Greater Manchester Transport Strategy 2040 and Delivery Plan 1 (2016/17 - 2021/22)

Integrated Assessment Report

Main Report

Transport for Greater Manchester
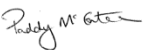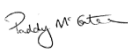
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Appendices (separate document)

Non-Technical Summary

Introduction

This is the Non-Technical Summary (NTS) of the Integrated Assessment (IA) Report of the Greater Manchester Transport Strategy 2040. The purpose of this NTS is to set out the IA process and the outcomes derived from this and is intended to inform people who have a general interest in the Transport Strategy, but who are not concerned with its detailed technical assessment – readers are advised to read the full contents of the IA Report for more detailed information if required.

Transport for Greater Manchester (TfGM) are currently producing a new Transport Strategy to ensure that Greater Manchester has the appropriate transport infrastructure and services to support future growth of the economy and to allow communities and individuals access to all their employment, educational, health, social and recreational needs. This Transport Strategy will cover the period up to 2040 and will apply across the ten local authority areas that make up the Greater Manchester (GM) region.

The vision for transport in Greater Manchester

It is the vision that the Transport Strategy will lead to GM having:

"World class connections that support long-term, sustainable economic growth and access to opportunity for all"

The four key elements of this vision are:

1. Supporting sustainable economic growth
2. Protecting our environment
3. Developing an innovative city region
4. Improving quality of life for all

The Transport Strategy sets out the detailed policies and proposals for how it is intended to meet this vision and its key elements.

A series of specific new transport schemes have also been proposed which meet the objectives of the Transport Strategy and information on these is to be provided in a series of Delivery Plans that cover 5 year periods of the Strategy. The first Delivery Plan (No.1) has now been developed and will cover the first 5 years of the Strategy from 2016/17 – 2021/22. Delivery Plan 1 accompanies the Transport Strategy as a separate document. Delivery Plans will be updated annually to cover later 5 year periods.

The purpose of the Integrated Assessment

While it is important that the Transport Strategy and the transport schemes contained in the Delivery Plans help deliver the vision for transport across Greater Manchester, it is also important that this is done in a way which protects the environment, protects the health of people and allows as many different people as possible the same opportunities for accessing the facilities and services they require whilst promoting sustainable economic growth at the same time. Therefore, the Transport Strategy and Delivery Plan 1 have been subjected to a series of assessments that cover the topics of Sustainability and Strategic Environmental Assessment (SA/SEA), Health Impact Assessment (HIA) and Equality Impact Assessment (EqIA). It is also important to note that as there is a potential that the Transport Strategy could lead to a direct or indirect effect on sites which have been designated at the European level for nature conservation purposes (such as Special Areas of Conservation), a Habitats Regulation Assessment (HRA) was also carried out. Taken together these various assessments are described as an 'Integrated Assessment' (IA).

Another important point to note is that the new Transport Strategy is not starting with 'a blank sheet of paper'. There is a current transport network across GM that has been developed over many years and is the result of previous Strategies and investment decisions. This transport network already has an effect on the environment, on people's health and their equality of opportunity. An objective of this IA is to provide for a high level protection of the environment and to contribute to the integration of environmental considerations into the preparation of the Strategy; to consider potential impact on and support efforts to improve the health

of individuals and communities and to ensure that the Strategy does not discriminate against any individual or community and where possible promotes equality. In short, it is the intention that the IA will ensure that the new Transport Strategy does not exacerbate existing problems associated with the transport network and provides opportunities to remove or reverse these problems.

An overview of the IA processes and how these come together is as follows. Note that the HRA process is undertaken in parallel and the results incorporated into the IA as appropriate:

Transport Planning Stage	Sustainability Appraisal / Strategic Environmental Assessment		Habitats Regulation Assessment	Health Impact Assessment	Equalities Impact Assessment
	Stage	**Tasks**	**Tasks**	**Tasks**	**Tasks**
Determining the scope of the 2040 Transport Strategy clarifying goals; specifying the problems or challenges the authority wants to solve	**A. Setting the context and objectives, establishing the baseline and deciding on the scope**	Review plans / programmes		Identify health related plans / programmes (as part of SA/SEA)	Review of relevant policies and strategies
		Review Sustainability themes		Derivation of health-related themes (as part of SA/SEA)	Derivation of equality-related themes
		Review Baseline data and likely future trends	Identify all international sites within and up to 20km around the Strategy area	Gather data relating to health (as part of SA/SEA)	Baseline evidence
		Review Key sustainability issues	Contact Natural England for details of all international sites and consultation purposes	Identify health specific issues (as part of SA/SEA)	Identify equalities specific issues
		Review objectives and decision making questions (SA/SEA Framework)	Liaise with SA/SEA team to ensure SA/SEA Framework covers international sites appropriately	Ensure inclusion of Health specific objectives in SA/SEA Framework	Ensure inclusion of Equalities specific objectives in SA/SEA Framework
		Prepare Key Sustainability Issues briefing note	*HRA information incorporated in briefing note*	*Prepare Key Sustainability Issues briefing note*	*HRA information incorporated in briefing note*
		Informal consultation with SEA Statutory consultees on the Key Sustainability Issues briefing note	*Consultation as part of SA/SEA informal consultation*	Informal engagement with HIA consultees on relevant aspects of Key Sustainability Issues Briefing note	Informal engagement with EqIA consultees on relevant aspects of Key Sustainability Issues briefing note
Generating options for the Strategy to resolve these	**B. Developing, refining and appraising strategic**	Assess Strategy objectives against the SA/SEA	Assess Strategy objectives against relevant HRA objective	*HIA assessment of Strategy objectives and strategic options*	*EqIA assessment of Strategy objectives and*

Transport Planning Stage	Sustainability Appraisal / Strategic Environmental Assessment		Habitats Regulation Assessment	Health Impact Assessment	Equalities Impact Assessment
challenges; appraising the options and predicting their effects	**options**	Framework	Initial advice provided to client in relation to the sensitivities of the international sites and how to avoid significant effects on these sites	*to be undertaken within SA/SEA*	*strategic options to be undertaken within SA/SEA*
		Appraise Strategy strategic options			
		Evaluate / select Strategy preferred options			
Selecting preferred options for the Strategy and deciding priorities	**B. Assessing the effects of the Strategy**	Predict and assess effects of options taken forward	HRA review of proposals	*HIA assessment of preferred options to be undertaken within SA/SEA. Mitigation measures proposed within SA/SEA*	*EqIA assessment of preferred options to be undertaken within SA/SEA. Mitigation measures proposed within SA/SEA*
		Propose mitigation measures	Propose mitigation measures		
Production of the draft Strategy and Delivery Plan 1		Propose monitoring programme	*Monitoring as part of SA/SEA*	*Monitoring as part of SA/SEA*	*Monitoring as part of SA/SEA*
	C. Prepare IA Report		Prepare HRA Screening Report (separate output)	HIA fully documented in IA Report (no separate output but HIA component properly identified)	EqIA fully documented in IA Report (no separate output but EqIA component properly identified)
Consultation on draft Strategy and Delivery Plan 1	**D. Consulting on IA Report**		HRA Screening Report sent to Natural England for agreement on findings.	*HIA Consultation included in IA Report consultation*	*EqIA Consultation included in IA Report consultation*

Review of other Plans and Programmes

In addition to the existing transport network in which it operates, there are a range of relevant Plans, Programmes and Legislation which need to be considered in the development of the Transport Strategy as this helps to identify relevant environmental and wider sustainability themes, baseline information and key issues. Therefore a range of relevant (to Sustainability, Health and Equality) plans, programmes and legislation were identified at the International (European), National (UK wide), Regional (Greater Manchester) and local levels.

The relationships between the relevant plans, programmes and legislation and the Transport Strategy were considered during the strategy development, with a large number of common themes and objectives being identified. These were addressed as appropriate.

The Existing Baseline

As noted above, the environment of GM is already affected by the existing transport network. In order to consider the potential effects of the Transport Strategy, it was important to understand the existing environmental, social, economic and health context in which the strategy will be enacted and also understand how this environment may evolve without the implementation of the strategy. As such, an overview of the existing environmental (and wider sustainability) baseline was carried out.

The baseline data provided an overview of the sustainability characteristics of the GM region and these compare to the UK as a whole. The analysis highlighted a number of key issues which had implications and opportunities for the Transport Strategy.

Key Sustainability Issues

As noted the review of existing plans, programmes and legislation, along with a review of the existing sustainability baseline allowed the identification of a series of key sustainability issues for GM grouped under the following topics:

- Air Quality
- Carbon Emissions
- Biodiversity, Flora and Fauna
- Landscape and Townscape
- Historic and Cultural Heritage
- Water Resources and Quality
- Land use, Soil and Agriculture
- Flooding
- Waste and Resources
- Transport
- Economy
- Urban development
- General health & health inequalities
- Population growth and make-up of the local population

Key HIA and EqIA issues have also been identified for the following topics:

- Physical activity and Open space
- Deprivation
- Air Pollution
- Noise Pollution
- Light Pollution
- Road Safety for all travellers
- Crime and Fear of crime
- Severance
- Affordability of transport

The identification of these key sustainability issues also allowed the identification of implications and opportunities for the Transport Strategy and from this the identification of a series of IA Objectives that would require particular attention during the strategy formulation process.

Integrated Assessment Objectives

The IA Objectives were worded to allow one single desired direction of change for the theme concerned and to avoid overlap with other objectives.

A series of 15 IA Objectives were identified as follows:

No	IA Objective	SEA topic (relevance to HIA, EqIA and HRA shown in brackets)
1.	Improve air quality	Air Quality; Biodiversity (HIA/EqIA)
2.	Reduce carbon dioxide (CO_2) emissions from transport overall, with particular emphasis on road transport	Climatic factors; Biodiversity
3.	Conserve and enhance biodiversity, green infrastructure and geodiversity assets	Biodiversity, Flora, Fauna
4.	Conserve and enhance the European sites *(HRA specific objective)*	Biodiversity, Flora, Fauna (HRA)
5.	Conserve and enhance the character and quality of GM's landscapes and townscapes	Landscape / Townscape; Biodiversity; Climatic factors (HIA/EqIA)
6.	Conserve and enhance the quality and distinctiveness of historic and cultural heritage	Cultural Heritage; Landscape / Townscape
7.	Conserve and enhance the water environment	Water; Biodiversity
8.	Conserve soil and agricultural resources and seek to remediate / avoid land contamination	Landscape
9.	Reduce risk of flooding and increase resilience to the effects of a changing climate	Climatic factors; Material Assets
10.	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling	Material Assets
11.	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport	Population; Material Assets, Human Health
12.	Promote economic growth and job creation across the sub-region, and improve access to jobs for all	Population
13.	Coordinate land use and transport planning across GM	Population
14.	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society *(EqIA specific objective)*	Population (see EqIA sub-objectives)
15.	Improve health and well-being for all citizens and reduce inequalities in health *(HIA specific objective)*	Human Health (see HIA sub-objectives)

EqIA Objective	EqIA sub-objectives
To promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society	1. Improve accessibility to services, facilities and amenities for all 2. Improve affordability of transport 3. Reduce crime and fear of crime and promote community safety 4. Improve road safety and reduce the number of accidents and other incidents 5. Reduce severance 6. Reduce environmental impacts of transport – air and noise pollution

HIA Objective	HIA sub-objectives
Improve health and well-being for all citizens and reduce inequalities in health (*HIA specific objective*)	1. Improve accessibility to services, facilities and amenities for all 2. Improve affordability of transport 3. Reduce crime and fear of crime and promote community safety 4. Improve road safety and reduce the number of accidents and other incidents 5. Reduce severance 6. Reduce environmental impacts of transport - vibration and air, noise and light pollution

A series of questions to help aid the assessment and interpretation of each Objective were also identified. These questions and the IA Objectives together make up the IA Framework against which the Transport Strategy and Delivery Plan 1 proposals were assessed.

Compatibility between the objectives of the Transport Strategy and Objectives of the IA

In the early stages of development of the Transport Strategy, it was important to be sure that the objectives of the Strategy were in accordance with the IA Objectives and therefore an assessment of their compatibility was carried out. This process identified potential synergies (i.e. where factors can come together to produce effects greater than a simple sum of the individual elements) but also any inconsistencies and helped to refine the objectives of the strategy.

In this assessment it was found that there was a reasonable degree of compatibility, although some potential areas of conflict were identified, along with a number of gaps and areas where it was unclear how compatible the objectives were. Therefore a series of recommendations were made in order to improve compatibility and shape the Transport Strategy as it developed.

Assessment of Alternatives

Consideration of alternative strategies and options for the Transport Strategy is an integral part of the strategy development process. In this instance two alternatives were assessed as follows:

- Alternative 1: This is a 'Business as Usual' approach i.e. the continuation of the current transport strategy (known as LTP3)
- Alternative 2: This is a 'Balanced Approach' which could be said to build upon key aspects of Alternative 1 but with an additional range of transport schemes (or interventions) to be implemented.

This approach would also involve proactive identification of opportunities and issues across GM to identify priorities for different types of travel.

The task of predicting changes arising from each alternative scenario required the use of the following scale to consider whether the alternative scenario would have a likely significant effect in relation to each of the IA objectives. Note this scale was used throughout the IA for all assessments.

Assessment Scale		Assessment Category	Significance of Effect
+++		Large beneficial	Significant
++		Moderate beneficial	
+		Slight beneficial	Not Significant
0		Neutral or no obvious effect	
-		Slight adverse	
--		Moderate adverse	Significant
---		Strong adverse	
?		Effect uncertain	
+/-		Combination of slight beneficial and adverse effects	Not significant
++	-	Combination of moderate beneficial and slight adverse effects	Significant

IA Objectives	Alternative 1 (Business as Usual)	Alternative 2 (Balanced Approach)	
1. Improve air quality	+/-	++	-
2. Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport	+/-	++	-
3. Conserve and enhance biodiversity, green infrastructure and geodiversity assets	+/-	+/-	
4. Conserve and enhance the European sites (HRA specific objective)	?	?	
5. Conserve and enhance the character and quality of GM's landscapes and townscapes	+/-	+/-	
6. Conserve and enhance the quality and distinctiveness of historic and cultural heritage	+/-	+/-	
7. Conserve and enhance the water environment	-	-	
8. Conserve soil and agricultural resources and seek to remediate / avoid land contamination	+/-	+/-	
9. Reduce risk of flooding and increase resilience to the effects of a changing climate	-	-	
10. Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling	+	++	
11. Reduce the need to travel by car or move goods by road and promote sustainable modes of transport	+/-	++	

12. Promote economic growth and job creation across the sub-region, and improve access to jobs for all	+	++
13. Coordinate land use and transport planning across GM	+	++
14. Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective)	+	++
15. Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective)	+	++

In environmental terms, for the most part both Alternative 1 and Alternative 2 have an even performance against the IA environmental objectives. This is in large part due to Alternative 2 being made up of a large number of intervention types originally proposed in Alternative 1 – in short it could be said that Alternative 2 builds upon key aspects of Alternative 1. While Alternative 2 builds upon the positive effects of Alternative 1, it does also retain some of the negative effects. This can be most clearly seen through the Highways theme, where there is a retained commitment to 'building new capacity' resulting in the identification of positive and negative effects in relation to conserving and enhancing the character and quality of GM's landscapes and townscapes, historic environment and biodiversity.

One area of the environment where both Strategic approaches perform less well is considered to be in the area of 'conserving and enhancing the water environment'. In both Strategic approaches, interventions would be made which could have a negative effect on the water environment.

Alternative 2 performs better than Alternative 1 in a number of environmental areas – namely in relation to:

- 'Improve Air Quality';
- 'Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport';
- 'Promoting the prudent use of natural resources, minimise the production of waste and support re-use and recycling'; and
- 'Reduce the need to travel by car or move goods by road and promote sustainable modes of transport.

Alternative 2 also has clearer goals of improving air quality and reducing carbon dioxide emissions resulting in moderate positive effects for these two environmental objectives in comparison to only slight positive effects for Alternative 1. The potential for traffic growth remains associated for some themes in both alternatives and therefore air quality negative effects are also identified. The moderate positive effects identified for Alternative 2 cut across a number of themes and IA Objectives and will be the result of a number of enhanced interventions – for example, the approach to electric vehicles will enable more rapid uptake of ultra-low-emission vehicles (ULEVs), with a particular focus on goods vehicles and buses, and developing ULEV car clubs. This will also help to improve the health of all citizens of Greater Manchester (see below).

From an economic perspective, it is considered that Alternative 2 is much more positive in terms of 'Promoting economic growth and job creation across the sub-region and improving access to jobs for all'. This is shown by the moderate positive effects identified. In large part this is due to Alternative 2 having a greater geographical spread through its 'Spatial Themes' and thereby having a positive effect on a greater range of citizens, whilst also recognising key growth areas such as Manchester Airport Enterprise Zone and the concept of the 'Northern Powerhouse' economy and making specific provision for these as well as recognising the key concepts of closer co-ordination / partnerships with other bodies and new approaches to issues such as funding over the long-term, to help make these economic visions a reality.

In addition Alternative 2 recognises that proactive identification of opportunities and issues for GM would take a co-ordinated and integrated approach with a range of authorities and key stakeholders. Importantly, this Balanced Approach would also involve joint working to develop the GM Spatial Framework with transport a key consideration in identifying sites for development.

In relation to the social perspective, it is considered that Alternative 2 promotes a greater equality of opportunity for all citizens, as well as likely to improve the health and well-being for all citizens. This approach will also reduce inequalities in health and help achieve a fairer society. In large part this is also due to Alternative 2 having a greater geographical spread through its 'Spatial Themes' and thereby having a positive effect on a greater range of citizens, but it is also due to interventions which will be derived improving accessibility to the transport network and key facilities such as health centres. These positive effects will be experienced across a range of income groups and people with different health and mobility issues. Protection will also be afforded to more vulnerable groups through interventions such as increased security / safety on the public transport network and efforts to reduce the number of accidents (for example through the introduction of 20mph zones). An ambition has been stated of having 'near zero fatalities'.

It is considered that the wider geographical spread of Alternative 2, together with a more pro-active and co-ordinated approach to liaison and planning with other bodies and more focused interventions make Alternative 2 to be the best approach in terms of environmental, economic and social issues. Notwithstanding this outcome, it is still the case that implementation of interventions derived from Alternative 2 would require the satisfactory minimisation of identified negative effects. TfGM proceeded with Alternative 2 as the preferred alternative for the development of the Draft Transport Strategy.

Assessment of the Draft Transport Strategy

In order to achieve the vision for the Transport Strategy, TfGM developed a series of Principles and Spatial themes, supported by an ambition for how the transport network would appear by 2040. These Principles and themes are as follows:

Network Principle	- Integration at the heart of our Transport Strategy 2040 - An accessible and inclusive network - A safe and secure transport system - Moving toward zero emissions
Modal Principle	- Highways: The arteries of our city region - Developing a comprehensive walking and cycling network - Public Transport: Keeping GM moving in 2040 - Goods and servicing
Spatial Theme	- Global connectivity - Delivering better city to city links - Travel to and within our regional centre - Travel across the wider city region - Connected neighbourhoods

The results of the assessment showed a number of areas of strength, but also of weakness in relation to the performance of the Network Principles against the IA Objectives. Areas of particular strength were found in relation to improving air quality and reducing carbon emissions. It was also found that these Principles would lead to a reduction in the need to travel by car – including for those with mobility issues who will likely find accessibility to the transport network improved.

In economic terms, it was found that potential job creation and access to employment opportunities would increase, with for example better passenger security supporting the development of the night time economy. Further economic benefits would be found from a healthier workforce supported for example by a more active approach to travel.

Health improvements would further result from increased access to health services and recreation / leisure opportunities. Similar positive aspects were found in terms of equality, with those that have mobility issues, low income, lack of access to cars and people from minority communities all expected to benefit.

It was found though that these Network Principles could be strengthened and a series of recommendations to do so were made. For example, it was recommended to emphasise the improvement in travel information provision to benefit as wide a range of the population as possible.

Of particular note was that it was found that there was insufficient consideration of a key element of the GM vision, namely 'Protecting our Environment'. It was therefore recommended that a new principle was required specifically concerned with environmental matters and which would apply across all elements of the strategy.

In terms of the Modal Principles, these were also found to be largely positive and it was felt that the Transport Strategy will result in an attractive, efficient and well integrated public transport network. It will also help to deliver high quality walking and cycling infrastructure. As with the Network Principles there would be benefits in health terms from more active travel etc and accessibility to healthcare provision, reduction in severance, reduction in traffic congestion etc. Likewise, these aspects and others like them would result in positive Equality improvements.

As with the Network Principles however, it was considered that there were negative aspects to the Modal Principles identified and again, of note this largely related to environmental issues. It was therefore recommended that, as for the Network Principles, a new principle was required specifically concerned with environmental matters and which would apply across all elements of the strategy.

It was considered that this new principle would contribute to the protection and enhancement of the built and natural environment of Greater Manchester and addressed those areas of the environment where the performance of the strategy against the IA Objectives was considered to be lacking. TfGM committed early on to introduce this new principle in the Transport Strategy. The table below shows the assessment results before and after the introduction of the new principle.

	IA Objective	Integration at the heart of our Transport Strategy 2040	An accessible and inclusive Network	A resilient Network	A safe and secure transport system	Moving toward zero emissions	Highways: The Arteries of our City Region	Developing a comprehensive Walking and Cycling Network	Public Transport: Keeping GM Moving in 2040	Goods and Servicing
1	Improve air quality (Pre new principle)	++	+	+/-	+	++	-	++	+	++
	Improve air quality (Post new principle)	++	+	+/-	+	++	-	++	+	++
2	Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport (Pre new principle)	++	+	+/-	+	++	-	++	+	+/-
	Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport (Post new principle)	++	+	+/-	+	++	-	++	+	+/-
3	Conserve and enhance biodiversity, green infrastructure and geodiversity assets (Pre new principle)	++	--	0	0	0	+	--	+	-	-
	Conserve and enhance biodiversity, green infrastructure and geodiversity assets	++	-	0	0	0	+	-	+	-	-

No	Objective											
	(Post new principle)											
4	Conserve and enhance the European sites (HRA specific objective) (Pre new principle)	++	--	0	0	0	+		--	+	--	+/-
	Conserve and enhance the European sites (HRA specific objective) (Post new principle)	++	-	0	0	0	+		-	+	-	+
5	Conserve and enhance the character and quality of GM's landscapes and townscapes (Pre new principle)	++	--	0	0	0	+		--	+	-	-
	Conserve and enhance the character and quality of GM's landscapes and townscapes (Post new principle)	++	-	0	0	0	+		-	+	0	0
6	Conserve and enhance the quality and distinctiveness of historic and cultural heritage (Pre new principle)	++	--	0	0	0	+	++	--	+	-	-
	Conserve and enhance the quality and distinctiveness of historic and cultural heritage (Post new principle)	++	-	0	0	0	+	++	-	+	0	0
7	Conserve and enhance the water environment (Pre new principle)	--		0	-	0	0	--		0	-	-
	Conserve and enhance the water environment (Post new principle)	-		0	0	0	0	-		0	0	0
8	Conserve soil and agricultural resources and seek to remediate / avoid land contamination (Pre new principle)	++	--	0	0	0	0	++	--	+	+/-	+/-
	Conserve soil and agricultural resources and seek to remediate / avoid land contamination (Post new principle)	++	-	0	0	0	0	++	-	+	+	+
9	Reduce risk of flooding and increase resilience to the effects of a changing climate (Pre new principle)	--		0	+/-	0	0	++	--	0	-	-

#	Objective										
	Reduce risk of flooding and increase resilience to the effects of a changing climate (Post new principle)	-	0	+	0	0	++	-	0	0	0
10	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling (Pre new principle)	+/-	0	0	0	+	-	0	+/-	-	
	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling (Post new principle)	+	0	0	0	+	0	0	+	0	
11	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport (Pre new principle)	+++	++	0	+	+	--	++	+++	+/-	
	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport (Post new principle)	+++	++	0	+	+	-	++	+++	+/-	
12	Promote economic growth and job creation across the sub-region, and improve access to jobs for all (Pre new principle)	++	+/-	0	+	+	+/-	+	++	++	
	Promote economic growth and job creation across the sub-region, and improve access to jobs for all (Post new principle)	++	+	0	+	+	+	+	++	++	
13	Coordinate land use and transport planning across GM (Pre new principle)	+++	0	0	0	0	-	+	+	0	
	Coordinate land use and transport planning across GM (Post new principle)	+++	0	0	0	0	0	+	+	0	
14	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective) (Pre new principle)	++	++	++	++	++	++	++	+++	++	
	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA	++	++	++	++	++	++	++	+++	++	

	specific objective) (Post new principle)								
15	Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective) (Pre new principle)	++	++	++	++	++	++	++	+++	++
	Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective) (Post new principle)	++	++	++	++	++	++	++	+++	++

The introduction of the new principle was also found to be particularly beneficial in terms of assessment of the proposals under the Spatial Themes and would ensure the adequate addressing of the full range of environmental issues relevant to schemes or interventions proposed.

Overall the Spatial Themes were found to be positive in terms of economic growth and the promotion of equality of opportunity for all citizens, along with the need to improve health and well-being.

IA Objective		Global Connectivity	Delivering better city to city links	Travel to and within our regional centre	Travel across the wider city region	Connected Neighbourhoods
1	Improve air quality	-	+	+	+	+
2	Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport	-	+	+	+	+
3	Conserve and enhance biodiversity, green infrastructure and geodiversity assets	++ --	++ --	+/-	++ --	+
4	Conserve and enhance the European sites (HRA specific objective)	*See HRA Stage 1 Screening Report that accompanies the Transport Strategy*				
5	Conserve and enhance the character and quality of GM's landscapes and townscapes	+/-	+/-	+	+/-	+
6	Conserve and enhance the quality and distinctiveness of historic and cultural heritage	+/-	+/-	+	+/-	+
7	Conserve and enhance the water environment	+/-	+/-	+/-	-	+/-
8	Conserve soil and agricultural resources and seek to remediate / avoid land contamination	+/-	+/-	+/-	+/-	+

9	Reduce risk of flooding and increase resilience to the effects of a changing climate	--	--	-	++	--	+/-
10	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling	-	-	-	-		-
11	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport	+++	+++	++	++		++
12	Promote economic growth and job creation across the sub-region, and improve access to jobs for all	+++	+++	++	++		+
13	Coordinate land use and transport planning across GM	+	0	++	++		+
14	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective)	++	++	++	++		+++
15	Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective)	++	++	++	++		+++

Assessment of Delivery Plan 1

In order to deliver the vision of 'World class connections that support long-term sustainable economic growth and access to opportunity for all', the Greater Manchester Transport Strategy 2040 is supported by a series of short term (5 year) Delivery Plans, which will be reviewed and updated annually. Through these Delivery Plans, TfGM will be able to respond quickly to needs arising from new development and regeneration opportunities, as well as to additional funding opportunities and regulatory changes. The first Delivery Plan covers the years 2016/17 – 2021/22 and has also been subject to assessment.

TfGM have identified in the Delivery Plan for 2016/17 – 2021/22 transport schemes for delivery over this first five year period. The Delivery Plan contains two broad types of scheme:

- Committed Schemes i.e. fully funded and being developed at the time of this assessment.
- Indicative Schemes and Programmes to be delivered subject to funding – these will be subject to further assessment and consideration

The Delivery Plan includes the continued implementation of schemes that were identified in the 'Greater Manchester Local Transport Plan 3 Capital Programme 2015/16 – 2020/21' and funded under the Local Growth Fund (committed schemes). It is important to note that these committed schemes have been developed and assessed in accordance to the relevant guidance and legislation applicable at that time and have not been considered further as part of this IA.

In order to maintain consistency during the assessment, the various schemes noted in the Delivery Plan were categorised into scheme types as part of the IA work.

- New Highway Links
- Highway Infrastructure Improvements
- Rail Links
- Rail Infrastructure Improvements
- Station Upgrade
- Metrolink & Bus

- Minor Works
- Station & Interchange Works
- EV Facilitation
- Sustainable Freight Infrastructure.

As well as schemes, there are various studies listed in the Delivery Plan relating to new infrastructure such as new highway or rail projects. No detailed assessment was undertaken in relation to these studies as proposals are not sufficiently developed.

The Delivery Plan element of the Strategy document took on a role of a bidding document for the July 2016 Growth Deal, As such, interventions were included within the document at a later stage than would usually be the case. This means that Table 17 may not mirror exactly the schemes that are in the consultation version of the Delivery Report.

However, when aggregated into sectors, they clearly set out a proposed demonstration of anticipated future transport programmes

The above scheme types were assessed against the IA Objectives using the standard assessment scale utilised throughout the IA noted above.

The schemes with most negative effects are those within the 'New Highway Links' type, in particular in terms of how they will affect soil and agricultural resources, interact with the issue of flooding, use of natural resources and will not encourage a reduction in travel by car, nor a reduction of the movement of goods by road. However, on the plus side, they are considered to be strongly beneficial in terms of promoting economic growth and job creation and will improve access to jobs for all.

'Highway Infrastructure Improvement' schemes can be for the most part adverse – strongly so in relation to reducing travel by car and reducing the movement of goods by road. On the positive side, these types of scheme will be strongly beneficial in terms of promoting economic growth and job creation and will improve access to jobs for all.

Whilst appreciating that there is a limited amount of non-committed 'Rail Links' and 'Rail Infrastructure Improvements' these are strongly beneficial in both reducing the need to travel by car and reducing the movement of goods by road, as well as promoting economic growth and job creation and improving access to jobs for all. It is also considered that they will be moderately beneficial in terms of improving air quality and reducing carbon emissions. However, it is considered that they will have moderate adverse effects on a range of issues such as biodiversity, landscapes, cultural heritage, the water environment and flooding and the use of natural resources. New rail links are also anticipated to have a strong adverse effect on soil / agricultural resources.

In addition to 'Rail Links' and 'Rail Infrastructure Improvements', improving air quality and reducing carbon emissions is anticipated to be promoted by schemes progressed under 'Station Upgrades', 'Metrolink & Bus', the Minor Works programmes, 'Station and Interchange Works', as well as the proposed expansion of the EV charging network and the new Port Salford wharf. The schemes relating to Highway Links and Improvements are also anticipated to have some benefits in this regard.

Overall, the schemes proposed are also anticipated to be, for the most part, beneficial in terms of promoting economic growth and job creation and improving access to jobs for all, as well as reducing the need to travel by car and reducing the movement of goods by road (notwithstanding the strong adverse effects of the highway related schemes in this regard). The programme of 'Minor Works' is considered to be frequently beneficial (often strongly or moderately so) which demonstrates that schemes do not need to be large, high profile schemes in order to achieve IA objectives.

As a result of the assessments, a range of typical mitigation measures that could be applied to the proposed schemes was identified. It is important to note that this typical mitigation may, or may not, be applied to an individual scheme – the mitigation to be applied will depend upon the precise design of the scheme, the landscape and environment into which it is to be placed, the level of environmental protection required and the overall economic and social objectives of the scheme. In short, any mitigation to be put in place will be bespoke to and appropriate for, that scheme.

Scheme	IA Objective

Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
New Highway Links	-- ++	-- ++	--	--	--	--	--	---	---	---	---	+++	+	+/-	+/-
Highway Infrastructure Improvements	-- ++	-- ++	--	--	-- ++	-- ++	-- ++	-	--	--	---	+++	++	+/-	+/-
Rail Links	++	++	--	--	--	--	--	---	--	--	+++	+++	+	+/-	+/-
Rail Infrastructure Improvements	++	++	--	--	+/-	-- ++	--	-	-	--	+++	+++	0	+	+/-
Station Upgrades	++	++	0	0	+	+	0	+	+	-	++	+	0	0	0
Metrolink & Bus	++	++	0	0	+	+/-	0	+	0	-	++	+++	+	+	+
Minor Works	+++	+++	0	0	+	+/-	0	+	0	-	++	+++	++	++	++
Station & Interchange works	+++	+++	0	0	+	+/-	0	+	0	-	++	+	0	+	+
EV Facilitation	+++	+++	0	0	0	0	0	0	0	-	--	0	+	0	+
Sustainable Freight Infrastructure	++	++	--	0	---	++	--	---	--	--	+++	++	++	0	+

Cumulative effects

There is also a requirement to consider Cumulative, Synergistic and Indirect Effects of policies and interventions in the Transport Strategy and associated Delivery Plan 1. Secondary and Indirect effects are effects that are not a direct result of the plan, but occur away from the original effect or as the result of a complex pathway. Cumulative effects arise where several proposals individually may or may not have significant effect but in-combination have a significant effect due to spatial crowding or temporal overlap. Synergistic effects are when two or more effects act together to create an effects greater than the simple sum of the effects acting alone.

For each of the IA Objectives, cumulative effects were identified and for the most part these were found to have a mix of both positive and negative effects over the medium to long term. Solely negative effects are anticipated in the medium to long term in relation to the water environment and the risk of flooding. Solely positive effects are anticipated in the medium to long term in relation to air quality, carbon emissions, reducing the need to travel by car or move goods by road and the promotion of sustainable transport modes. Further positive effects are anticipated in relation to economic growth and job creation and improving the health and well-being for all citizens and reducing inequalities in health.

Monitoring

As further Delivery Plans will be developed, it is important that any decisions taken in relation to the proposed transport schemes that these Plans may contain, are taken with the best information available. Therefore, following the assessments, a monitoring programme was developed to allow the early establishment of a causal link between the implementation of the Transport Strategy (via the Delivery Plan 1) and the likely significant effects (positive or negative). This will provide TfGM and other relevant authorities the information to make appropriate and informed decisions and take appropriate action as soon as practicable should the proposed monitoring programme be adopted. The results of this monitoring will also help inform future iterations of the Transport Strategy itself.

Next Steps

The IA Report will be published for formal consultation with the Draft Transport Strategy and Delivery Plan 1. The results of the formal public consultation exercise may well result in changes to the Draft Transport Strategy and/or the Delivery Plan, and these may have implications for the Integrated Assessment. In addition, the consultation exercise may result in direct changes to the contents of the IA Report. These will be reported in the Post Adoption Statement in the next stage of development of the Transport Strategy, Delivery Plan and the IA prior to adoption.

Summary & Conclusion

The Greater Manchester Transport Strategy 2040 sets out a vision for transport across GM that will lead to 'World class connections that support long term, sustainable economic growth and access to opportunity for all'.

It was recognised that implementation of this Strategy could have implications for the environment of the region, the health of its citizens and visitors to the region and the equality of opportunity for individuals and communities within the region whilst promoting economic growth. Therefore comprehensive and robust assessments were undertaken at the same time as the Strategy development and this process ensured that these issues were brought to the fore of the range of considerations undertaken during Strategy formulation.

For example, a new section was inserted to the Strategy to protect the built and natural environment and specifically the need to protect the environment across a range of issues such as biodiversity, the water environment and flooding, soil and agricultural resources, landscape, townscape and cultural heritage. This commitment to protect the environment, health and equality means that the Transport Strategy includes a number of policies and encourages a range of mitigation to be incorporated into transport schemes which will ensure that the negative effects of these aspects are minimised as much as possible.

Mitigation will also be important to counteract many of the negative effects that can be expected from the construction and operation of any transport scheme. For example, the use of natural resources and the generation of waste are inherent in any construction process but mitigation can lead to greater use of recycling and waste reduction.

Mitigation can also provide an opportunity for enhancement of the environment. An example of this relates to mitigating the effects of Highway Infrastructure improvements on biodiversity where the sowing of wildflower mixes on grass verges, installation of bat and bird boxes, use of native species of tree and hedgerow all provide opportunities for biodiversity enhancement. In short, where there are aspects of the Transport Strategy which may have negative effects, there are opportunities to reduce or reverse these effects.

It is recognised that car use is still, and is likely to remain, a major component of the transport system. There remains a requirement for new roads and improvements to the road infrastructure and there will be both positive and negative aspects to this. Nevertheless, the Transport Strategy also contains a range of aspects which will strongly encourage and aid the development of an attractive, efficient and well integrated public transport network (aspects of which, such as buses, will benefit from the improved highway network), with high quality walking and cycling infrastructure and there will be an anticipated marked reduction in the need to travel by car or to move goods by road.

Benefits to health from more active travel and greater access to the full range of public services including those in the fields of healthcare provision, education and recreation can also be expected from the implementation of this Transport Strategy. Increased traveller safety and reduction in traveller stress are also expected.

Health benefits will also be experienced through the anticipated improvements in air quality, particularly in urban areas, which implementation of the Transport Strategy will allow and which are anticipated to be particularly beneficial to children, those in deprived areas and those with breathing difficulties. Similarly carbon emissions are also expected to fall as a result of the implementation of the Transport Strategy.

In terms of Equality, it is anticipated that the Transport Strategy will improve significantly accessibility and integration across a wide range of the population including those with mobility issues, older people, those on low incomes, people without access to cars and people from minority communities. The Transport Strategy will also be positive in terms of Equality through reducing severance, reducing accidents and reducing air, noise and light pollution.

Key elements of the public transport element of the Transport Strategy include Simplicity, Convenience, Inclusivity, Transparency and Trustworthiness and Value for money. Implementation of these objectives will further improve equality across GM.

The Transport Strategy is also anticipated to result in positive economic growth and job creation across the Greater Manchester and this will ultimately benefit all citizens of the region and beyond.

Overall the Transport Strategy represents a well balanced approach in terms of its sustainability, health impact and equality impact performance and would ensure that the vision for the transport of Greater Manchester up to the year 2040 can be achieved in a sustainable and integrated fashion.

1. Introduction

1.1. Purpose of Report

1.1.1.   This is the Integrated Appraisal (IA) Report for the Greater Manchester Transport Strategy 2040 (henceforth Transport Strategy) and Delivery Plan 1 2016/17-2021/22 (henceforth Delivery Plan 1) which has been prepared to fulfil the requirements for Sustainability Appraisal/Strategic Environmental Assessment (SA/SEA), Health Impact Assessment (HIA) and Equality Impact Assessment (EqIA). In addition, Habitats Regulation Assessment (HRA) has been undertaken as a parallel process to the IA and is reported separately.

1.1.2.   The IA Report identifies the likely sustainability effects of implementing the Transport Strategy and associated Delivery Plan 1 and reports on the process of developing Transport Strategy and Delivery Plan 1 from a sustainability perspective. The IA and HRA Reports have been produced by Atkins for Transport for Greater Manchester (TfGM).

1.1.3.   An overview of the Transport Strategy is presented next.

1.2. Greater Manchester Transport Strategy 2040

Transport Strategy's Vision, Objectives and Delivery

1.2.1.   TfGM is currently producing a new long-term Transport Strategy for Greater Manchester. This Transport Strategy will cover the period up to 2040, with particular detail on potential interventions for the period up to 2025.

1.2.2.   A particular aim of the Transport Strategy is to ensure that GM has the appropriate transport infrastructure and services to support future growth in Greater Manchester (GM). Therefore the Transport Strategy will be closely aligned with the GM Spatial Framework, which will identify new development locations. This Spatial Framework is still in development and as such the transport strategy needs to be flexible to enable it to influence and support proposals as they are identified. This flexibility is achieved through a series of five-year Delivery Plans, which will accompany the Transport Strategy. These will set out the spending programmes, based on the resources available and will allow quick response to needs arising from new development and regeneration opportunities, as well as additional funding opportunities and regulatory changes. Taken together, the Transport Strategy and Delivery Plans will constitute Greater Manchester's Fourth Local Transport Plan.

1.2.3.   Each Delivery Plan will be updated annually to describe the progress made in delivering the Transport Strategy and to reflect any changes needed. Therefore the Delivery Plan will provide detail on
*   The Schemes delivered
*   Changes in Key Performance Indicators
*   Changes in the external environment which may affect priorities for delivery
*   Results of studies or development of detailed sub-strategies

The first Delivery Plan covers the 5 year period of 2016/17 – 2021/22 and is being published together with the Transport Strategy.

1.2.4.   TfGM has identified the following overarching Transport Strategy's Vision:

'World class connections that support long-term sustainable economic growth and access to opportunity for all'

1.2.5.   To make the vision a reality, four key goals have been identified for the Transport Strategy:
*   To support sustainable economic growth
*   To improve the quality of life for our residents
*   To help protect our environment
*   To develop Greater Manchester as an innovation city region

1.2.6.   The four key elements of the Vision are set out in the Figure 1 below.
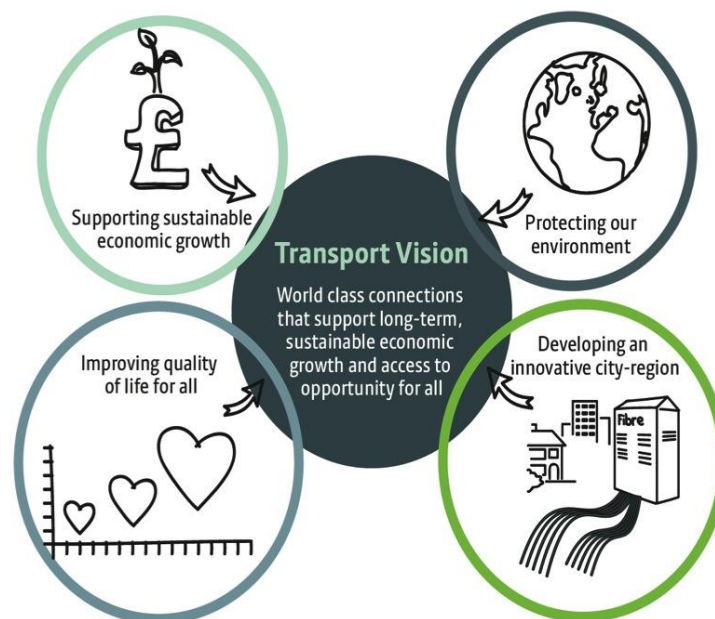

Figure 1.   **Key elements of the vision for transport in Greater Manchester**

1.2.7.   Alongside identifying proposals which apply across GM, the Transport Strategy will also target improvements for different types of travel, from global connectivity to support overseas trade and leisure markets, right down to the critical local trips that people make on a daily basis from their homes to work, school, shops, services, and local transport interchanges.

1.2.8.   Five types of travel have been identified in the Vision document which are core to the development of the Transport Strategy:

- A globally connected city
- City-to-city links
- Getting into and around the regional centre
- Travel across the wider city region
- Connected neighbourhoods

2. Approach to Integrated Assessment

2.1. Introduction

2.1.1.   The Transport Act 2000 introduced a statutory requirement for local transport authorities to produce a Local Transport Plan (LTP). The Local Transport Act 2008 requires that local transport authorities keep their LTP under review and replace it as the authority sees fit and that this is decided at the local level to best fit with other local policies and plans. The Act requires that LTPs contain policies (referred to as the strategy) and implementation plans (the proposals for delivery of the policies contained in the strategy).

2.1.2.   The Greater Manchester's third Local Transport Plan (LTP3) 2011/12 – 2015/16 was adopted in 2011. TfGM, on behalf of the Greater Manchester Combined Authority, is currently producing a new long-term Transport Strategy for GM which will replace LTP3. An Integrated Assessment (IA) was previously undertaken for the GM LTP3 and an IA Report which covered SEA, EqIA and HIA was prepared as part of the evidence base underpinning the LTP. In addition to the IA, HRA was undertaken separately and informed the IA.

2.1.3. The Transport Strategy's IA process has been aligned with that for the GM Spatial Framework's IA process which is currently underway. The GM Spatial Framework will be a statutory planning document providing a coherent strategic context for Greater Manchester. It will include strategic policies for the Greater Manchester area over the next 20 years providing an overarching plan which the ten local authorities will use to make land available to address strategic challenges and priorities. The plan will address GM's housing, employment land, strategic infrastructure, main town centre hierarchies and associated issues. Aligning the Transport Strategy's IA process with that of the GM Spatial Framework will strengthen the co-ordinated approach to land use and transport planning that TfGM is pursuing in the development of the Transport Strategy.

2.2. Sustainability Appraisal/Strategic Environmental Assessment

2.2.1. Although TfGM is not required under the Planning and Compulsory Purchase Act 2004 to undertake Sustainability Appraisal (SA) of the Transport Strategy and Delivery Plan 1, it has decided to undertake SA voluntarily. On the other hand, it is a statutory requirements that SEA is undertaken under the European Directive 2001/42/EC 'on the assessment of certain plans and programmes on the environment' (the 'SEA Directive').

2.2.2. Although the requirements to carry out SA and SEA are distinct, DCLG (Department for Communities and Local Government, formerly the ODPM (Office of the Deputy Prime Minister)) proposed that both can be satisfied through a single appraisal process. It has produced guidance (see Chapter 3 Methodology) to ensure SAs meet the requirements of the SEA Directive whilst widening the Directive's approach to include economic and social issues as well as environmental ones.

2.2.3. The EU Directive 2001/42/EC on assessment of effects of certain plans and programmes on the environment (the "SEA Directive") came into force in the UK through the Environmental Assessment of Plans and Programmes Regulations 2004 (the "SEA Regulations"). The SEA Regulations apply to a wide range of plans and programmes, including transport plans, and modifications to them.

2.2.4. The overarching objective of the SEA Directive is:

"To provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans… with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans… which are likely to have significant effects on the environment." (Article 1)

2.2.5. The main requirements introduced by the SEA Regulations are that:
- the findings of the SEA are published in an Environmental Report (ER), which sets out the significant effects of the draft plan, in this case LTP3;
- consultation is undertaken on the plan and the ER;
- the results of consultation are taken into account in decision-making relating to the adoption of the plan; and
- information on how the results of the SEA have been taken into account is made available to the public.

2.2.6. In this IA process, the IA Report incorporates the Environmental Report.

2.3. Health Impact Assessment

2.3.1. There is no statutory requirement to undertake an HIA but it provides a useful way to support efforts to improve health of individuals and communities and help address health inequalities.

2.3.2. Guidance by the Department of Health (DH) 2007 aims to help authorities assess the health effects of their plans and programmes more effectively and is based on current good practice.

2.3.3.   The Department for Transport (DfT) Transport Analysis guidance 2009 indicates that consideration of 'Human Health' is a legal requirement in an SEA and that an HIA is an integral part of an SEA to identify and inform health issues in Plans.

2.3.4.   The HIA process is fully reported in the IA Report.

2.4. Equalities Impact Assessment

2.4.1.   EqIA fulfils the statutory duties of public bodies to ensure the promotion of equalities under the Equality Act 2010 and subsequent Public Sector Equality Duty.

2.4.2.   The purpose of an EqIA is to ensure plans and programmes do not discriminate against any individual or community and where possible promotes equality. An EqIA considers impacts on a variety of groups, mainly focussing upon the 'protected characteristic groups' (PCGs) established under the Act, namely: age, disability, gender, gender reassignment, marriage and civil partnerships, pregnancy and maternity, race, religion or belief, and sexual orientation. The Act also makes explicit the concept of 'dual discrimination', where someone may be discriminated against or treated unfairly on the basis of a combination of two of the protected characteristics.

2.4.3.   DfT Transport Analysis guidance 2009 requires an evidence-led EqIA to be completed to help inform the development of the transport plan, ensuring it addresses any equality issues identified and takes account any impacts the plan may have on the local communities.

2.4.4.   The EqIA process is fully reported in the IA Report.

2.5. Habitats Regulations Assessment

2.5.1.   HRA is required under Article 6 of the Habitats Directive and Regulation 61 of the Conservation of Habitats and Species 2010 (as amended) (the Habitats Regulations), for all plans and projects which may have likely significant effects on a European site (either alone or in combination with other plans or projects) and are not directly connected with, or necessary to, the management of the site.

2.5.2.   European sites include Special Areas of Conservation (SAC) and Special Protection Areas (SPA). HRA is also required, as a matter of UK Government policy for potential SPAs (pSPA), candidate SACs (cSAC), Wetlands of European importance (Ramsar sites), and proposed Ramsar sites (pRamsar) for the purposes of considering plans and projects, which may affect them .

2.5.3.   The HRA Stage 1 - Screening assessed whether the Transport Strategy (and associated Delivery Plan 1) is likely to lead to significant effects on the European sites listed below (with reference to the conservation objectives of the qualifying feature(s) of each of the sites):

- Peak District Moors South Pennine Moors (Phase 1) SPA;
- South Pennine Moors SAC;
- South Pennine Moors (Phase 2) SPA;
- Rochdale Canal SAC;
- Manchester Mosses SAC;
- Rostherne Mere Ramsar Site;
- Rixton Clay Pits SAC;
- Ribble and Alt Estuaries SPA;
- Mersey Estuary SPA/Ramsar Site;
- Midland Meres and Mosses Phase 1 Ramsar Site; and
- Martin Mere SPA/Ramsar Site.

2.5.4.   At this stage, due to the high level strategic nature of the Transport Strategy, only broad details of future development possibly arising from the policies are given. As such the Transport Strategy will commit to conducting HRAs for any future infrastructure project which might have likely effects on European sites. In addition, Delivery Plan 1 which accompanies the GMTS 2040 acknowledges that there may be a requirement for HRA as part of the scheme appraisal process that schemes will undergo prior to funding being sought.

2.5.5.   Future infrastructure projects will need to be in-line with the Transport Strategy and will need to satisfy Greater Manchester Combined Authority and Natural England that there will be no adverse effect on the integrity of the European sites. Any adverse effects on site integrity must be effectively mitigated and, as a last resort, compensated for.

2.5.6.   The HRA Stage 1 Screening Report has identified that there will be no likely significant effects 'alone' or 'in combination' on any of the European sites included within this assessment. The HRA Stage 1 Screening Report is being published separately form the IA Report.

2.6.   IA/ Transport Strategy Programme Key Milestones

2.6.1.   The IA process has been programmed as follows:
  - Commencement: October 2015;
  - IA Key Sustainability Issues Technical Note Consultation: December 2015;
  - Consultation on the draft Transport Strategy and Delivery Plan 1and IA Report: 4 July 2016 to 26 September 2016.
  - Revisions to draft Transport Strategy and IA Report Autumn 2016
  - Publication of final Transport Strategy and IA Statement: Winter 2016

2.7.   Reporting and consultation as part of the IA process

2.7.1.   Key consultation requirements are those set in the SEA Regulations which identify three organisations to act as statutory consultation authorities in the SEA process: the Environment Agency, Natural England (formerly English Nature and the Countryside Agency) and Historic England (formerly English Heritage).

2.7.2.   Two consultation periods involving the statutory consultation authorities and, in the latter period, the public are also set in the SEA Regulations. The consultation periods relate to:
  - Scoping. The responsible authority is required to send details of the plan or programme to each consultation authority so that they may form a view on the scope, level of detail and appropriate consultation period of the Environmental Report. The consultation authorities are required to give their views within five weeks.
  - The Environmental Report. The responsible authority is required to invite the consultation authorities and the public to express their opinions on the Environmental Report and the plan or programme to which it relates.

2.7.3.   To ensure that the evidence base underpinning the IA of the Transport Strategy was robust and up to date, a review of the IA and HRA scoping information which informed the development of the LTP 2011-2016 has been undertaken. A formal Scoping Report consultation has not been undertaken as this had already been undertaken for LTP 2011-2016 and the Transport Strategy is viewed as a review of LTP 2011-2016. Instead, a Technical Note was prepared and consulted upon by TfGM providing background to the Transport Strategy and IA development processes and presenting the results of the focussed scoping information review that was undertaken for information and comment.

2.7.4.   Listed below are the organisations that were consulted on the Technical Note and the responses from this consultation have been used to inform the IA and have helped refine the Transport

Strategy. The Technical Note and the comments received, together with how these comments have been addressed in the preparation of this IA Report, are set out in Appendix A to this report.

- Blackburn with Darwen Borough Council
- Bolton Metropolitan Borough Council
- Bury Metropolitan Borough Council
- Canals and Rivers Trust
- Disability Design Reference Group
- Environment Agency
- Greater Manchester Combined Authority
- Greater Manchester Public Health Network
- Greater Sport
- Historic England
- Lancashire County Council
- Living Streets
- Manchester Airport
- Manchester City Council
- Natural England
- New Economy
- NHS Tameside & Glossop
- Oldham Metropolitan Borough Council
- Peak District National Park
- Public Health England
- Rochdale Metropolitan Borough Council
- Rochdale PHS
- Rossendale Borough Council
- Salford City Council
- Stockport Metropolitan Borough Council
- Tameside Metropolitan Borough Council
- Trafford Metropolitan Borough Council
- West Lancashire Borough Council
- Wigan Metropolitan Borough Council

2.7.5.   Key reporting requirements are those set by the SEA Directive and SEA Regulations:

'An Environmental Report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated.'

2.7.6.   As already indicated, the SEA Report has been integrated in this IA Report. Table 1 sets out the way the specific SEA requirements have been met in this report.

Table 1.   **Schedule of SEA Requirements**

Information to be included in the Environmental Report under the SEA Regulations (Regulation 12 and Schedule 2)		Where covered in IA Report
1.	An outline of the contents, main objectives of the plan, and of its relationship with other relevant plans and programmes	Sections 1, 2, 3 and 5
2.	The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan;	Section 6 and Appendix C
3.	The environmental characteristics of areas likely to be significantly affected	Sections 3, 6 and Appendix C
4.	Any existing environmental problems which are relevant to the plan including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC;	Section 6 and 7
5.	The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan and the way those objectives and any environmental considerations have been taken into account during its preparation	Sections 7 and 8
6.	The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues such as: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage including architectural and archaeological heritage; landscape; the interrelationship between the above factors	Sections 7 to 13 and Appendix D, E and F
7.	The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan	Sections 11, 12 and 13
8.	An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information	Section 10 and Appendix D
9.	A description of measures envisaged concerning monitoring in accordance with Regulation 17	Section 14
10.	A non-technical summary of the information provided under paragraphs 1 to 9	Non-technical summary

2.7.7.   The IA Report is thus an important consultation document and likely to be of interest to a wide variety of readers including decision makers, other plan/programme practitioners, statutory consultees, NGOs and members of the public. It accompanies the draft Transport Strategy 2040 on public consultation taking place from 4 July 2016 to 26 September 2016.

3. Scope of the IA

3.1. Introduction

3.1.1. This section describes the spatial, temporal and technical scope of the sustainability studies undertaken as part of the IA.

3.2. Spatial Scope

3.2.1. The study area for the IA of the GM Transport Strategy 2040 covers the ten districts making up the Greater Manchester Combined Authority area: Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan (see Figure 2).

Figure 2.   **Map of Greater Manchester showing its 10 Local Authority areas (map developed by TfGM)**

3.3. Temporal Scope

3.3.1. The temporal scope of the IA has been aligned with that for GM Transport Strategy 2040 which, as the name implies, will apply to the period up to 2040.

3.4. Technical Scope

3.4.1. The IA has a very wide remit and will consider the following topics associated with the various assessment processes it covers.

   SA/SEA

3.4.2. The SEA Directive and the SEA regulations require that the likely significant effects on the environment are assessed, considering the following factors and interrelationship between them:
   - Biodiversity;
   - Population;

- Human health (covering noise issues among other effects on local communities and public health);
- Fauna and flora;
- Soil;
- Water;
- Air;
- Noise;
- Climatic factors;
- Material assets (covering infrastructure, waste and other assets);
- Cultural heritage including architectural and archaeological heritage; and
- Landscape.

3.4.3.   SA guidance requires the consideration of socio-economic factors alongside the environmental factors identified above.

HIA

3.4.4.   The DH guidance recommends that the assessment of the impact of local transport plans should consider the following topics:
- Transport to work, shops, schools and healthcare;
- Walking and cycling;
- Community severance;
- Frequency and severity of crashes;
- Collisions causing injury and fatal accidents;
- Air pollution, noise; and
- Ageing population and increasing disability.

3.4.5.   From an HIA perspective there are vulnerable social groups that need special consideration in transport planning with regards to their health. These groups are likely to experience transport-related exclusion and/or be subject to negative externalities of transport and are as follows:
- Children - who, as non-drivers, are reliant on others for motorised transport and who suffer the greatest impacts of transport policy on their health, particularly children in low-income families;
- Women - who are more likely not to own a car and find it harder to travel to shops, employment, healthcare and other services;
- Older people - who may feel vulnerable using public transport, who often need to seek health services and who are particularly vulnerable to road crash related injuries. Their continuing independence at home is often dependent on reliable transport options;
- Disabled and people with other health problems - who may not be able to access many forms of transport or need special arrangements to access those. They are likely to find it difficult to walk and may also be disadvantaged by the cost of transport;
- Those in low-income groups - who are likely to walk further because they cannot afford public transport or to own a car, and whose lack of transport options may limit life opportunities. They suffer the most from injuries, noise pollution and air pollution.

EqIA

3.4.6.   The EqIA process focuses on the consideration of the potential Transport Strategy's effects on nine protected characteristic groups (PCGs) identified in the Equality Act 2010 that are relevant to the transport agenda:
- Age;
- Disability;
- Gender;
- Gender reassignment;
- Marriage and civil partnerships;
- Pregnancy and maternity;
- Race;
- Religion or belief; and
- Sexual orientation.

3.4.7.   A degree of overlap between the HIA vulnerable social groups and the EqIA protected characteristics has been acknowledged by both HIA and EqIA processes. Consistency between the two assessments has been ensured, where appropriate, particularly in terms of assumptions, analysing techniques and findings.

4.   IA Methodology

4.1.   Introduction

4.1.1.   The IA started as the preparation of Transport Strategy began and it has progressed concurrently in an iterative fashion in order to integrate sustainability considerations into the plan making process. The IA has been used as a tool for improving Transport Strategy's sustainability performance. Specifically, this has been achieved through allowing sustainability objectives to be considered throughout the strategy's formulation process: from inception through development of principles, strategic options and preferred policies, measures and schemes. It should be noted that the IA process has also contributed to the development of Delivery Plan 1 which is nested within the Transport Strategy.

4.1.2.   As it has already been stated, the IA process fully integrates three assessment processes: SA/SEA, HIA and EqIA. HRA has been undertaken in parallel to the IA and its results incorporated into the IA as appropriate. Table 2 demonstrates how the integration has been planned and achieved throughout all the preparation stages of the IA and Transport Strategy.

4.2.   Assessment methodology

4.2.1.   The IA methodology adopted was developed broadly based on a number of published guidance documents:

* Transport Analysis Guidance (TAG) 2.11 Strategic Environmental Assessment for Transport Plans and Programmes, Department for Transport, 'In Draft' Guidance, April 2009;
* Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents - Guidance for Regional Planning Bodies and Local Planning Authorities, by the ODPM, the Scottish Executive, the Welsh Assembly Government and the Northern Ireland Department of the Environment November 2005;
* A Practical Guide to the Strategic Environmental Assessment Directive, by the ODPM, the Scottish Executive, the Welsh Assembly Government and the Northern Ireland Department of the Environment, September 2005;
* Draft Guidance on Health in Strategic Environmental Assessment, Consultation Document, Department of Health, 2007; and
* National Planning Policy Framework, March 2012 and associated Planning Practice Guidance, March 2014.

4.2.2.   The work undertaken to-date involved the completion of the SA/SEA stages A, B and C and associated tasks (see Table 2).

Table 2.   Integration of the Assessment Processes

Transport Planning Stage	Sustainability Appraisal / Strategic Environmental Assessment		Habitats Regulation Assessment	Health Impact Assessment	Equalities Impact Assessment
	Stage	Tasks	Tasks	Tasks	Tasks
Determining the scope of the 2040 Transport Strategy	A. Setting the context and objectives, establishing the baseline	Review plans / programmes		Identify health related plans / programmes (as part of SA/SEA)	Review of relevant policies and strategies
		Review		Derivation of	Derivation of

Transport Planning Stage	Sustainability Appraisal / Strategic Environmental Assessment		Habitats Regulation Assessment	Health Impact Assessment	Equalities Impact Assessment
clarifying goals; specifying the problems or challenges the authority wants to solve	and deciding on the scope	Sustainability themes		health-related themes (as part of SA/SEA)	equality-related themes
		Review Baseline data and likely future trends	Identify all international sites within and up to 20km around the Strategy area	Gather data relating to health (as part of SA/SEA)	Baseline evidence
		Review Key sustainability issues	Contact Natural England for details of all international sites and consultation purposes	Identify health specific issues (as part of SA/SEA)	Identify equalities specific issues
		Review objectives and decision making questions (SA/SEA Framework)	Liaise with SA/SEA team to ensure SA/SEA Framework covers international sites appropriately	Ensure inclusion of Health specific objectives in SA/SEA Framework	Ensure inclusion of Equalities specific objectives in SA/SEA Framework
		Prepare Key Sustainability Issues briefing note	*HRA information incorporated in briefing note*	*Prepare Key Sustainability Issues briefing note*	*HRA information incorporated in briefing note*
		Informal consultation with SEA Statutory consultees on the Key Sustainability Issues briefing note	*Consultation as part of SA/SEA informal consultation*	Informal engagement with HIA consultees on relevant aspects of Key Sustainability Issues Briefing note	Informal engagement with EqIA consultees on relevant aspects of Key Sustainability Issues briefing note
Generating options for the Strategy to resolve these challenges; appraising the options and predicting their effects	**B. Developing, refining and appraising strategic options**	Assess Strategy objectives against the SA/SEA Framework	Assess Strategy objectives against relevant HRA objective	*HIA assessment of Strategy objectives and strategic options to be undertaken within SA/SEA*	*EqIA assessment of Strategy objectives and strategic options to be undertaken within SA/SEA*
		Appraise Strategy strategic options	Initial advice provided to client in relation to the sensitivities of the international sites and how to avoid significant effects on these sites		
		Evaluate / select Strategy preferred options			
Selecting preferred options for the	**B. Assessing the effects of**	Predict and assess effects of options taken	HRA review of proposals	*HIA assessment of preferred options to be*	*EqIA assessment of preferred*

Transport Planning Stage	Sustainability Appraisal / Strategic Environmental Assessment		Habitats Regulation Assessment	Health Impact Assessment	Equalities Impact Assessment
Strategy and deciding priorities	the Strategy	forward		*undertaken within SA/SEA. Mitigation measures proposed within SA/SEA*	*options to be undertaken within SA/SEA. Mitigation measures proposed within SA/SEA*
		Propose mitigation measures	Propose mitigation measures		
Production of the draft Strategy and Delivery Plan 1		Propose monitoring programme	*Monitoring as part of SA/SEA*	*Monitoring as part of SA/SEA*	*Monitoring as part of SA/SEA*
	C. Prepare IA Report		Prepare HRA Screening Report (separate output)	HIA fully documented in IA Report (no separate output but HIA component properly identified)	EqIA fully documented in IA Report (no separate output but EqIA component properly identified)
Consultation on draft Strategy and Delivery Plan 1	D. Consulting on IA Report		HRA Screening Report sent to Natural England for agreement on findings.	*HIA Consultation included in IA Report consultation*	*EqIA Consultation included in IA Report consultation*

SA/SEA

Stage A - Setting the Context and Establishing the Baseline

Other Relevant Plans and Programmes

4.2.3.   The Transport Strategy will both influence and be influenced by other plans, policies and programmes (PPPs) produced by district councils, by statutory agencies and other bodies with plan making responsibilities. Legislation is a further driver that sets the framework for Transport Strategy, both directly and indirectly. Relevant plans and programmes had already been identified in the 2011 IA Report and an update of these has been undertaken to inform the preparation of this IA Report (see Section 5 and Appendix B).

Baseline Information

4.2.4.   To predict accurately how potential plan proposals will affect the current baseline, it is first important to understand its current state and then examine the likely evolution of the environment without the implementation of the strategy.

4.2.5.   Baseline information provides the basis for understanding existing local environmental, economic and social issues, in particular in respect of health and equality, and alternative ways of dealing with them; formulating objectives to address these issues and predicting and monitoring sustainability effects.

4.2.6.   The baseline conditions reported in the 2011 IA Report have been reviewed and updated. This is presented in Section 6 and Appendix C.

Key Sustainability Issues

4.2.7.   Key sustainability issues in general, and those pertaining to health and equality in particular, within TfGM area have been identified as a result of the analysis of the baseline data and the review of other plans and programmes. The identification of these issues helped focus the IA processes on the aspects that really matter. Implications to Transport Strategy development and opportunities for how Transport Strategy could assist in addressing these issues were also identified. This is presented in Section 7 of this report.

Developing IA Framework

4.2.8.   A set of IA objectives against which the policies and proposals in the Transport Strategy can be assessed, was drawn up. They were identified building from the previous IA Framework and the task updates above.

4.2.9.   For each objective, assessment aid questions have been set out to form the IA framework. The assessment aid questions provide a clarification of the intended interpretation of each objective to support direction of change sought through the implementation of the Transport Strategy. The questions have guided the Transport Strategy's assessment process.

4.2.10.   The IA objectives and assessment aid questions were refined through the consultation on the Key Sustainability Issues Technical Note and are presented in this report in Section 8 of this report.

Stage B - Developing alternatives

Testing the Transport Strategy Objectives against the IA Objectives

4.2.11.   A compatibility assessment of Transport Strategy objectives in its initial stages of preparation against the IA objectives was carried out, as part of the iterative process to assess the sustainability of Transport Strategy objectives. This assessment ensured that the overall objectives of Transport Strategy were in accordance with the IA objectives and provided a suitable framework for developing alternatives (Section 9 of this report).

Developing, Refining and Appraising Strategic Alternatives

4.2.12.   Consideration of alternative strategies and options for Transport Strategy are an integral part of the plan development. Two strategic scenarios were identified by TfGM in close liaison with the team conducting the IA.

4.2.13.   This task comprised the prediction of changes arising from Transport Strategy's strategic scenarios. While carrying out this evaluation, each alternative was considered in the context on whether it would have a likely significant effect in relation to each of the IA objectives. The results are presented in Section 10 of this report.

Assessing the Effects of Transport Strategy Preferred Option (Strategy and Delivery Plan 1)

4.2.14.   Assessing the significance of predicted effects is essentially a matter of judgement. There are a number of factors that will determine the significance of an effect, e.g. its scale and permanence and the nature and sensitivity of the receptor. It is very important that judgements of significance are systematically documented, in terms of the particular characteristics of the effect which are deemed to make it significant and whether and what uncertainty and assumptions are associated with the judgement. The assessment of significance also includes information on how the effect may be avoided or its severity reduced.

4.2.15.   In the current practice of IA (influenced by SEA), the broad-brush qualitative prediction and evaluation of effects can be often based on a qualitative seven point scale in easily understood terms. In general, this assessment has adopted the scale shown in Table 3 to assess the significance of effects of the schemes and proposals in the Transport Strategy.

Table 3. **Criteria for Assessing Significance of Effects**

Assessment Scale		Assessment Category	Significance of Effect
+++		Large beneficial	Significant
++		Moderate beneficial	
+		Slight beneficial	Not Significant
0		Neutral or no obvious effect	
-		Slight adverse	
--		Moderate adverse	Significant
---		Strong adverse	
?		Effect uncertain	
+/-		Combination of slight beneficial and adverse effects	Not significant
++	--	Combination of moderate beneficial and adverse effects	Significant

4.2.16.   Moderate and strong beneficial and adverse effects (and combination of this type of effect) have been considered of significance whereas no effect and slight beneficial and adverse effects (and combination of this type of effect) have been considered non-significant.

4.2.17.   Assessments have been undertaken for policy proposals contained in the Draft Transport Strategy. The assessment results of the Draft Transport Strategy are discussed in Section 11.

4.2.18.   As part of the assessment of the Draft Transport Strategy a number of mitigation measures (recommendations) are set out in Section 11. TfGM has given careful consideration to these recommendations and has proposed to address most of them as described in Section 11.

4.2.19.   Assessments have also been undertaken for the interventions proposed in the Delivery Plan 1. Interventions have been categorised and assessments have been undertaken for each category of intervention. The assessment results are presented in Section 12.

4.2.20.   The term mitigation encompasses any approach that is aimed at preventing, reducing or offsetting significant adverse environmental effects that have been identified. A range of measures applying one or more of these approaches has been considered in mitigating any significant adverse effects predicted as a result of implementing the Transport Strategy and Delivery Plan 1. In addition, measures aimed at enhancing positive effects have also been considered. All such measures are generally referred to as mitigation measures.

4.2.21.   However, the emphasis of the assessments has been in the first instance on proactive avoidance of adverse effects. Only once alternative options or approaches to avoiding an effect have been examined, then ways of reducing the scale/importance of the effect have been examined and proposed.

4.2.22.   Mitigation can take a wide range of forms, including:
- Refining intervention measures in order to improve the likelihood of positive effects and to minimise adverse effects;
- Technical measures (such as setting guidelines) to be applied during the implementation stage;
- Identifying issues to be addressed in project environmental impact assessments for certain projects or types of projects;
- Proposals for changing other plans and programmes.

4.2.23.   The assessment also considered cumulative, indirect (secondary) and synergistic effects of the Draft Transport Strategy (and Delivery Plan 1) as follows.

Cumulative Effects Assessments

4.2.24.   Annex I of the SEA Directive requires that the assessment of effects include secondary, cumulative and synergistic effects.

4.2.25.   Secondary or indirect effects are effects that are not a direct result of the plan, but occur away from the original effect or as a result of the complex pathway e.g. a development that changes a water table and thus affects the ecology of a nearby wetland. These effects are not cumulative and have been identified and assessed primarily through the examination of the relationship between various objectives during the Assessment of Effects.

4.2.26.   Cumulative effects arise where several proposals individually may or may not have a significant effect, but in-combination have a significant effect due to spatial crowding or temporal overlap between plans, proposals and actions and repeated removal or addition of resources due to proposals and actions. Cumulative effects can be:

- Additive - the simple sum of all the effects;
- Neutralising- where effects counteract each other to reduce the overall effect;
- Synergistic- is the effect of two or more effects acting together which is greater than the simple sum of the effects when acting alone. For instance, a wildlife habitat can become progressively fragmented with limited effects on a particular species until the last fragmentation makes the areas too small to support the species at all.

4.2.27.   Many sustainability problems result from cumulative effects. These effects are very hard to deal with on a project by project basis through Environmental Impact Assessment. It is at the strategic level that they are most effectively identified and addressed.

4.2.28.   Cumulative effects assessment is a systematic procedure for identifying and evaluating the significance of effects from multiple activities. The analysis of the causes, pathways and consequences of these effects is an essential part of the process.

4.2.29.   Cumulative (including additive, neutralising and synergistic) effects have been considered throughout the entire IA process, as described below:

- Identification of key sustainability (including detailed health and equality) issues as part of the review of relevant strategies, plans and programmes and baseline data analysis.
- Establishing the nature of likely cumulative effects, causes and receptors.
- Identifying key receptors (e.g. specific wildlife habitats) in the process of collecting baseline information and information on how these have changed with time, and how they are likely to change without the implementation of the Transport Strategy.
- Particularly sensitive, in decline or near to their threshold (where such information is available) or with slow recovery receptors have been identified through the analysis of environmental issues and problems.
- The development of IA objectives and assessment aid questions has been influenced by cumulative effects identified through the process above and IA objectives that consider cumulative effects have been identified.
- Cumulative effects of Transport Strategy (and Deliver Plan 1) proposals have been assessed.

4.2.30.   The results are presented in Section 13 of this report.

Monitoring the Effects of Strategy Implementation

4.2.31.   Monitoring involves measuring indicators which will enable the establishment of a causal link between the implementation of the plan and the likely significant effect (positive or negative) being monitored. It thus helps to ensure that any adverse effects which arise during implementation, whether or not they were foreseen, can be identified and that action can be taken by TfGM to deal with them.

4.2.32.   A monitoring programme has been prepared showing, for each significant effect, what data should be monitored, the source of the data, the frequency of monitoring, as well as when and what actions should be considered if problems are identified from the monitoring.

4.2.33.   The results are presented in Section 14 of this report.

Stage C – Preparing the IA Report

4.2.34.   This IA Report has been prepared to accompany the Draft Transport Strategy and Delivery Plan 1 on consultation.

Stage D – Consulting on Draft Plan and IA Report

Assessing significant changes

4.2.35.   The IA Report will be published for formal consultation with the Draft Transport Strategy and Delivery Plan 1. The results of the formal public consultation exercise may well result in changes to the Draft Transport Strategy and/or the Delivery Plan, and these will have implications for the IA Report. In addition, the consultation exercise may result in direct changes to the contents of the IA Report. These will be reported in the Post Adoption Statement.

Post Adoption Statement

4.2.36.   Following completion of the public consultation and preparation of the Final Transport Strategy document, a statement (separate document) will be prepared setting out the following:

- How sustainability considerations have been integrated into the plan, for example any changes to or deletions from the plan in response to the information in the IA Report.
- How the IA Report has been taken into account.
- How the opinions and consultation responses have been taken into account. The summary should be sufficiently detailed to show how the plan was changed to take account of issues raised, or why no changes were made.
- The reasons for choosing the plan as adopted in the light of other reasonable alternatives dealt with.
- The measures that are to be taken to monitor the significant environmental effects of implementation of the Transport Strategy.

HIA

4.2.37.   In order to ensure that potential impacts of the Transport Strategy and associated Delivery Plan 1 on health and health inequalities have been considered and to fulfil the requirements of health legislation, an HIA has been undertaken in a fully integrated fashion with the SA/SEA process as set out in Table 2. The need for the HIA arises from the recognition that the Strategy's policies and proposals may impact on the factors influencing the health of communities and individuals, including such factors, as noise and air quality, accessibility to key services and facilities and the design of transport infrastructure.

Approach

4.2.38.   The HIA objectives that have been considered in the 2011 IA Report have been reviewed in the light of HIA guidance and identified health issues. The approach to the HIA review has ensured that all relevant topics have been considered throughout the assessment process from establishing the baseline and building up the area's population profile in terms of health, identifying the key issues, developing the IA Framework, assessing the Transport Strategy's options, mitigation and monitoring.

4.2.39.   The HIA has identified actions that can enhance positive effects and reduce or eliminate negative effects of the Transport Strategy with respect to health and health inequalities.

Consultation

4.2.40.   Consultation to inform and shape the HIA is being undertaken as part of the overall SA/SEA process as outlined in Table 2. Consultation responses from health representatives to the Key

Sustainability Issues Technical Note have been analysed to inform the HIA (see Reporting and Consultation as part of IA process).

EqIA

4.2.41. In order to ensure that potential impacts of Transport Strategy and associated Delivery Plan on equality have been considered and to fulfil legislative requirements, an EqIA has been undertaken in a fully integrated manner with the SA/SEA process.

Approach

4.2.42. The EqIA objectives that have been considered in the 2011 IA Report have been reviewed in the light of EqIA guidance and identified equalities issues. The approach to the EqIA review has ensured that all relevant topics have been considered throughout the assessment process from establishing the baseline and building up the area's population profile in terms of equalities, identifying the key issues, developing the IA Framework, assessing the Transport Strategy's options, mitigation and monitoring.

Consultation

4.2.43. Consultation to inform and shape the EqIA is being undertaken as part of the overall SA/SEA process as outlined in Table 2. Consultation responses from equalities representatives to the Key Sustainability Issues Technical Note have been analysed to inform the HIA (see Reporting and Consultation as part of IA process).

5. Review of Other Plans and Programmes

5.1. Introduction

5.1.1. The first task of the IA is the identification of other relevant PPPs. This helps to identify relevant environmental and wider sustainability themes, baseline information and key issues. The Transport Strategy must be prepared to take these PPPs into account as it may influence and be influenced by them.

5.1.2. The SEA Directive specifically states that information should be provided on:

"The relationship [of the plan or programme] with other relevant plans and programmes"

"The environmental protection objectives, established at international, [European] Community or [national] level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation"

5.1.3. In addition to this, the PPPs related to wider sustainability, HIA and EqIA have also been considered.

5.2. Methodology

5.2.1. Both the Transport Strategy and the IA Report should be set in the context of international, national, regional and local objectives along with environmental, strategic planning, transport, health, social, economic and equality policies.

5.2.2. Relevant plans and programmes include those at different levels (international, national, regional and local) which influence Transport Strategy, or those in other sectors which contribute, together with Transport Strategy, to changes in the sustainability conditions of the area to which they apply.

5.2.3. Appendix B lists the documents reviewed to identify environmental, social (health and equality) and economic themes. A series of key generic themes which have emerged from the review are presented below.

Environmental Themes

5.2.4. The review of PPPs revealed a large amount of common themes in terms of their objectives relating to sustainability within the context of transport planning.
- Climate Change and Energy
- Reduce energy consumption and energy wastage;
- Reduce GHG emissions, particularly carbon dioxide;
- Maximise the use of renewable energy;
- Increase energy efficiency and make use of new and clean technologies;
- Minimise the use of fossil fuels;
- Need for measures to adapt to climate change.
- Transport
- Promote mixed-use development policies to reduce the need to travel;
- Improve local air quality through minimising traffic related emissions;
- Encourage walking, cycling and the use of public transport;
- Reduce traffic congestion and improve safety for all road users;
- Promote sustainable alternatives to car travel;
- Promote viable alternatives to road haulage, such as shipping and rail;

- Promote clean vehicle technology;
- Connect key regeneration sites;
- Promote integration, maintain and improve the public right of way and wider access network;
- Connect the area to the wider regional, national and international networks.
- Natural Resources and Waste
- Ensure efficient resource use and minimise resource footprint;
- Raise awareness of resource use/depletion;
- Use secondary and recycled materials;
- Consider opportunities to maximise on-site re-use of materials;
- Employ waste reduction methods to minimise construction and maintenance waste;
- Reduce the amount of waste disposed of at landfill.
- Land
- Brownfield/Greenfield hierarchy of land use;
- Minimise and seek to reclaim derelict and contaminated land whilst taking into account any biodiversity interests;
- Protect farmland and soils.
- Water
- Improve the quality of ground and surface water;
- Improve the biological and chemical quality of rivers;
- Make use of vegetated drainage systems and 'Sustainable Urban Drainage Systems';
- Minimise the risk and impact of flooding by controlling surface water management and floodplain management;
- Prevent inappropriate development in floodplains;
- Prepare for impacts of climate change, including sea level rise, coastal squeeze and coastal erosion.
- Biodiversity
- Contribute to the delivery of local and national Biodiversity Action Plans;
- Protect and enhance endangered species, habitats and geodiversity, including sites of geological importance;
- Protect and enhance existing wildlife and provide opportunities for new habitat creation
- Increase tree cover and ensure the sustainable management of existing woodland;
- Protect, maintain and where possible enhance natural habitat networks and green infrastructure, to avoid fragmentation and isolation of networks;
- Protect and enhance designated nature conservation sites of international importance (SPA/SAC) and national importance (SSSI);
- Promote access and understanding of nature and biodiversity.
- Landscape
- Protect and enhance landscape and townscape character and local distinctiveness;
- Heritage
- Help to conserve historic buildings through sympathetic design;
- Conserve, protect and enhance designated and non-designated historic assets;
- Improve access to buildings and landscapes of historic/cultural value;
- Use architectural design to enhance the local character and "sense of place" of development;
- Protect local distinctiveness.

Economic Themes

- Improve physical accessibility of jobs through the location of employment sites and transport links close to areas of high unemployment.
- Widen the number and range of accessible employment opportunities.
- Improve rail and road journey reliability for business users.
- Support local businesses.

Social Themes (Health and Equalities)

- Safety
- Promote design that discourages crime and fear of crime e.g. by reducing hiding places or escape routes;
- Address anti social behaviour.
- Community services and amenities

- Provide or improve access to local health and social care services;
- Provide or improve physical accessibility of education facilities and training opportunities;
- Provide information and advice to the community on the transport services and initiative available;
- Reduce light pollution;
- Reduce noise pollution and protect tranquillity;
- Minimise dust, odours, litter;
- Ensure the protection, maintenance, enhancement (including creation) of, and access to green spaces, and the wider multi-functional green infrastructure network including the wider countryside; and
- Improved public spaces.

Health

5.2.5.   The derived key health-related themes are:

- Improve health in the UK and globally, taking account of the diverse factors influencing health, such as climate change, pollution, conflict, environmental degradation and poverty;
- Tackle poor health by improving the health of everyone, and of the worst off in particular;
- Reduce health inequalities among different groups in the community (e.g. young children, pregnant women, black and minority ethnic people; older people, people with disabilities; low income households);
- Support the public to make healthier and more informed choices with regard to their health and adopt physically active lifestyles;
- Address pockets of deprivation;
- Provide physical access for people with disabilities;
- Provide or improve access to local health and social care services;
- Provide opportunities for increased exercise, thus reducing obesity, particularly in children, and illnesses such as coronary heart disease;
- Provide for an ageing population;
- Promote healthy lifestyles through exercise, physically active travel and access to good quality and affordable food, which can assist in reducing both physical and mental illnesses.

Equality

5.2.6.   The derived key equality-related themes are:

- Protect human rights (e.g. the right to liberty and security of person) and fundamental freedoms (e.g. a right to freedom of thought, conscience and religion, freedom of expression, etc);
- Prohibit discrimination, harassment and victimisation on such grounds as sex, race, language and religion;
- Promote equality of opportunity in the way services are planned, promoted and delivered;
- Treat everyone with dignity and respect;
- Recognise people's different needs, situations and goals and removes the barriers that limit what people can do and can be;
- Create sustainable communities which are active, inclusive, safe, fair, tolerant and cohesive;
- Create sustainable communities which are fair for everyone - including those in other communities, now and in the future;
- Improve economic, social and environmental conditions particularly in the most deprived areas;
- Ensure fair access to and distribution of resources across the community;
- Assess and address the impacts upon diverse communities including cultural, racial, economic, generational, social (including disabilities) and religious mixes;
- Create a sense of belonging and wellbeing for all members of the community;
- Provide physical access for people with disabilities;
- Minimise isolation for vulnerable people.

6. Baseline Information

6.1. Introduction

6.1.1. The next task addresses the collection of an evidence base for the IA. The SEA Directive states that the Environmental Report should provide information on:

"relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan" and the "environmental characteristics of the areas likely to be significantly affected" (Annex I (b) (c))

and

"any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC (Birds Directive) and 92/43/EEC (Habitats Directive)" (Annex I (c)).

6.1.2. To accurately predict how Transport Strategy proposals will affect the environmental characteristics, it is important to understand the current state of the environment and then examine the likely evolution of the environment without the implementation of the plan. In this report the current state regarding wider sustainability, rather than just environment, has been characterised.

6.2. Methodology

6.2.1. Existing baseline information provides the basis for the prediction and monitoring of the effects of the implementation of the GM Transport Strategy 2040 and helps identify sustainability problems and alternative ways of dealing with them.

6.2.2. Due to the fact that IA is an iterative process, subsequent stages in its preparation and assessment might identify other issues and priorities that require the sourcing of additional data and/or information and identification of monitoring strategies. This makes the IA process flexible, adaptable and responsive to changes in the baseline conditions and enables trends to be analysed over time.

6.2.3. The most efficient way to collate relevant baseline data is through the use of indicators whenever possible (see below). This ensures that the data collation is both focused and effective. The identification of relevant indicators has taken place alongside the review of other relevant plans, policies and programmes (Section 5), the identification of sustainability issues (Section 7) and developing the IA framework (Section 8).

6.3. Data Analysis

6.3.1. Data have been collated and analysed for the following topics (as detailed in Appendix C):

Environmental data

- Population
- CO2 Emissions
- Climate Change
- Local Air Quality
- Noise
- Light Pollution
- Biodiversity, Fauna and Flora
- Landscape and Townscape

- National Character Areas
- Heritage Assets
- Green Belt
- Green Infrastructure Corridors
- Green Space
- Soil
- Water Quality
- Flooding

Economic data

- Employment
- GVA
- Economic sectors

Social data (including health and equalities)

- General health statistics
- Accessibility
- Road safety and accidents
- Obesity
- Physical activity in children and adults
- Equality target groups
- Multiple deprivation
- NEET level

6.3.2.   The baseline data provides an overview of the sustainability characteristics of the Transport Strategy's area and how these compare to the region and the UK. This overview is presented in Appendix C. The analysis of the baseline data has highlighted a number of key issues in Greater Manchester. These, together with implications and opportunities arising for the Transport Strategy have been summarised in Table 4.

6.4.   Data Limitations

6.4.1.   The purpose and use of indicators is to provide quantified, objective information in order to show how things change over time. However, they do not explain why particular trends are occurring and the secondary, or knock-on, effects of any changes.

6.4.2.   It is believed that the data sets available provide a comprehensive overview of the sustainability situation in Greater Manchester.

7.   Key Sustainability Issues

7.1.1.   The SEA Directive states that the Environmental Report should provide information on:

"Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC" (Annex I(d))

7.1.2.   The key sustainability issues identified in the 2011 IA Report have been reviewed and updated. The review of key issues and problems indicated that there are a number of significant sustainability issues in Greater Manchester area. These key issues are summarised in Table 4. This table also provides a discussion on the implications/opportunities of such issues to the Transport Strategy and provides a clear link to the proposed IA Objectives. The analysis of sustainability issues has influenced the development of the IA Framework (see Section 8), in particular in formulating assessment aid questions.

7.1.3.   It should be noted that, because HIA and EqIA are also being undertaken, the approach involved the identification of generic HIA and EqIA key sustainability issues, implications and opportunities and objectives in Table 4 under the Social dimension of sustainability. These have been further developed in Table 5 to ensure a more in-depth level of coverage of issues to satisfy specific HIA and EqIA requirements leading to the development of HIA and EqIA sub-objectives.

Table 4.   Key Sustainability Issues

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
Environmental				
1.	**Air Quality:** The largest proportion of air pollution in GM arises from road traffic. It has been demonstrated that particular air quality issues are reflective of the regions' motorway network, though negative impacts are experienced across the urban area and at particular 'hotspots' such as the airport and the Regional Centre Nitrogen dioxide (NO_2) emissions are of particular concern but PM_{10} emissions are also a major issue, with emissions from cars and motorcycles being identified as a significant source (with buses also contributing particularly on busier routes). AQMA's have been established across all the GM authorities and their boundaries tend to reflect the motorway network. A GM Air Quality Action Plan has been developed to improve air quality in the AQMA, but so far has not achieved compliance with legal limits, despite downward trends. Note this AQMA Action Plan is now integrated with the GM Local Transport Plan. GM is not expected to meet requirements of the European Air Quality Directive in terms of NO_2 pollution until after 2020. Poor air quality can have adverse consequences across many areas, but is most closely linked to health and biodiversity problems. There are habitats of ecological value, notably designated sites of nature conservation importance adjacent to key routes and AQMA.	The Transport Strategy should seek to ensure that reducing NO_2 and PM_{10} emissions is a fundamental principle of the Plan and acts to bolster the GM Air Quality Action Plan as appropriate. The Transport Strategy should also aim to meet Government targets for air quality and carbon reduction and be reflective of appropriate legislation. The Transport Strategy should consider ecological receptors (such as the air quality sensitive wetland and heath habitats) alongside human receptors when dealing with air quality. Examples of how this could be addressed include promotion of sustainable modes of transport, smarter travel management such as workplace, residential and school travel plans, creation of inter-modal interchanges, sustainable freight movements and traffic management interventions.	Improve air quality	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
2.	**Carbon emissions:** Transport results in a quarter of UK's carbon dioxide (CO_2) emissions, with road transport being the majority source. A business as usual scenario has predicted a 13% rise in CO_2 from transport in the GM area by 2026. The percentage contribution from transport varies across the GM Local Authorities. Traffic congestion is a recognised factor in high emissions of CO_2 – increased population and associated traffic growth could compound this issue. Freight movements are also recognised as major contributors of CO_2 – responsible for 48% emissions on motorways and 31% on major roads. Transport emissions are highest in Manchester and Salford and lowest in Tameside and Oldham. Car engines have tended to become more efficient and although still a very small percentage, the relative contribution of bus emissions to total CO_2 emissions is growing. GM is committed to securing the transition to a low carbon economy with a target of reducing CO2 emissions by 48% by 2020 from a 1990 baseline.	The Transport Strategy should seek to ensure that reducing CO_2 emissions is a core component of all implementation plan elements, though it should also be realistic that projected levels of growth mean emissions will likely remain an issue. This could be achieved via promotion of sustainable modes of transport including innovative low carbon technology for mass transit and city wide commuting, smarter travel management such as workplace, residential and school travel plans, creation of inter-modal interchanges, sustainable freight movements and traffic management interventions. Also, more rapid electrification of public transport services to reduce transport emissions should be considered. The Transport Strategy should also seek to ensure that new schemes maximise the opportunity for increasing tree /vegetation cover, where practical, in order to absorb increased amounts CO_2, e.g. through the use of street trees.	Reduce carbon dioxide emissions from transport overall with particular emphasis on road transport	YES
3.	**Biodiversity, Flora and Fauna:** Although perceived as an urban area, there are a wide variety of habitats, species and designated sites across GM which warrant protection and enhancement. These habitats, species and designated sites are located in a wide variety of land use types and landscapes, examples of which are urban and urban fringe, river corridors, ancient woodlands, reservoirs and waterbodies left after coal mining	The Transport Strategy should aim to protect and enhance all sites of biodiversity importance and should place a particular emphasis on protecting sites designated for nature conservation purposes. This could be achieved by ensuring that planning / design of transport interventions	Conserve and enhance biodiversity, green infrastructure and geodiversity assets	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	subsidence such as the Wigan Flashes. Sites are designated for nature conservation purposes at the International (European), National (UK) and Local level across the GM area and in neighbouring regions. Within the GM area there are 3 Special Areas of Conservation (SAC) and Special Protection Areas (SPA) - European designated sites, 21 Sites of Special Scientific Interest (SSSI), 535 Sites of Biological Importance and 57 Local Nature Reserves. There are a number of former quarry sites across GM which offer rich geodiversity and support important habitats and species. Key threats have been identified from air pollution and climate change, which can change distribution of species and habitats. GM has a wealth of green infrastructure assets. These assets deliver a whole series of provisioning (i.e. direct products such as agriculture or other natural resources); regulating (i.e. air quality regulation, pollination or flood risk reduction) or cultural (i.e. spiritual or tourism) benefits to GM and other parts of the UK. New transport projects have the potential to impact on the sites of ecological or geological value and more generally on the network of linked multi-functional green spaces, comprising the local green infrastructure, through direct landtake for infrastructure (which may contribute to fragmentation) and construction and operational disturbance (noise, vibration, light pollution etc) and emissions / contamination (air, water & soil), though it may also provide opportunities for enhancement. Increased accessibility to designated sites also has the potential to adversely impact on them. Direct road kill can	avoid sensitive areas and through the adoption of best practice wildlife friendly designs into road interventions. Where this is not possible, there should be mitigation and compensation for losses. Opportunities for new habitat creation and enhancement associated with transport developments should be explored, e.g. through the use of appropriate locally native species in landscaping plans, through creation of new road verges and enhancement of the existing road verge network. The potential for biodiversity creation in brownfield sites should be also taken into account. Other opportunities for the Transport Strategy include the following: • avoid the fragmentation of green infrastructure, which contributes to protecting natural habitats and biodiversity; • the need for cohesive habitat networks to help habitats and species adapt to the consequences of climate change; • enhancement of the green infrastructure through for example foot paths, cycle lanes and other public rights of ways. Increased accessibility to appropriately designed multi-functional green	Conserve and enhance the European sites (HRA specific objective)	No specific IA objective

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	also impact on some species.	infrastructure can play a significant role in diverting access pressure away from more sensitive sites, such as those designated for wildlife and geological conservation. In parallel with the IA of the Transport Strategy a Habitats Regulation Assessment (HRA) is being undertaken which will identify the European designated nature conservation areas to avoid, or where this is not possible, appropriate mitigation measures very early on in the development of the Strategy.		
4.	**Landscape and Townscape:** The landscape and townscape within GM varies greatly between districts including seven different regional landscape character areas and types including both urban and rural features. There is a mix of high density urban areas, suburbs, semi-rural and rural locations in GM, but overwhelmingly the land use is urban. The highest statutory protection is provided to National Parks (The Peak District encroaches on GM within Oldham), though there are also non-statutory designations such as Local Landscape designations. Note there are no Areas of Outstanding Natural Beauty (AONB) within the GM area. The GM area falls within the following National Character Areas: • NCA 54 Manchester Pennine Fringe • NCA 55 Manchester Conurbation • NCA 56 Lancashire Coal Measures	The Transport Strategy should seek to preserve and enhance the character of GM's landscape and townscape by ensuring that its integrity and valuable natural open space is not lost. The Transport Strategy should also aim to ensure that transport interventions avoid sensitive areas and respect particular landscape or townscape settings. Opportunities for landscape enhancement should be explored, e.g. through sympathetic design and enhancements to existing landscape improvement areas, new planting opportunities associated with transport development.	Conserve and enhance the character and quality of GM's landscapes and townscapes	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	• NCA 60 Mersey Valley There are a number of Country Parks spread across the GM area and there is a widespread designation of Green Belt between the main urban centres (a total of 59,590 hectares). Parts of the urban landscape and townscape are closely linked to the historical development and cultural heritage of the conurbation, including potential archaeological assets. Listed buildings, conservation areas and other heritage/ archaeological assets including historic waterways are important features of townscapes within GM and help to provide the conurbation and distinct settlements within it with a sense of identity. The North West Region of the UK, of which GM is part, is particularly strong in having Green Flag Awards for parks and gardens. Industrial heritage is also an important component of many landscapes / townscapes. Loss of Tranquillity is an issue within the GM area – a fact of the urban and industrial nature of large parts of this region.			
5.	**Historic and Cultural Heritage:** This term encompasses more than just individual heritage features and includes the landscape in which these are located. Transport can impact on the setting of features within the landscape and can cause for example issues such as severance. There can also of course, be direct impacts on cultural heritage features themselves. GM contains a wide range of historic and cultural heritage features located across the region and which span the full range of human settlement – from the prehistoric to the present.	The Transport Strategy should aim to protect and preserve designated and non-designated cultural heritage features and their settings. Several elements of the transport infrastructure in the GM's area (bridges, stations etc) are designated heritage assets. The Transport Strategy should ensure that these assets are appropriately managed. Transport related development / infrastructure is to be sensitively designed to be sympathetic to its existing character and	Conserve and enhance the quality and distinctiveness of historic and cultural heritage	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	There is a particularly rich industrial heritage. Examples of this include canals, warehouses, mills etc. Other features of cultural heritage include Scheduled Monuments, Registered Parks and Gardens, Listed Buildings and Conservation Areas and Areas of Archaeological Importance. Historic waterways are an integral part of the history of the GM area and still play an important economic and recreational role today. Of particular note are the historic Manchester Ship Canal and the regenerated Salford Quays. Note that these historic canals also play a role in the economy and regeneration opportunities – in 2009 13.7million visits were linked to the GM canal network and this led to £39million in direct spending. The canal corridors support some 1300 leisure and tourism related jobs in GM. It is important to note that the nature of cultural heritage features means that not all are known at present - in particular buried archaeological remains.	quality and opportunities for improving settings should be examined. Better accessibility to the historic environment should also be an aim.		
6.	**Water resources and quality:** GM has a wide range of water body types. Water bodies were frequently negatively impacted due to the industrial past of this region, but in recent decades there has been a marked and continuing improvement in water quality. There are still though water quality issues relating to the urbanised / industrialised nature of large parts of the region and the role of agriculture in other areas. Pollution can be both direct and indirect (point source or diffuse). As with the rest of the UK, the principles of the Water Framework Directive (WFD) are key to understanding the management of water bodies in the area – this area falls within the North West River Basin. Main rivers in the GM	The Transport Strategy should seek to prevent pollution of water bodies (including groundwater) both during the construction and operation of any transport project. This could be achieved via the appropriate use of SuDS or other appropriate measures and new approaches in road drainage design/ transport interventions to enhance water quality and reduce pollution and flood risk. Risk to all types of water bodies (not just main rivers) is to be considered during any scheme design. Recognition of the objectives of the Water	Conserve and enhance the water environment	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	region include: • River Mersey • River Irwell • River Irk • River Tame • River Medlock • River Goyt • River Etherow There are also numerous canals – with the terminal basin for the various Manchester & Salford area being of particular note. Numerous activities impact on water bodies in the area – agriculture, recreation, abstraction etc. Water bodies are also vital in terms of biodiversity and their role in the wider landscape. Groundwater is a vital water body that is often overlooked. It is important to note that there are aquifers in the region utilised as a source for potable water. There are a number of Groundwater Source Protection Zones across the GM region. The main areas of Groundwater sensitivity are located in the south and west of the GM area, with an additional area to the north east of GM (between Oldham and Rochdale). Although not as major a threat to water quality as some other activities, transport does pose a risk. For example, highway runoff can have relatively high pollutant loads especially after dry periods or following gritting operations. There is also of course the potential for pollution following a transport accident.	Framework Directive (WFD) should be made and all opportunities to help meet the objectives of the WFD should be taken when possible. Green & Blue Infrastructure should be considered in the context of the aims of the WFD and how this can realise these, as well as other wider, benefits & Objectives.		
7.	**Land use / Soil / Agriculture:** GM is a highly urbanised / industrialised area. There is a mix of land use types e.g. heavily urbanised, suburban, urban fringe and rural	The Transport Strategy should seek to make best use of areas that are already urbanised	Conserve soil and agricultural	NO

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	locations but overwhelmingly the land use is urban. There is continuing pressure on areas of open space for development. This continuing pressure is also partly driven by transport / infrastructure needs. Despite the heavy urbanisation, there are areas within GM that are classified within the top grades of the Agricultural Land Classification system. The best and most versatile land is generally in the western part of the region – away from the upland Pennine areas. Soil is a finite resource that fulfils many important functions and services (ecosystem services) for society; for instance as a growing medium for food, timber and other crops, as a store for carbon and water, as a reservoir of biodiversity and as a buffer against pollution. There are areas already impacted by urbanisation that could accommodate new (brownfield) development though it is to be noted that contamination could be encountered in these areas due to the legacy of heavy industrialisation in the region. Development pressure will also be felt on existing rural areas, with the need for new transport infrastructure contributing to this pressure. This could have a wide range implications for the land use / soil / agricultural resource e.g. through direct loss, potential for pollution or contamination incidents, severance of farm holdings etc.	and provide an opportunity for regeneration / improvements to land quality – as such Brownfield sites should be prioritised. Where use of agricultural land is unavoidable, measures should be taken to avoid those areas of the highest quality and aim to protect soil and agricultural holdings through avoidance of impacts such as contamination or severance. The Transport Strategy must protect soils as they are essential for achieving a range of important ecosystem services and functions. In particular, the Transport Strategy must ensure that that soil resources are protected during the construction phase of schemes. Dealing with the past industrial legacy of GM is a major issue and should be addressed at all opportunities due to its ongoing environmental impact.	resources and seek to remediate / avoid land contamination	
8.	**Flooding:** Due to the highly urban nature of GM, many rivers and other water bodies, along with ground surface types have been modified from their natural condition. This has resulted in limitations to the carrying capacity o	The Transport Strategy should seek to ensure that transport infrastructure minimises any negative effect arising from flooding and	Reduce risk of flooding and increase	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	the drainage network. The existing flood risk within GM has been recognised at both a regional and local level – for example each of the 10 local authorities are producing Local Flood Risk Management Strategies. It is also recognised that there are different flooding types due to natural differences in topography, geology, rainfall patterns, vegetation etc as well as manmade conditions such as urbanisation and drainage infrastructure. As such, flood risk varies widely across the region and each local authority has a number of issues. For example, even though flood risk areas within Bolton are fairly narrow, there are still significant Flood Zone 2 and some large Flood Zone 3 areas. Development of transport infrastructure can aggravate existing flood risk in a wide range of ways, for example by requiring land take from flood plains, or by changing the drainage regime etc. Expected climate change impacts in GM include increased risk of extreme flooding (from more frequent "heavy precipitation events") and more extreme weather events from higher temperatures and increased wind and rain in winter months. This likely to result in: • Direct impacts of flooding on buildings and infrastructure, now and into the future. • Secondary impacts of flooding such as flood damage to people's homes, and the psychological stress that this	avoids where possible areas of highest flood risk. Flood risk should be considered in any design and the implementation of SuDS and similar other appropriate measures or new approaches (such as opportunity mapping) should be considered and encouraged where feasible. The Transport Strategy should ensure that where transport schemes require a landtake from the floodplain there is appropriate compensatory measures put in place. The Transport Strategy should seek to explore the possibilities for creating blue infrastructure which can both help to manage localised flood risk and simultaneously create new habitats. The Transport Strategy should recognise the challenges that a changing climate will bring and aim to reduce the impacts. More frequent and extreme weather events should be considered in any infrastructure design and maintenance procedures / regime. The Transport Strategy should recognise that while development should not increase the flood risk, some development can be compatible with the Flood Zone – for example some green infrastructure such as cycle ways.	resilience to the effects of a changing climate	

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	can cause flood victims.			
9.	**Waste and Resources:** The transport sector can impact on and interact with a wide range of resources such as through energy (fuel) use, use of construction materials (aggregate, concrete etc.), waste generation and disposal etc. It is recognised that most physical resources required for development in the GM area are imported (and transported) to the region rather than extracted / developed locally. New transport interventions' construction contributes to increase the levels of waste generated, if building materials are not efficiently used. With more waste being produced, the amount of trips to transport such waste is likely to increase, thus generating more traffic. The transport sector accounts for a major proportion of energy use, mainly through the consumption of fossil fuel.	The Transport Strategy should seek to reduce consumption of resources such as construction materials e.g. through encouraging the use of recycled or secondary materials. This will also reduce the need to transport these materials and transport the waste by-products. The Transport Strategy can also help reduce the consumption of fuel by promoting a shift to more sustainable forms of transport and through measures such as servicing and delivery plans for new developments. Appropriate management and maintenance of Transport Infrastructure can meet waste and resource goals as well as a range of other objectives.	Promote prudent use of natural resources, minimise the production of waste and support re-use and recycling	NO
10.	**Transport:** GM has seen a general increase in both population and economic activity over the last number of decades. This has increased the need for an effective transport system. Journeys are made within the GM area and into/from GM to neighbouring regions. Across GM the dominant mode of transport for commuting is the private car, followed by bus use and then walking. In addition to population increase, car ownership has also increased – these trends have led to an overall increase in road travel, although these trends	The Transport Strategy will clearly set out to resolve or ameliorate many of the issues identified. The Transport Strategy should aim to minimise dependence on the private car, thereby reducing traffic growth and congestion. This could be achieved by increasing accessibility through sustainable modes of transport to / from residential areas, encouraging modal shift by facilitating a	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	vary significantly in different parts of Greater Manchester. While GM as a whole benefits from having an extensive public transport network, there are still some areas with limited connectivity to key locations. This is of particular note in the rural parts of the region such as the Pennine fringe to the east, but is also of note in cross boundary areas such as between Wigan and Warrington. Bus travel has levelled out in recent years following a steady decline during the1980's and 1990's. GM's Metrolink network is one of the most successful light rail systems in the UK, carrying around 27.5 million passengers every year. Rail travel has increased in recent years, though overcrowding has been identified as an issue, as is the capacity of the local rail network. Walking has increased, particularly into the City Centre. In addition, the significant investment in cycling infrastructure is reflected in the increase in cycle trips. It is recognised though that the levels of walking and cycling could increase further. The highway network is utilised to transport the majority of freight into and around GM. With relatively small volumes moved by rail and on waterways. Congestion on the strategic highway is an issue – a reflection of the large car use and movement of freight on the road network. Sections of the Motorway network, particularly on the north west side of the M60 and near junctions are identified as particular congestion 'hot spots'.	widening travel choice through quality integrated facilities and services, walking and cycling improvements, demand management, network management, travel planning and intelligent transport systems. Similarly, freight movements should be encouraged away from the road network onto the rail and waterway networks where feasible. The Transport Strategy should also examine the connectivity within GM and how best all areas can be made accessible to key locations. The Strategy should promote an integrated transport infrastructure with patterns of land use which reduce the need to travel, particularly by car. The Transport Strategy should create the infrastructure to encourage people to switch to low emission vehicles - charging points, preferential parking etc.		

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	Manchester Airport is the third busiest in the UK and serves a large part of the north of England and beyond. It is forecast that growth at this airport will grow over the coming years and there are plans to expand terminals capacity and improve access to air travel.			
Economic				
11.	**Economy:** GM is the largest functional economic area in the UK outside London – with an annual economic output of £54billion. It is an ambition that GM will develop toward a low carbon economy – with a target to reduce CO2 emissions by 48% by 2020 (from 1990 baseline). This aim is aided by a growth in the financial and services sector – this sector represented 40% of employment growth over the last decade. The creative, digital and education sectors are also key areas. The dominant sector is thus the Services sector with GM having a slightly higher percentage of people in the services sector than the North west of England, or England as a whole. As with other indicators though, there are variations within the GM area – with Tameside and Rochdale having a lower percentage in services but a higher percentage employed in the manufacturing sector. It is considered that GM will lead economic recovery across the region with GVA anticipated to rise from £54billion in 2014 to £89billion by 2034. Note that the GVA values vary across sectors and geographic areas within GM. GM has seen a slight increase in numbers of	The Transport Strategy should seek to ensure that its measures are in line with the overall GM low carbon economy objective and target to reduce CO_2 emissions. The Transport Strategy should improve city-to-city connectivity in order to support business to business markets and access to wider and highly skilled labour markets. In particular, the need for an improved strategic road network as well as rail improvements, providing reliable travel alternatives, particularly for those travelling between cities for business purposes. Improved connectivity should be achieved by sustainable and affordable modes of transport. The Transport Strategy should tackle congestion on transport networks by making existing transport networks more efficient and providing better travel alternatives to the private car. Increased reliability of journeys will enhance the productivity and competitiveness of the GM economy.	Promote economic growth and job creation across the sub-region, and improve access to jobs for all	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	economically active residents (0.8%) which is slightly lower than the national rate (1.2%). The rate varies across the GM area with some areas such as Salford significantly higher rates of increase (7.3%) while other areas have had a decline e.g. Oldham (-2.9%). Similar trends are noted for numbers of economic inactivity – e.g. Oldham had a 2.9% rise, while Salford had a 3.7% decline. Employment type also varies across the region with Stockport and Trafford showing notably high levels of professional occupations compared to other local authority areas.			
12.	**Urban Development:** A more accessible and efficient transport system requires compact and mixed-use urban development, focussed in and around existing town centres and the regional centre to support regeneration. Prioritisation of transport infrastructure investment that will support such land use patterns will contribute to sustainable economic growth and attract inward investment in regeneration areas. A new long-term spatial framework for GM is being developed by the Association of GM Authorities to identify the scale and likely spatial distribution of housing and employment growth across the conurbation. In addition, a number of key Strategic Economic Sites have already been identified in GM. Principal among these sites is the Regional Centre which extends from Manchester City centre to Salford, into the adjacent development of Salford Quays / Trafford Wharfside. There are other key strategic sites across GM which will generate significant employment and economic growth in the future.	The Transport Strategy should support a co-ordinated approach to land use and transport planning across GM and prioritise investment in this regard. The Transport Strategy should ensure widespread accessibility to the already identified key Strategic Economic Sites. This should include the use of sustainable modes of transport.	Coordinate land use and transport planning across Greater Manchester	NO

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
Social				
13.	**General health & health inequalities** Although health inequalities are not uniform across the region, GM as a whole has health indicators lower than the UK average - with Manchester local authority considered the most deprived area in relation to health and disability in England. Manchester is also the most deprived local authority in the region in terms of the 'Living Environment' which is a measurement that is partly made up with issues relating to transportation e.g. air quality indicators and road traffic accidents. Around 19% of GM residents are currently living with long term conditions (LTCs) such as diabetes, asthma and heart disease, and 25% of over 60s have two or more LTCs. GM is typically worse than the national average across a range of health indicators, although with some variation within the area. Key points include: - The 2014 rate of primary school children in year 6 classed as obese or morbidly obese in some authorities in GM is higher than national and regional levels (19%). Highest levels of childhood obesity were seen in Manchester (25%), Salford (21%) and Bolton (21%). - Adult obesity levels are higher than national levels within some authorities in GM. The highest levels of obesity are seen in Rochdale (30% of adult population), compared to 23% nationally. In contrast, Trafford has low levels of adult obesity, with only 16% of adults classed as obese.	While it is recognised that a range of measures are already in place, the Transport Strategy should encourage healthier lifestyles for all communities by helping to provide environments that promote good physical and mental health. This could be achieved through the promotion of active modes of travel, improvement of local air quality etc. The Transport Strategy should also consider better access to key health, education, shopping and employment opportunities. The Transport Strategy should deliver a strategy for improving road safety with consideration for deprived areas. One mechanism for this may be through for example reduced traffic speeds.	Improve health and well-being for all citizens and reduce inequalities in health (*HIA specific objective; see Table 2 for HIA sub-objectives*)	YES

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	- Every day 18 people die from cancer in GM – around 6,500 a year – making the death toll around 10 per cent higher than the UK average. These high numbers are due to a higher number of people in GM getting diagnosed with cancer, in part due to high levels of smoking in the area. - Life expectancy at birth for both males and females was lower than national levels in the majority of districts, and two districts (Manchester and Salford) are in the top ten for lowest life expectancy at birth in England and Wales for both males and females (Tameside is also in the top ten for males). In public health nationally significant inequalities exist as a result of failures, including information, social context, market failures, etc. The level of deprivation varies considerably between and within the districts within GM. This is likely to give rise to potential inequalities in terms of health as deprived or lower socio-economic groups are more likely to experience health inequalities due to: • inadequate level of health literacy; • fewer resources to devote to healthy goods and services. Research relating to the links between transport and health inequalities shows that: • people without access to a car can experience health problems as a result of lack of access to essential services and amenities and increased level of social exclusion.			

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	• disadvantaged groups are more likely to be involved in a road accident. • deprived communities tend to experience poorer air quality as a result of transport related air pollution, and therefore they are more likely to experience the resulting health impacts; • the pedestrian death rate for children from families in social class V is higher than for children of social class I.			
14.	**Population growth and make-up of the local population** GM is a generally densely populated urban area with a diversity in ethnicity and economic terms of its population. The population is growing across the GM region with Manchester experiencing the greatest growth. It is forecast that the GM area will have a population rise from 2.7million in 2013 to over 3 million by 2037. This population is housed in over 1 million homes as of 2011. Manchester local authority area has the highest population (514,417 in 2013) with Bury being the lowest (186,527 in 2013). **Deprivation** Deprivation varies considerably between and within the ten districts in GM area, with three of the authorities (Manchester, Salford and Rochdale) being in the top 20 most deprived in England. Manchester in particular has a comparatively very high level, with 41% of Lower Super Output Areas (LSOAs) being in the 10% most deprived in England (IMD 2015). Another indicator of deprivation is the proportion of the	The Transport Strategy should consider specific transport needs of the growing population and of different neighbourhoods and communities. It should take into account all age groups and special needs and ensure that people from different groups and backgrounds have the same opportunities with regards to access to transport.	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective; see Table 2 for EqIA sub-objectives)	Key issue considered but no clear IA objective identified

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	population unemployed. In the GM area, approximately 1.1% of the population were collecting job seekers allowance (JSA) in September 2015, which is in line with national levels (1.1%). Levels of unemployment have decreased over recent years. **Equality Groups** **Gender** The gender balance in GM is 49% males and 51% female, which mirrors the national balance in England. **People with Disabilities** 9.8% of GM residents have a long term limiting illness which limits their life a little and 9.6% have a long term limiting illness which limits their life a lot. There are higher levels of illnesses which 'limit their lives a lot' in Wigan, Tameside and Rochdale; and higher levels of illnesses which 'limit their lives a little' in Salford, Wigan and Rochdale. **Black and Minority Ethnic Groups** The majority of the GM population is white (83.7% in 2011), though there are significant populations of other ethnicities – most notably those classified as Asian (total in 2011 of 12.5% across all Asian sub groups).Ethnicity is not uniform across GM – for example both Manchester and Oldham have relatively high populations of ethnic groups other than white (33.4% of Manchester city residents belong to BME groups, and 22.5% of Oldham residents). Areas of Manchester such as Moss Side have a particularly high population of black residents, and there are high proportions of Asian residents in the south			

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	of Manchester also.			
	There were around 29,000 National Insurance number registrations to overseas adults in the GM area in the year to March 2015, with the majority of immigrants in Manchester city (14,000) and significant numbers on Salford also (4000). The majority of immigrants are from Europe (68.1%, with just over half of those coming from newer EU member states) and there is also significant immigration from South Asia (11.0% of immigrants in the region).			
	Sexuality and Gender Identity			
	Manchester is generally considered a gay-friendly city, with a variety of facilities and services aimed at LGBT people. 0.22% of people in GM are in a registered same-sex civil partnership, which is in line with national levels, although in Manchester city, this number rises to 0.34%, well above the national average.			
	Age Profile			
	GM has a marginally younger population than for England as a whole. Around 20% of the population are children, compared to 19% nationally. The district of Oldham has the highest proportion of children, where just over 22% of the population are aged under 16.			
	The highest proportion of older people within the GM area is found within Stockport where around 18% of the population are aged over 65.			
	Faith Groups			
	The majority of people in GM identify as Christian (61.8% in 2011) with a significant percentage (8.7%) identifying as Muslim. There is an even spread of other religions and			

No	Key Issue	Implications/Opportunities for GM Transport Strategy	IA Objective	Key issue/IA Objective considered in 2011 LTP3 IA Report?
	26.9% of the population having no or not stated religion.			

Table 5.   Key HIA and EqIA specific issues

No	Key Issue	Implications/Opportunities for Transport Strategy	HIA/EqIA sub-objective	Key issue/sub-objective considered in 2011 LTP3 IA Report?
1.	**Physical activity and open space** The 2014 rate of primary school children in year 6 classed as obese or morbidly obese in some authorities in GM is higher than national and regional levels (19%). Highest levels of childhood obesity were seen in Manchester (25%), Salford (21%) and Bolton (21%). Adult obesity levels are higher than national levels within some authorities in GM. The highest levels of obesity are seen in Rochdale (30% of adult population), compared to 23% nationally. In contrast, Trafford has low levels of adult obesity, with only 16% of adults classed as obese. There is a wide variety in levels of physical activity between the authorities in GM – some authorities have much lower levels than the national average (57%), such as Rochdale (49% of adults physically active) and Salford (51%), whereas other authorities have much higher levels, with 63% of adults in Trafford physically active.	The Transport Strategy should help encourage public accessibility to open space and the movement of people within open areas. It should also aim to encourage regular physical activity including active travel for children and adults as part of a healthy lifestyle, including promoting countryside access, to reduce obesity levels and associated health problems.	Improve accessibility to services, facilities and amenities for all	YES

No	Key Issue	Implications/Opportunities for Transport Strategy	HIA/EqIA sub-objective	Key issue/sub-objective considered in 2011 LTP3 IA Report?
2.	**Deprivation** Deprivation varies considerably between and within the ten districts in GM area, with three of the authorities (Manchester, Salford and Rochdale) being in the top 20 most deprived in England. Manchester in particular has a very high level, with 41% of Lower Super Output Areas (LSOAs) being in the 10% most deprived in England (IMD 2015). Another indicator of deprivation is the proportion of the population unemployed. In the GM area, approximately 1.1% of the population were collecting job seekers allowance (JSA) in September 2015, which is in line with national levels (1.1%). Levels of unemployment have decreased over recent years.	The Transport Strategy should aim to promote accessibility to key services and facilities and employment areas by public transport and cycling routes, particularly to/from relatively deprived areas. Differences in deprivation are a major determinant of health inequality in the UK. Improving access of opportunity in deprived areas will assist in reducing such inequalities.	Improve accessibility to services, facilities and amenities for all	YES
3.	**Air Pollution** All ten of the GM authorities have declared Air Quality Management Areas (AQMAs), largely for NO_2 and PM_{10}. Road transport is the most significant source of pollution across GM for both NO_x and PM_{10}, contributing 60.4% and 61.2% of total emissions in 2006 respectively. Despite only making up a relatively small proportion of vehicles on the road, other goods vehicles (OGVs – including rigid and articulated HGVs) contribute over half of the NO_x emissions on major roads in GM. With regard to exposure to poor air quality, it is also important to note that 86 out of the 362 areas that comprise the most deprived quintile within GM lie partly within AQMAs.	The Transport Strategy should seek to minimise the impacts of the transport system on air pollution. It should adhere to the principles set out in the local Air Quality Action Plans to assist in reducing air quality issues across the area and work to improve health inequalities in GM. The Transport Strategy should promote the use of active travel, public transport, discourage car use, and implementation of other schemes to reduce emissions. The Transport Strategy should support the development of the GM Clean Air Strategy.	Reduce air, noise and light pollution from transport	YES

No	Key Issue	Implications/Opportunities for Transport Strategy	HIA/EqIA sub-objective	Key issue/sub-objective considered in 2011 LTP3 IA Report?
	The GM authorities work together in execution of their Local Air Quality Management duties, especially for detailed air quality modelling work and collecting data for the local emissions inventory (EMIGMA). The group of authorities also work together in the production of the regional Air Quality Action Plan. However, it is acknowledged that traffic increase and growth of carbon-based motorised transport infrastructure can significantly impact air quality, leading to costly health-related illnesses of residents and visitors. Short-term exposure to elevated PM_{10} concentrations can cause premature deaths, primarily from cardiovascular and respiratory causes, and extra and early emergency hospital admissions. There is also wide ranging evidence that chronic exposure to raised levels of particulates have considerable effects on mortality and on the development of respiratory disease. Elevated concentrations of ambient NO_2 may be causally related to cardiovascular deaths and to emergency hospital admissions for ischemic heart disease, acute myocardial infarction, chronic obstructive pulmonary disease (COPD) in older people and asthma at all ages, as well as increasing symptoms, medication use, and medical consultations, predominantly in people who already have COPD or asthma. Long-term exposure to raised NO_2 may affect lung function and increase the risk of respiratory infection.			
4.	**Noise Pollution** Many areas of GM already experience high levels of	The Transport Strategy should seek to minimise as much as practicable noise generation, especially noise generated	Reduce air, noise and light pollution	YES

No	Key Issue	Implications/Opportunities for Transport Strategy	HIA/EqIA sub-objective	Key issue/sub-objective considered in 2011 LTP3 IA Report?
	traffic noise, principally associated with the motorway (M60 and M62) and trunk road networks (e.g. A56, A34, A6 and A664).	by traffic, e.g. through use of quiet surfacing and establishment of quiet zones and reduced traffic speeds.	from transport	
	Over 75% of the population of GM experience LA10,18-hour noise levels ≥ 55 dB due to road traffic noise, and more than 14,500 people have been identified as living in locations that should investigated for action to reduce traffic noise. About 35,000 people experience noise from railways to a similar level, with about 500 people living in areas that should be investigated for further action in this respect.			
	Future population and traffic growth, with associated congestion are likely to result in an increase in existing levels of noise.			
	Noise pollution can be a major nuisance and is widely recognised as a disbenefit affecting daily life. General annoyance and sleep disturbance are the most widespread effects of environmental noise. Symptoms such as depression, irritability and headaches have also been reported. Stress has been suggested as a possible mechanism through which noise may affect mental and physical health.			
5.	**Light Pollution** Between 1993 and 2000 light pollution increased 24% nationally, and 35% in the North West. Within GM, there were 0% of areas classified as "dark" in 1993 or 2000, and the percentage of areas classed as "saturated" with light rose from 61% to 74% between 1993 and 2000. Health effects of light pollution may include: increased headache incidence, worker fatigue, medically defined stress, decrease in sexual function and increase in	The Transport Strategy should seek to minimise as much as practicable light pollution (e.g. through promoting light sources of minimum intensity and LED luminaires).	Reduce air, noise and light pollution from transport	Key issue considered but no objective considered

No	Key Issue	Implications/Opportunities for Transport Strategy	HIA/EqIA sub-objective	Key issue/sub-objective considered in 2011 LTP3 IA Report?
	anxiety			
6.	**Road safety for all travellers** In the GM area, there were a total of 3,861 accidents in 2013. Of these, 1% were fatal, 15% were serious and 84% were slight. The number of accidents each year has fallen for the last five years. Children, young males, disabled and older people are particularly vulnerable groups in terms of accidents. Research shows that a higher proportion of accidents occur in deprived areas – of which there are a comparatively large amount in the GM area. Pedestrians, cyclists and motorcyclists are vulnerable user groups in terms of accidents, and while accident rates amongst these groups are generally in line with the national average in the GM area, it will still be important to consider the impacts on them.	The Transport Strategy should set out a clear strategy and programme to continue to enhance safety for all road users including pedestrians, cyclists and motorcyclists, and aim to reduce the rate of road safety incidents (e.g. through reducing traffic growth and congestion, traffic calming measures, low key accident reduction strategies, 20mph zones).	Improve road safety and reduce the number of accidents and other incidents	YES
7.	**Crime and fear of crime** In the year April 2014 – March 2015 there were over 180,000 reported crimes within the GM constabulary area. 134,000 of these were classed as anti-social behaviour crimes, 40,000 as violent crimes, 1,700 as sexual offences and 4,000 as hate crimes (note: individual crimes may have more than one classification). These crimes are considerably more likely to impact on sense of place and perceived safety issues when travelling within the area. The latest Passenger Focus survey undertaken in Autumn 2014 identified that around 7% of bus passengers in GM felt that other passengers' behaviour gave them cause to worry or feel uncomfortable on their bus journey. 78% were satisfied with personal safety at	The Transport Strategy should seek to reduce the levels of crime and improve perceptions of safety and security on the GM transport network.	Reduce crime and fear of crime and promote community safety	NO

No	Key Issue	Implications/Opportunities for Transport Strategy	HIA/EqIA sub-objective	Key issue/sub-objective considered in 2011 LTP3 IA Report?
	the bus stop, and 82% were satisfied with personal security on the bus.			
8.	**Severance** Severance is often an unintended consequence of a measure intended to address other problems. Certain groups in society are potentially vulnerable to the effects of severance as a result of the transport network, and these include people without access to a car, children, older people, people with disabilities, parents with pushchairs, and deprived residents. Those groups impacted by severance may experience longer journey times, or are often required to use pedestrian routes that are inappropriate or difficult to use. In extreme cases, severance issues (either actual or perceived) may result in users limiting their journeys and hence reducing access to opportunity. Deprivation varies considerably between and within the ten districts in GM area, with three of the authorities (Manchester, Salford and Rochdale) being in the top 20 most deprived in England. Manchester in particular has a very high level, with 41% of Lower Super Output Areas (LSOAs) being in the 10% most deprived in England (IMD 2015). Those in deprived areas are less likely to own a car and are therefore more prone to severance issues associated with walking, cycling and public transport routes. The proportion of households without access to a car in GM is slightly higher than national averages (31% compared to 26% nationally) and levels are particularly high in Manchester (45%) and Salford (37%). Residents without access to a car are reliant on walking cycling and public transport for their journeys	The Transport Strategy should seek to reduce any existing severance issues and ensure new initiatives do not create unnecessary severance for the local population.	Reduce severance	NO

No	Key Issue	Implications/Opportunities for Transport Strategy	HIA/EqIA sub-objective	Key issue/sub-objective considered in 2011 LTP3 IA Report?
	and are therefore particularly prone to any impacts of severance.			
9.	**Affordability of transport** Any intervention that changes the cost of travel for users may give rise to impacts on personal affordability, and may have disproportionate effects where there are few or no travel alternatives, especially where low income households preclude car ownership and use. Changes to transport costs can include public transport fares, parking charges, road user charges or impacts to the road network that impacts on the operating costs of cars. The latest Passenger Focus surveys undertaken in Autumn 2014 showed that 73% of bus passengers and 48% of tram passengers in the GM Area were satisfied with the fare paid for their journey. Around 31% of bus passengers and 33% of tram passengers were not satisfied with fares.	The Transport Strategy should seek to ensure new transport initiatives are affordable and do not price out certain groups of society.	Improve affordability of transport	NO

8. IA Framework

8.1. Introduction

8.1.1. The assessment framework is a key component in completing the IA by synthesising the baseline information and sustainability issues into a systematic and easily understood tool that allows the prediction and assessment of effects arising from the implementation of the Transport Strategy.

8.2. IA objectives and assessment aid questions

8.2.1. Defining IA objectives before the Strategy is written gives an early indication of the sustainability issues that will require particular attention in the strategy making process.

8.2.2. The proposed IA objectives have been derived from a review of the objectives in the 2011 IA Report ensuring that they are aligned with identified sustainability issues. The IA objectives (and HIA and EqIA sub-objectives) have been worded so that they reflect one single desired direction of change for the theme concerned and do not overlap with other objectives. They include both externally imposed sustainability objectives and other objectives have been devised specifically in relation to the context of the strategy being prepared.

8.2.3. In addition, assessment aid questions have been identified to substantiate the proposed IA Objectives and HIA and EqIA sub-objectives. The assessment aid questions provide a clarification of the intended interpretation of each objective to support direction of change sought through the implementation of Transport Strategy. These questions guided the assessment process reported in Sections 9-11.

8.2.4. The IA objectives together with the assessment aid questions make up the IA framework that has been used in the assessments of the Transport Strategy and Delivery Plan 1 proposals in the following sections of the IA Report. The proposed IA objectives and associated assessment aid questions are presented in Table 7. Tables 8 and 9 show proposed HIA and EqIA sub-objectives and assessment aid questions, respectively.

8.3. Likely Cumulative Effects

8.3.1. IA objectives that have the potential for cumulative effects have also been identified (as required by the SEA Directive) from the analysis of plans and programmes, the baseline data and the key issues. This analysis has identified a set of likely cumulative effects, their receptors and likely causes, as shown in Table 6.

Table 6.   Likely Cumulative Effects and their Causes

Cumulative Effect	Affected Receptor	Causes	IA Objective
Increase in air pollution	Population Wildlife habitats Species (in particular within the AQMAs and in proximity to major roads)	Air emissions from major roads and particularly congested areas are of concern. Designation of the AQMAs indicates that national air quality standards are unlikely to be met in the areas concerned. This affects the health of humans and other species.	1

Habitat degradation, loss and fragmentation	Areas of wildlife habitats (in particular, those in unfavourable condition), valuable landscapes (in particular, those showing negative trends)	Use of land for new infrastructure, including transport infrastructure, commercial uses and housing. Disturbance of habitats and species and negative effects as a result of human activities (recreation, noise from transport, etc), coastal squeeze and pollution of environmental media (water, soil and air).	3 and 4
Climate change	Population (human health)

Transport Infrastructure | Even though local actions to combat an increase in GHG emissions (in particular carbon dioxide emissions) are important, climate change is a global phenomenon and GHG concentrations in the atmosphere are likely to increase during the Transport Strategy period as a result of human activities worldwide. These activities include transport, energy, industry, buildings sectors and others. Joint efforts of all nations may lead to a subsequent stabilisation and decline of GHG concentrations but such effects may occur in a distant future, beyond the Transport Strategy period. | 2 and 9 |
| Increase in flood risk | Population

Infrastructure

Heritage assets

Wildlife habitats

Species | Use of land for new transport infrastructure, commercial uses, housing and associated increase in impermeable surfaces. Risk of significant flooding events is also likely to increase in the future, particularly as a result of climate change consequences. | 9 |
| Increase in water pollution | Rivers

Groundwater | Water pollution is largely caused by human activity and has had a major impact on our local waterways and their ability to be healthy and function naturally. Water pollution comes from two sources - point sources or diffuse sources. Pollution from various sources discharging into the same waterbody can result in exceedances of water quality standards. | 7 |
| Heritage degradation | Local heritage assets (in particular, those on the Heritage at Risk Register) | Use of land for new infrastructure, including transport infrastructure, commercial uses and housing. Disturbance of heritage assets and their settings as a result of human activities (recreation, noise from transport, etc) and pollution of environmental media (water, soil and air). | 6 |
| Landscape and townscape degradation | Local landscape and townscape | Combined effects can arise through the interaction of two or more developments, whether of the same type or not, within the landscape/townscape and visual baseline context. Collectively they give rise to an overall combined effect and cause irreversible harm. | 5 |
| Sustainable Transport | Population

Local Landscape & Townscape

Infrastructure

Local Heritage assets (inc. in particular those relating to canals and railways)

Wildlife Habitats & | Use of land, including within towns, for new infrastructure. Disturbance to species / habitats. Use of heritage assets as new / improved transport modes e.g. canals, railways etc. | 11 |

	Species		
Economic growth	Population	Changes in access to employment opportunities. Shift in employment locations e.g. development of new Hubs for goods or services.	12
Health	Population (human health)	Changes in access to health facilities. Changes in Air Quality & emissions.	15

Table 7.   IA Framework of objectives and assessment aid questions

No	IA Objective	Assessment aid questions	SEA topic (relevance to HIA, EqIA and HRA shown in brackets)
Environment			
1.	Improve air quality *	*Will the Transport Strategy...* • Help to meet national air quality standards? • Result in an overall improvement in Air Quality across the plan area? • Result in localised improvements in Air Quality within the plan area? • Improve air quality and reduce the levels of NO_2 and PM_{10} in areas designated as AQMA? • Reduce traffic levels and congestion and promote more sustainable transport patterns across GM? • Promote walking and cycling and improve infrastructure for these forms of travel? • Reflect and be in accordance with the proposed Air Quality Action Plan as approved by the Combined Authority?	Air Quality; Biodiversity (HIA/EqIA)
2.	Reduce carbon dioxide (CO_2) emissions from transport overall, with particular emphasis on road transport *	*Will the Transport Strategy...* • Contribute to meeting national targets on CO_2 emissions? • Reduce CO_2 emissions from transport? • Reduce the need to travel? • Help to achieve the GM objective to move to a low carbon economy? • Promote innovative low carbon technology for mass transit and city wide commuting? • Protect and enhance green infrastructure through protecting existing and/or creating new carbon sinks? • Aid understanding of the need to reduce CO_2 emissions and communicate this need to relevant communities and other interested parties? • Promote the use of sustainable forms of transport and reduce car use?	Climatic factors; Biodiversity

No	IA Objective	Assessment aid questions	SEA topic (relevance to HIA, EqIA and HRA shown in brackets)
		• Promote better coordination and integration of different modes?	
3.	Conserve and enhance biodiversity, green infrastructure and geodiversity assets *	*Will the Transport Strategy…* • Lead to the direct physical loss of wildlife and habitat? • Avoid damage to / destruction / disturbance of sites designated for nature conservation purposes? • Provide opportunities to improve / enhance sites designated for nature conservation? • Promote and aid the delivery of Local Biodiversity Action Plans and other similar plans? • Protect and enhance green infrastructure and avoid severance of habitats links / promote or provide wildlife corridors and cohesive habitat networks? • Afford the opportunity to provide new habitat creation and enhancement? • Promote good design to include consideration of biodiversity?	Biodiversity, Flora, Fauna
4.	Conserve and enhance the European sites *(HRA specific objective)* *	*Will the Transport Strategy…* • Affect (directly or indirectly) the European sites identified as part of the HRA Screening process? • Take on board the HRA findings and recommendations?	Biodiversity, Flora, Fauna (HRA)
5.	Conserve and enhance the character and quality of GM's landscapes and townscapes *	*Will the Transport Strategy…* • Ensure that design, construction, repair and maintenance of transport infrastructure respects and enhances the landscape character & townscapes of the GM region? • Conserve, protect and enhance the natural environmental assets (e.g. parks and green spaces, common land, woodland / forests etc) of GM? • Improve sustainable access to open space and quality natural environments for all sections of the community? • Promote / protect Public Rights of Way (PRoW) and greenways?	Landscape / Townscape; Biodiversity; Climatic factors (HIA/EqIA)

No	IA Objective	Assessment aid questions	SEA topic (relevance to HIA, EqIA and HRA shown in brackets)
		• Seek to avoid sensitive areas and respect the integrity and setting of landscapes / townscapes? • Protect and enhance locally important buildings and townscapes, maintaining and strengthening local distinctiveness and a sense of place? • Explore opportunities for landscape / streetscape enhancement e.g. removing unnecessary clutter of signs? • Assist in the regeneration of previously utilised land, in particular areas of dereliction / contamination? • Protect and enhance green & blue infrastructure and explore the direct / indirect benefits of this e.g. both can enhance landscape while protecting from flood risk?	
6.	Conserve and enhance the quality and distinctiveness of historic and cultural heritage	*Will the Transport Strategy…* • Attach value to the historic environment? • Conserve, protect and enhance the region's cultural and designated / non-designated historic assets (e.g. locally important buildings, archaeological remains, World Heritage Sites, Scheduled Monuments, Listed Buildings and structures, registered Parks and Gardens, Registered Battlefields and Conservation Areas), their integrity and their settings? • Improve access to historic / culturally important sites by sustainable transport modes? • Reduce traffic congestion in historic town centres and villages or near to important sites?	Cultural Heritage; Landscape / Townscape
7.	Conserve and enhance the water environment *	Will the Transport Strategy… • Protect the quality of surface and groundwater resources? • Minimise the use of impermeable hard surfacing? • Protect and enhance green infrastructure contributing to improvements in the quality of surface water run-off? • Provide opportunities to improve water body status?	Water; Biodiversity

No	IA Objective	Assessment aid questions	SEA topic (relevance to HIA, EqIA and HRA shown in brackets)
		• Provide opportunities to improve Green & Blue Infrastructure?	
8.	Conserve soil and agricultural resources and seek to remediate / avoid land contamination *	*Will the Transport Strategy…* • Promote the reclamation and use of previously developed land to make more productive use of land? • Avoid permanent (irreversible) loss of the most highly productive agricultural soils? • Seek to avoid impact to agricultural holdings through contamination or severance? • Ensure protection of soil resources during any infrastructure construction activities? • Seek to remediate contaminated land?	Landscape
9.	Reduce risk of flooding and increase resilience to the effects of a changing climate*	*Will the Transport Strategy…* • Minimise the risk of flooding by the design and implementation of SuDS when possible? • Minimise the risk of flooding by avoiding areas of flood risk / flood plain when possible? • Ensure provision of appropriate compensatory measures are in place when there is no other option to landtake from areas of flood plain? • Plan and design for the successful adaptation to the predicted changes in weather conditions and frequency of extreme events (freezing, heat waves) from a changing climate?	Climatic factors; Material Assets

No	IA Objective	Assessment aid questions	SEA topic (relevance to HIA, EqIA and HRA shown in brackets)
10.	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling*	*Will the Transport Strategy…* • Seek to reduce the consumption of natural resources during construction through encouraging the use of recycled or secondary materials? • Encourage resource efficiency during the whole project life cycle i.e. from concept through design and operation to decommissioning? • Seek to reduce fuel use by promoting a shift to more sustainable forms of transport? • Improve access to recycling centres? • Promote the use of local suppliers and locally produced materials in construction? • Promote sustainable waste management practices?	Material Assets
11.	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport *	*Will the Transport Strategy…* • Promote modal shift to more sustainable forms of transport and continue making these forms of travel more convenient, accessible and affordable? • Minimise dependence on the private car? • Promote a wider travel choice through quality integrated facilities and services, walking and cycling improvements, demand management, network management, travel planning and intelligent transport systems? • Promote transportation of freight and goods using waterways and rail?	Population; Material Assets, Human Health
Economy			

No	IA Objective	Assessment aid questions	SEA topic (relevance to HIA, EqIA and HRA shown in brackets)
12.	Promote economic growth and job creation across the sub-region, and improve access to jobs for all *	*Will the Transport Strategy…* • Help create and sustain new jobs? • Help to achieve the GM objective to move to a low carbon economy? • Improve accessibility to employment opportunities across GM but in particular those areas with high levels of unemployment and economically inactive persons? • Improve accessibility to those areas identified as key Strategic Economic Sites? • Reduce congestion and improve / enhance journey time reliability on the highways and rail network? • Enhance productivity and competitiveness of business? • Improve the image of GM and help make it a more attractive place for investment and to do business in? • Support and improve accessibility for local business? • Embrace innovative approaches to transport delivery to improve performance, efficiency and resilience?	Population
13.	Coordinate land use and transport planning across GM	*Will the Transport Strategy…* • Support the development of compact and mixed use development? • Support housing and employment development in areas that are served by public transport or ensure that new services can be provided? • Support the development of urban centres and residential areas with attractive streets and public spaces that are easy to walk and cycle around?	Population
Social			
14.	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society	*Will the Transport Strategy …* • Promote greater equality of opportunity to the varying age groups of residents (the older population and younger travellers), disabled people, different	Population (see EqIA sub-objectives)

No	IA Objective	Assessment aid questions	SEA topic (relevance to HIA, EqIA and HRA shown in brackets)
	(*EqIA specific objective*)	nationalities and ethnic groups, different religious groups, low income and unemployed people, different sex and sexual orientation groups?	
15.	Improve health and well-being for all citizens and reduce inequalities in health (*HIA specific objective*) *	*Will the Transport Strategy …* • Promote the health and well-being of vulnerable groups (children and adolescents; older people; disabled people and people with other health problems; low-income groups and communities with high level of deprivation; cyclists, pedestrians, commuters by public transport, drivers) and of the wider population (residents, workers, commuters, tourists and visitors)? • Set out how TfGM will ensure that the best evidence and examples of good practice from around the world are considered when choices are being made for Greater Manchester?	Human Health (see HIA sub-objectives)

* - Indicate IA objectives that consider cumulative effects.

Table 8.   Proposed EqIA objective, sub- objectives and associated assessment aid questions

EqIA Objective	EqIA sub-objectives	Assessment aid questions
To promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society	1. Improve accessibility to services, facilities and amenities for all	*Will the Transport Strategy...* • Improve access to essential facilities, including employment, healthcare and education, particularly for those in the most deprived areas (20% most deprived nationally), older and disabled people? • Improve public realm and overall environment in the most deprived areas (20% most deprived nationally)? • Improve walking, cycling and public transport measures in the most deprived areas (20% most deprived nationally)? • Provide transport services/ initiatives that are accessible for all, including those with a physical or

EqIA Objective	EqIA sub-objectives	Assessment aid questions
		learning disability and those with limited mobility? (this includes physical access to services and provision of accessible information on transport service) • Provide transport services that are welcoming for all groups of society to increase availability of travel options? • Provide initiatives that improve perceptions of transport, and therefore increase range of travel options available? • Take due regard of requirements for travel by disabled and mobility impaired people?
	2. Improve affordability of transport	*Will the Transport Strategy...* • Provide transport services that are financially accessible for all, specifically those in the most income deprived areas nationally or those on limited incomes? • Provide transport services or initiatives that improve the affordability of travel options in the area, specifically the most deprived areas and vulnerable users? • Provide transport services that provide appropriate and/or statutory fare structures for vulnerable users (i.e. concessionary fares on public transport services)? • Promote use of technology to reduce transport costs for users i.e. integrated ticketing and smart cards?

EqIA Objective	EqIA sub-objectives	Assessment aid questions
	3. Reduce crime and fear of crime and promote community safety	*Will the Transport Strategy...* • Contribute to improvements of public realm and levels of natural surveillance to create more welcoming environments for travel (and hence improve accessibility for all)? • Improve personal security on public transport and at its facilities particularly for vulnerable users known to have security concerns with public transport (women, BME groups, older and disabled people)?
	4. Improve road safety and reduce the number of accidents and other incidents	*Will the Transport Strategy...* • Provide initiatives that enhance road safety and therefore reduce the number of accidents, particularly for vulnerable users– children, older people, disabled people, and those in deprived areas?
	5. Reduce severance	*Will the Transport Strategy...* • Improve access to essential facilities to reduce any existing severance issues? • Improve accessibility between communities? • Improve access to information for all users to promote travel options available for all? • Reduce the physical and perceived impact of the transport system on the local environment? (particularly for the most vulnerable population in terms of severance – including older children and disabled people)
	6. Reduce environmental impacts of transport – air and noise pollution	*Will the Transport Strategy...* • Improve impact of transport on the local environment to create more welcoming areas for travel? • Provide transport options that improve / do not worsen air and noise pollution levels, particularly for

EqIA Objective	EqIA sub-objectives	Assessment aid questions
		the most vulnerable groups such as deprived residents and children (as air quality and noise impacts are known to adversely impact learning ability of children in extreme cases)?
		• Reduce traffic levels and congestion and promote more sustainable transport patterns across the area, particularly focusing on areas with low air quality (e.g. AQMAs)?
		• Promote sustainable travel to reduce the environmental impact of transport for vulnerable groups?

Table 9.   Proposed HIA objective, sub- objectives and associated assessment aid questions

HIA Objective	HIA sub-objectives	Assessment aid questions
Improve health and well-being for all citizens and reduce inequalities in health (*HIA specific objective*)	1. Improve accessibility to services, facilities and amenities for all	*Will the Transport Strategy...* • Ensure that (new and existing) developments are accessible (particularly on foot, by cycling or public transport) to health services, particularly for the most vulnerable groups? • Promote and enable measures to help all residents to adopt healthy lifestyles (eg. active travel through walking and cycling)? • Promote accessibility (particularly on foot or by cycling or public transport) to open space and recreational activities (e.g. playing fields, sports facilities, footpaths etc), particularly for vulnerable groups? • Protect and enhance green infrastructure, a network of linked, multifunctional green spaces in and around the area's towns and cities, thus creating new or

		improved public green space?
		• Support publicity or awareness-raising campaigns and/or education and practical offers to promote active modes of transport or physical activity?
		• Provide overall accessibility improvements that improve the quality of life of users and therefore benefits health of residents?
	2. Improve affordability of transport	*Will the Transport Strategy...*
		• Provide affordable transport options to ensure accessibility to vital health services?
		• Provide affordable transport options to ensure accessibility to key facilities such as open spaces, employment locations etc.?
		• Promote use of technology to reduce transport costs for users i.e. integrated ticketing and smart cards?
		• Provide transport services that provide appropriate and/or statutory fare structures (i.e. concessionary fares on public transport services) to ensure the most vulnerable groups in terms of health (children, older), can afford to use transport options to access healthcare facilities?
	3. Reduce crime and fear of crime and promote community safety	*Will the Transport Strategy...*
		• Promote the application of 'Secured by Design' in transport development schemes?
		• Contribute to improvements of public realm and levels of natural surveillance to create a more welcoming environment for travel, physical activity, and accessing key facilities?
		• Improve personal security on public transport and at its facilities to improve accessibility to key facilities?
		• Improve actual and perceived safety and security issues relating to transport schemes to improve

		access of opportunity for all and create more welcoming environments for travel (including physical modes)?
	4. Improve road safety and reduce the number of accidents and other incidents	*Will the Transport Strategy...* • Ensure safe paths for walking and cycling? • Promote training for drivers to promote safe driving? • Ensure initiatives aiming to reduce traffic speeds in residential areas? • Promote road safety awareness with children and young people • Reduce the total killed and seriously injured in traffic accidents, particularly for vulnerable users in terms of accidents – children, young males, older people and those from deprived areas? • Reduce the total slight casualties? • Improve the safety of vulnerable road users such as pedestrians, motorcyclists and cyclists?
	5. Reduce severance	*Will the Transport Strategy...* • Improve access to essential facilities such as healthcare services to reduce any existing severance issues? • Improve accessibility between communities? • Reduce the physical and perceived impact of the transport system on the local environment? (particularly for the most vulnerable population in terms of severance and health – including older and disabled people)

	6. Reduce environmental impacts of transport - vibration and air, noise and light pollution	• Aim to minimise air, noise and light pollution and vibration during construction and operation? • Reduce transport impact on air quality and noise, particularly around vulnerable users such as children, older people and deprived areas? • Promote practices, equipment and materials which reduce vibration and air, noise and light pollution to assist in improving health levels?

9. Compatibility between Transport Strategy Objectives and the IA Objectives

9.1. Introduction

9.1.1. In order to ensure that the objectives of Transport Strategy are in accordance with the IA objectives, these have been tested for compatibility. This process is called the compatibility assessment. It helps identify potential synergies and inconsistencies and helps to refine the Transport Strategy objectives as well as in identifying strategic alternatives, the next stage of work.

9.1.2. The objectives of the Transport Strategy that have been considered at this early stage of development of the Strategy are as follows (as noted in the 'Our Vision' consultation document, page 19):

i. To support sustainable economic growth we need:
   a) less congested roads and public transport;
   b) better access to skills and markets;
   c) more reliable journey times;
   d) a resilient and well-maintained network; and
   e) a transport system fit for a major European city, which is viewed as a great place to visit and invest.

ii. To improve the quality of life for our residents we need:
   a) better access to jobs and training, and to healthcare and other essential services;
   b) a transport network that makes it easier to stay healthy through regular walking and cycling;
   c) improved road safety and reduced crime; and
   d) local environments that are not dominated by traffic, noise and pollution.

iii. To help protect our environment, we need:
   a) more people to travel by public transport, on foot and by bike;
   b) a reduction in harmful emissions from vehicles;
   c) to make best use of our existing transport infrastructure; and
   d) a reduction in the damage that transport can do to natural environments.

iv. To develop Greater Manchester as an innovative city region we need to support investment in transport to:
   a) enhance the capacity, efficiency, resilience and safety of our transport networks;
   b) improve customer experience through easy to use, integrated payment systems and real-time information;
   c) understand better the needs of our travelling customers through 'smarter' data collection, trend analysis and forecasts;
   d) reduce environmental impacts through low-emission vehicle technology; and
   e) reduce the need to travel and transport goods through advances in digital communications.

9.1.3. The objectives of the IA are as follows:

1. Improve air quality
2. Reduce carbon dioxide emissions from transport overall with particular emphasis on road transport
3. Conserve and enhance biodiversity, green infrastructure and geodiversity assets

4. Conserve and enhance the European sites
5. Conserve and enhance the character and quality GM's landscapes and townscapes
6. Conserve and enhance the quality and distinctiveness of historic and cultural heritage
7. Conserve and enhance the water environment
8. Conserve soil and agricultural resources and seek to remediate / avoid land contamination
9. Reduce risk of flooding and increase resilience to the effects of a changing climate
10. Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling
11. Reduce the need to travel by car or move goods by road and promote sustainable modes of transport
12. Promote economic growth and job creation across the sub-region and improve access to jobs for all
13. Coordinate land use and transport planning across GM
14. Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society
15. Improve health and wellbeing for all citizens and reduce inequalities in health

9.2. Results

9.2.1. The assessment results are shown in Table 10. A reasonable degree of compatibility between the two sets of objectives has been found although some potential areas of conflict have been identified for Strategy objective i) Support sustainable economic growth and a number of unclear outcomes for the other Strategy objectives.

9.2.2. Taken individually, the degree of compatibility between the two sets of objectives is patchy as particular Strategy objectives clearly pursue particular sustainability objectives, with the compatibility against other aspects of sustainability unclear. The picture improves when the Strategy objectives are taken together with some Strategy objectives providing coverage for conflicts and unclear outcomes identified for other Strategy objectives, however, some gaps in compatibility remain as discussed below. Recommendations are provided in order to improve the compatibility between Strategy objectives and IA objectives.

9.3. Recommendations

Strategy objective i. To support sustainable economic growth

This objective (together with its sub-objectives) is broadly compatible with IA objectives which aim to:
- promote economic growth and job creation across the subregion and improve access to jobs for all; and
- promote greater equality of opportunity for all citizens.

However, Strategy objective 1 is highly likely to promote interventions such new road schemes, road widening etc, despite the introduction of further public transport, which are likely to result in potential conflicts against IA objectives pursuing the protection of the environment (IA objectives 1-10).

The pursuit in parallel of Strategy objective iii. 'To help protect our environment' (see discussion below) provides important clues in terms of Strategy approach to protecting the environment and is likely to ensure that the potential conflicts that have been identified are minimised to satisfactory levels.

Strategy objective ii. To improve the quality of life for our residents

This objective (together with its sub-objectives) is broadly compatible with IA objectives which aim to:
- Improve air quality;
- Promote economic growth;
- Reduce the need to travel by car and promote sustainable modes of transport;
- Promote greater equality of opportunity for all citizens; and

- Improve health and wellbeing.

A number of uncertain outcomes have been identified against some IA objectives pursuing the protection of the environment (IA objectives 2-10), however, this is clarified through Strategy objective iii. 'To help protect the environment' (see below) which addresses most of these IA objectives.

Strategy objective iii. To help protect the environment

This objective (together with its sub-objectives) is broadly compatible with IA objectives which aim to:
- Improve air quality;
- Conserve and enhance biodiversity, green infrastructure and geodiversity;
- Conserve and enhance European sites;
- Conserve and enhance the water environment;
- Conserve soil and agricultural resources and seek to remediate / avoid land contamination;
- Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling;
- Reduce the need to travel by car or move goods by road and promote sustainable modes of transport;
- Promote economic growth and job creation across the sub-region and improve access to jobs for all;
- Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society; and
- Improve health and wellbeing for all citizens and reduce inequalities in health.

However, compatibility is uncertain for IA objectives:
- Reduce carbon dioxide emissions;
- Conserve and enhance the character and quality GM's landscapes and townscapes;
- Conserve and enhance the quality and distinctiveness of historic and cultural heritage; and
- Reduce risk of flooding and increase resilience to the effects of a changing climate.

In order to improve the compatibility with the above IA objectives, it is recommended that the following changes are introduced to this Strategy objective:
- For sub-objective b) add *'including carbon emissions'* at the end of the sub-objective to make it clear that carbon emissions are a key consideration;
- In order to include landscape, townscape and heritage considerations which are clearly missing, the wording of sub-objective d) should be as follows:
  'a reduction of the impact that transport can have on natural and built environments and landscapes'
- Introduce a new sub-objective *'a reduction in the risk of flooding'* to recognise the importance of this theme in the context of transport planning and the protection of the environment.

Strategy objective iv. To develop Greater Manchester as an innovative city region we need to support investment in transport

This objective (together with its sub-objectives) is broadly compatible with IA objectives which aim to:
- Reduce carbon emissions;
- Promote economic growth and job creation across the subregion and improve access to jobs for all;
- Reduce the need to travel by car and promote sustainable modes of transport;
- Promote greater equality of opportunity for all citizens; and
- Improve health and wellbeing.

A number of uncertain outcomes have been identified against some IA objectives pursuing the protection of the environment (IA objectives 1, 3-10), however, this is clarified through Strategy objective iii. 'To help protect the environment' (see discussion above) which addresses these concerns.

However, it is recommended that a new sub-objective is considered to recognise the importance of a changing climate and the need for innovation in this area:

'increase resilience of the transport infrastructure to the effects of a changing climate'

Lastly there is an obvious gap in the compatibility assessment with regards to IA objective 13. Coordinate land use and transport planning across GM as none of the Strategy objectives address this aspect. It is recommended that the IA objective becomes a Strategy objective with the following sub-objectives (derived from the assessment aid questions in IA Framework):

v. *To coordinate land use and transport planning across Greater Manchester through supporting:*

a) *the development of compact and mixed use development;*
b) *housing and employment development in areas that are served by public transport or ensure that new services can be provided; and*
c) *the development of urban centres and residential areas with attractive streets and public spaces that are easy to walk and cycle around.*

The inclusion of this additional objective would address this important gap in the Strategy objectives and improve the compatibility assessment results.

The recommendations above were taken into consideration by TfGM when developing the draft final set of objectives for the Transport Strategy.

9.4. Final Transport Strategy objectives

9.4.1. The Final Draft Transport Strategy confirms the 2040 vision of Manchester having "World class connections that support long term sustainable economic growth and access to opportunity for all". The four key elements of this vision and which represent the objectives of the Strategy continue to be:

- Supporting Sustainable Economic Growth
- Improving the Quality of Life
- Protecting our Environment
- Developing an Innovative City Region

9.4.2. TfGM have further developed these objectives, the rationale for them and the key challenges to achieving them in the Final Draft Transport Strategy. The recommendations above have been taken into account in the development of the policies and interventions set out in Parts 2 and 3 of the Transport Strategy which have been developed to provide a comprehensive toolkit for addressing all of the challenges that have been identified.

Table 10.   Compatibility Assessment Summary

Greater Manchester Transport Strategy Objectives	Integrated Assessment Objectives														
	Improve air quality	Reduce carbon dioxide emissions from transport overall with particular emphasis on road transport	Conserve and enhance biodiversity, green infrastructure and geodiversity assets	Conserve and enhance the European sites	Conserve and enhance the character and quality GM's landscapes and townscapes	Conserve and enhance the quality and distinctiveness of historic and cultural heritage	Conserve and enhance the water environment	Conserve soil and agricultural resources and seek to remediate / avoid land contamination	Reduce risk of flooding and increase resilience to the effects of a changing climate	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport	Promote economic growth and job creation across the sub-region and improve access to jobs for all	Coordinate land use and transport planning across GM	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society	Improve health and well being for all citizens and reduce inequalities in health
i. To support sustainable economic growth	X	X	X	X	X	X	X	X	X	X	?	✓	?	✓	?
ii. To improve the quality of life for our residents	✓	?	?	?	?	?	?	?	?	?	✓	✓	?	✓	✓
iii. To help protect our environment	✓	?	✓	✓	?	?	✓	✓	?	✓	✓	✓	?	✓	✓
iv. To develop Greater Manchester as an innovative city region we need to support investment in transport	?	✓	?	?	?	?	?	?	?	?	✓	✓	?	✓	✓

Key:

√	Broadly Compatible
X	Potential Conflict
?	Depending upon the nature of the implementation measure
NR	Not Relevant / No Relationship

10. Assessment of Alternatives

10.1. Introduction

10.1.1.   In conducting the IA, account has been taken of the SEA Directive requirement that the Environmental Report should consider:

10.1.2.   'reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme' and give 'an outline of the reasons for selecting the alternatives dealt with' (Article 5.1 and Annex I h).

10.2. Defining strategic alternatives

10.2.1.   TfGM has developed two alternative strategic scenarios in response to the Transport Vision of 'world class connections that support long term, sustainable economic growth and access to opportunity for all'.

10.2.2.   A full description of each of the two alternative scenarios under consideration is provided in Appendix A. Alternative 1 considers a 'Business as Usual' approach which is the current LTP3 Strategy, whereas Alternative 2 takes a 'Balanced Approach' with an additional range of interventions identified across all spatial themes. Alternative 2 will also involve proactive identification of opportunities and issues across GM and have an integrated (multi-modal) approach to identifying priorities for different types of travel, as defined by the 'spatial themes' of:

- Global Connectivity

- City-to-City links

- Travel to and within the Regional Centre

- Travel Across the Wider City Region

- Connected Neighbourhoods

10.3. Assessing alternative strategic scenarios

10.3.1.   The alternative strategic scenarios presented in Appendix A were assessed using the IA framework. The outcomes of this process are shown in full in Appendix D and then summarised Table 1 below and the subsequent discussion.

10.3.2.   Both alternatives and their constituent themes have been assessed against the various IA objectives. This has been done using a scale of effect as follows:

Assessment Scale		Assessment Category	Significance of Effect
+++		Large beneficial	Significant
++		Moderate beneficial	
+		Slight beneficial	Not Significant
0		Neutral or no obvious effect	
-		Slight adverse	
--		Moderate adverse	Significant
---		Strong adverse	
?		Effect uncertain	
+/-		Combination of slight beneficial and adverse effects	Not significant
++	-	Combination of moderate beneficial and slight adverse effects	Significant

10.3.3.   Those effects which are either moderate or major are deemed to be significant. In addition, commentary on each assessment is provided.

10.3.4.   The subsequent discussion includes recommendations and refinements to be considered in developing the preferred option for the long-term strategy.

10.4. Assessment summary for the strategic alternatives and recommendations

10.4.1.   A discussion of the assessment summary results presented in Table 11 follows, considering environmental, economic and social (including health and inequalities) effects. Recommendations regarding the most sustainable strategic scenario are also provided.

10.4.2.   In general terms it is important to note that there are a number of key differences between Alternative 1 (Business as Usual LTP3 approach) and Alternative 2 (Balanced Approach). While Alternative 1 had priorities identified for each mode and a number of cross-cutting themes, proposed interventions focus on economic growth areas and improving access to them. It was considered that this would limit both in terms of the number of citizens affected and the spatial geography, the effects of any Transport Strategy. Alternative 2 proposes a different approach in that, while there will still be a focus on economic growth areas, a range of interventions are identified across all spatial themes. This will mean that the effects of the Strategy will be more widely experienced both in terms of citizens and geographical spread.

10.4.3.   Alternative 2 takes a more pro-active, much closer and integrated approach to liaison and working with other relevant key stakeholders, statutory bodies and cross boundary local authorities. Alternative 2 also takes a longer term approach to investment / funding and less reliance on short term funding bids. This should mean that a greater range of opportunities for improving transport across GM can be identified. Similarly, it should also have the additional benefit of allowing negative issues / effects to be identified at a much earlier stage in the planning / scheme development process.

10.4.4.   In environmental terms, for the most part both Alternative 1 and Alternative 2 have an even performance against the IA environmental objectives. This is in large part due to Alternative 2 being made up of a large number of intervention types originally proposed in Alternative 1 – in short it could be said that Alternative 2 builds upon key aspects of Alternative 1. While Alternative 2 builds upon the positive effects of Alternative 1, it does also retain some of the negative effects. This can be most clearly seen through the Highways theme, where there is a retained commitment to 'building new capacity'. In environmental terms though, it is anticipated that effects will be largely similar between both strategy approaches – this can be seen, for example, in relation to conserving and enhancing the character and quality of GM's landscapes and

townscapes, historic environment and biodiversity with a combination of positive and negative effects being identified. **It is recommended that it is made much clearer in the new Strategy that consideration of protecting landscapes and townscapes, the historic environment and biodiversity is made as part of the development / design of any relevant intervention in order to address the identified negative effects.** Text could be added to Part 2 of the Strategy in relation to TfGM Project Management Procedures to clarify this issue.

10.4.5. One area of the environment where both Strategic approaches perform less well is considered to be in the area of 'conserving and enhancing the water environment'. In both Strategic approaches, interventions would be made which could have a negative effect on the water environment. **It is recommended that it is made much clearer in the new Strategy that consideration of protecting the water environment is made as part of the development / design of any relevant intervention.** Text could be added to Part 2 of the Strategy in relation to TfGM Project Management Procedures to clarify this issue.

10.4.6. Alternative 2 performs better than Alternative 1 in a number of environmental areas – namely in relation to:

- 'Improve Air Quality';

- 'Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport';

- 'Promoting the prudent use of natural resources, minimise the production of waste and support re-use and recycling'; and

- 'Reduce the need to travel by car or move goods by road and promote sustainable modes of transport.

10.4.7. Alternative 2 also has clearer goals of improving air quality and reducing carbon dioxide emissions resulting in moderate positive effects for these two environmental objectives in comparison to only slight positive effects for Alternative 1. The potential for traffic growth remains associated for some themes in both alternatives and therefore air quality negative effects are also identified. The moderate positive effects identified for Alternative 2 cut across a number of themes and IA Objectives and will be the result of a number of enhanced interventions – for example, the approach to electric vehicles will enable more rapid uptake of ultra-low-emission vehicles (ULEVs), with a particular focus on goods vehicles and buses, and developing ULEV car clubs. This will also help to improve the health of all citizens of Greater Manchester (see below).

10.4.8. In terms of promoting the prudent use of natural resources, it is considered that Alternative 2 is much clearer in the need to reduce car use (and thereby resulting in fuel saving– a prudent use of a natural resource and a minimisation of waste). For example, a target of delivering a 10% cycling mode share by 2020 has been set. However, the approach to the issue of 're-use and recycling' is much less clear (in both Alternatives) and **it is recommended that it is made much clearer in the new Strategy that consideration of the re-use and recycling of materials should be made as part of the development / design of any relevant intervention.** Text could be added to Part 2 of the Strategy in relation to TfGM Project Management Procedures to clarify this issue.

10.4.9. From an economic perspective, it is considered that Alternative 2 is much more positive in terms of 'Promoting economic growth and job creation across the sub-region and improving access to jobs for all'. This is shown by the moderate positive effects identified. In large part this is due to Alternative 2 having a greater geographical spread through its 'Spatial Themes' and thereby having a positive effect on a greater range of citizens, whilst also recognising key growth areas such as Manchester Airport Enterprise Zone and the concept of the 'Northern Powerhouse' economy and making specific provision for these as well as recognising the key concepts of closer co-ordination / partnerships with other bodies and new approaches to issues such as funding over the long-term, to help make these economic visions a reality.

10.4.10. In addition Alternative 2 recognises that proactive identification of opportunities and issues for GM would take a co-ordinated and integrated approach with a range of authorities and key stakeholders. Importantly, this Balanced Approach would also involve joint working to develop the GM Spatial Framework with transport a key consideration in identifying sites for development.

10.4.11.   In relation to the social perspective, it is considered that Alternative 2 promotes a greater equality of opportunity for all citizens, as well as likely to improve the health and well-being for all citizens. This approach will also reduce inequalities in health and help achieve a fairer society. In large part this is also due to Alternative 2 having a greater geographical spread through its 'Spatial Themes' and thereby having a positive effect on a greater range of citizens, but it is also due to interventions which will be derived improving accessibility to the transport network and key facilities such as health centres. These positive effects will be experienced across a range of income groups and people with different health and mobility issues. Protection will also be afforded to more vulnerable groups through interventions such as increased security / safety on the public transport network and efforts to reduce the number of accidents (for example through the introduction of 20mph zones). An ambition has been stated of having 'near zero fatalities'.

10.4.12.   In summary, while many of the effects of Alternative 1 and Alternative 2 would be the same, it is considered that the wider geographical spread of Alternative 2, its more pro-active and co-ordinated approach to liaison and planning with other bodies and its likely more focused interventions make Alternative 2 to be the best approach in terms of environmental, economic and social issues. Notwithstanding this outcome, it is still the case that implementation of interventions derived from Alternative 2 would require the satisfactory minimisation of identified negative effects.

10.4.13.   It should be noted that it is not the purpose of the IA to decide the alternative to be chosen for the Transport Strategy. This is the role of the decision makers who will have to make decisions about the plan to be adopted. The IA provides information on the relative performance of the strategic scenarios and can make the decision making process more transparent.

10.4.14.   TfGM has taken Alternative 2 forward as the basis for the development of the Draft Transport Strategy.

Table 11. Assessment summary for the Alternative Strategic Scenarios

IA Objectives	Alternative 1 (Business as Usual)	Alternative 2 (Balanced Approach)	
1. Improve air quality	+/-	++	-
2. Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport	+/-	++	-
3. Conserve and enhance biodiversity, green infrastructure and geodiversity assets	+/-	+/-	
4. Conserve and enhance the European sites (HRA specific objective)	?	?	
5. Conserve and enhance the character and quality of GM's landscapes and townscapes	+/-	+/-	
6. Conserve and enhance the quality and distinctiveness of historic and cultural heritage	+/-	+/-	
7. Conserve and enhance the water environment	-	-	
8. Conserve soil and agricultural resources and seek to remediate / avoid land contamination	+/-	+/-	
9. Reduce risk of flooding and increase resilience to the effects of a changing climate	-	-	
10. Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling	+	++	
11. Reduce the need to travel by car or move goods by road and promote sustainable modes of transport	+/-	++	
12. Promote economic growth and job creation across the sub-region, and improve access to jobs for all	+	++	
13. Coordinate land use and transport planning across GM	+	++	
14. Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective)	+	++	
15. Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective)	+	++	

11. Assessment of Draft Transport Strategy

11.1. Introduction

11.1.1.   This Section predicts and evaluates the likely sustainability effects arising from the proposed Draft Transport Strategy.

11.1.2.   TfGM's vision for Greater Manchester is to have 'World class connections that support long-term, sustainable economic growth and access to opportunity for all'. There are four key elements to this vision as follows:

- Supporting economic growth
- Improving quality of life
- Protecting our environment
- Developing an innovative city-region

11.1.3.   These key elements have been assessed in an earlier assessment exercise (Compatibility Assessment) - see Section 9.

11.1.4.   In order to achieve this vision and fulfil the key elements outlined above, TfGM have developed a series of Principles and Spatial Themes with Ambitions associated to each in the Draft Strategy document. These are detailed in Table 12.

Table 12.   Draft Transport Strategy Principles and Themes

Network Principle	Our Ambition by 2040
Integration at the heart of our Transport Strategy 2040	A fully integrated sustainable transport system which enables customers to move seamlessly between services and modes of transport, supported by sophisticated travel choices campaigns and programmes; personalized journey planning and wayfinding tools; and paid for via a single cashless personal travel account. We must also have a fully integrated approach to land use planning and transport that can support delivery of transformational levels of housing and employment growth without significant increases in traffic levels and congestion.
An accessible and inclusive Network	A fully inclusive and affordable sustainable transport system for all
A resilient Network	A transport network that is well-maintained and managed across Greater Manchester, and much better able to withstand unexpected events and severe weather conditions.
A safe and secure transport system	To eradicate deaths on our roads. Poor perceptions of personal security will no longer be a significant barrier to people using public transport.
Moving toward zero emissions	Greater Manchester will be an established world leader in zero emission transport technologies and techniques. We will have reduced tailpipe emissions from transport to zero. Air quality problems will be a thing of the past.

Modal Principle	Our Ambition by 2040
Highways: The Arteries of our City Region	A consistent and co-ordinated approach to highways management which delivers a reliable and resilient network which focuses on the efficient and effective movement of people and goods to, from and across Greater Manchester.
Developing a comprehensive Walking and Cycling Network	A comprehensive network of on and off-road walking and cycling routes that make it easier and safer for people to walk and cycle to key local destinations, such as local centres, jobs, healthcare and education and for leisure purposes.
Public Transport: Keeping GM Moving in 2040	A fully integrated, customer-focused, low-emission public transport network that provides an attractive and accessible alternative to travelling by car to key Greater Manchester destinations.
Goods and Servicing	All goods will be in Greater Manchester moved by zero emission vehicles. The negative impact of freight vehicles on our local communities will be minimised.

Spatial Theme	Our Ambition by 2040
Global Connectivity	Our ambition is to support growth at the Airport and the adjacent Enterprise Zone by: bringing many more passengers within a 1hr and 2hr rail journey time; improving the reliability of the highway network; and ensuring that public transport services better meet the needs of airport passengers and employees. Fewer people will drive to work at the Airport, with transformed sustainable transport connectivity to the Airport from across Greater Manchester and beyond.
Delivering Better City to City Links	Our Ambition is to see GM at the heart of a successful Northern Powerhouse Economy, with transformed connectivity between the major cities of the North of England, and to the Midlands, London and Scotland. The will be a step-change in quality, speed and reliability of our city-to-city rail links, allowing travel to Liverpool, Leeds and Sheffield in 30 minutes or less and to London in just over an hour. The strategic highway network will reliably allow 'mile a minute' journey times. More freight will be moved by rail or water. Transformed infrastructure and smart ticketing and customer information will encourage more trans-northern journeys to be made by public transport.
Travel to and Within our Regional Centre	Our ambition is for fully integrated transport networks that support rapid growth in the economy: with HS2 and Northern Powerhouse Rail services serving the heart of the city centre; traffic levels held at or below 2016 volumes (with fewer trips by goods vehicles during the peak); and with at least 70% of peak hour trips by public transport and 15% on foot or by bike. There will be much better public transport, pedestrian and cycle connections between the City Centre and the outer parts of the Regional Centre and key destinations will be accessible by public transport 24/7. The pedestrian and cycle network will be safe and secure at all times and the negative impacts of traffic on residents will be minimised.
Travel across the Wider City-region	Our ambition is that our regenerated town centres easy to get to, particularly by sustainable modes, and pleasant to walk around and spend time in. Journeys across the area, between centres or to other major destinations will be made easier through better and faster orbital links, reduced congestion, more reliable buses, more effective interchange and better-connected cycle routes. Road accidents will fall, year on year, moving towards our goal of zero

	deaths and serious injuries. The significant new development expected in GM will be accessible by public transport, so that the impact of the extra trips on the road network is mitigated.
Connected Neighbourhoods	Our ambition is for local neighbourhoods to be safer and more pleasant to walk and cycle around, with the impact of traffic on local roads reduced and a year-on-year reduction in accidents. Active travel will be the natural choice for many short journeys, 10% of which will be made by bike. Easier access to interchanges and to local centres will increase the proportion of journeys made by public transport and ensure that local facilities are supported.

11.1.5. The proposals associated with these Principles and Spatial Themes form Parts 2 and 3 of a draft Transport Strategy document dated January 2016 and have been assessed in two consecutive steps. First, the Network and Modal Principles (Part 2) were assessed and a set of initial recommendations for improvement of the sustainability performance of Part 2 of the Transport Strategy were provided to TfGM for consideration. Following an initial response from TfGM to the recommendations proposed, the assessment of the Spatial Themes in Part 3 has taken place.

11.1.6. All assessments have been undertaken against the Integrated Assessment (IA) Framework as set in Tables 7, 8 and 9. The assessment utilised the following significance scale:

Assessment Scale		Assessment Category	Significance of Effect
+++		Large beneficial	Significant
++		Moderate beneficial	
+		Slight beneficial	Not Significant
0		Neutral or no obvious effect	
-		Slight adverse	
--		Moderate adverse	Significant
---		Strong adverse	
?		Effect uncertain	
+/-		Combination of slight beneficial and adverse effects	Not significant
++	--	Combination of moderate beneficial and adverse effects	Significant

11.1.7. A summary of the assessment findings and recommendations to improve the sustainability performance of the Transport Strategy follow. Tables detailing the assessments are provided in Appendix E.

11.2. Assessment results

Network and Modal Principles

11.2.1. As already mentioned, the assessment first focussed on the Network Principles and the Modal Principles. A table showing the initial assessment scores for each IA objective and for each Principle is provided (Table 13). A discussion of the assessment results and a table compiling the

assessments recommendations follows (Table 15). The recommendations are aimed at improving the sustainability performance of the Principles against the IA objectives.

Table 13. Network and Modal Principles Assessment Summary

IA Objective		Integration at the heart of our Transport Strategy 2040	An accessible and inclusive Network	A resilient Network	A safe and secure transport system	Moving toward zero emissions	Highways: The Arteries of our City Region	Developing a comprehensive Walking and Cycling Network	Public Transport: Keeping GM Moving in 2040	Goods and Servicing
1	Improve air quality (Pre new principle)	++	+	+/-	+	++	-	++	+	++
	Improve air quality (Post new principle)	++	+	+/-	+	++	-	++	+	++
2	Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport (Pre new principle)	++	+	+/-	+	++	-	++	+	+/-
	Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport (Post new principle)	++	+	+/-	+	++	-	++	+	+/-
3	Conserve and enhance biodiversity, green infrastructure and geodiversity assets (Pre new principle)	++	--	0	0	0	+	--	+	-	-
	Conserve and enhance biodiversity, green infrastructure and geodiversity assets (Post new principle)	++	-	0	0	0	+	-	+	-	-
4	Conserve and enhance the European sites (HRA specific objective) (Pre new principle)	++	--	0	0	0	+	--	+	--	+/-
	Conserve and enhance the European sites (HRA specific objective) (Post new principle)	++	-	0	0	0	+	-	+	-	+
5	Conserve and enhance the character and quality of GM's	++	--	0	0	0	+	--	+	-	-

No.	IA Objective											
	landscapes and townscapes (Pre new principle)											
	Conserve and enhance the character and quality of GM's landscapes and townscapes (Post new principle)	++	-	0	0	0	+		-	+	0	0
6	Conserve and enhance the quality and distinctiveness of historic and cultural heritage (Pre new principle)	++	--	0	0	0	+	++	--	+	-	-
	Conserve and enhance the quality and distinctiveness of historic and cultural heritage (Post new principle)	++	-	0	0	0	+	++	-	+	0	0
7	Conserve and enhance the water environment (Pre new principle)		--	0	-	0	0		--	0	-	-
	Conserve and enhance the water environment (Post new principle)		-	0	0	0	0		-	0	0	0
8	Conserve soil and agricultural resources and seek to remediate / avoid land contamination (Pre new principle)	++	--	0	0	0	0	++	--	+	+/-	+/-
	Conserve soil and agricultural resources and seek to remediate / avoid land contamination (Post new principle)	++	-	0	0	0	0	++	-	+	+	+
9	Reduce risk of flooding and increase resilience to the effects of a changing climate (Pre new principle)		--	0	+/-	0	0	++	--	0	-	-
	Reduce risk of flooding and increase resilience to the effects of a changing climate (Post new principle)		-	0	+	0	0	++	-	0	0	0
10	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling (Pre new principle)	+/-		0	0	0	+	-		0	+/-	-

	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling (Post new principle)	+	0	0	0	+	0	0	+	0
11	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport (Pre new principle)	+++	++	0	+	+	--	++	+++	+/-
	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport (Post new principle)	+++	++	0	+	+	-	++	+++	+/-
12	Promote economic growth and job creation across the sub-region, and improve access to jobs for all (Pre new principle)	++	+/-	0	+	+	+/-	+	++	++
	Promote economic growth and job creation across the sub-region, and improve access to jobs for all (Post new principle)	++	+	0	+	+	+	+	++	++
13	Coordinate land use and transport planning across GM (Pre new principle)	+++	0	0	0	0	-	+	+	0
	Coordinate land use and transport planning across GM (Post new principle)	+++	0	0	0	0	0	+	+	0
14	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective) (Pre new principle)	++	++	++	++	++	++	++	+++	++
	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective) (Post new principle)	++	++	++	++	++	++	++	+++	++
15	Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective)	++	++	++	++	++	++	++	+++	++

(Pre new principle)										
Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective) (Post new principle)	++	++	++	++	++	++	++	+++	++	

11.2.2. The initial results identified a number of areas of strength, but also some areas of weakness in relation to the performance of these Principles against the IA Objectives as follows:

Network Principles

1. The Network Principles have been found to be positive in terms of improving air quality and reducing carbon dioxide emissions. This aspiration has been demonstrated for example, in the Strategy through the constant recognition of a preference toward walking and cycling. It is recognised that moving toward the ambitious GM targets will have huge air quality benefits for the region – particularly within the urban centres.

2. It has also been found that the Network Principles will lead to a reduction in the need to travel by car – including for those with mobility issues who will likely find accessibility to the transport network improved.

3. In relation to economic aspects, it is anticipated that the Network Principles could positively support potential job creation and access to employment opportunities, as well as increased travel horizons for the workforce. A better perception of passenger safety could also increase the 'night-time economy'. Further economic benefits are anticipated from having a healthier workforce e.g. from increased walking etc and reduced air pollution – this is anticipated to result in an increase in workforce productivity and a reduced requirement for health services. Note though that it is considered that the Strategy could expand upon these points (see Recommendations in Table 15).

4. Where they are relevant, the Principles have also been found to be positive (frequently significantly so) in terms of Health Impact on the population of Greater Manchester in a number of areas such as accessing key services including healthcare provision and services such as leisure / recreation and employment opportunities.

5. The Principles are also considered to be positive in terms of improving levels of activity, reducing negative impacts from poor air quality, with particular benefits for those people with breathing conditions and a reduction in noise pollution which will have particularly beneficial results for children. Safety and security are also enhanced by provisions within the Principles, such as reduction in speeds and severance, with a corresponding positive impact in reduction in accidents and increase in usage of positive elements such as cycling and walking.

6. Notwithstanding the positive impacts from the Principles on Health, a number of recommendations have been made to strengthen even further the benefits (see Recommendations in Table 15). For example it is recommended to target the travel information so that people are able to find the best routes for them, and it will also be important to make sure that the information is accessible, including making it available in other languages and making it available to people with disabilities. This will ensure as wide a range of the population as possible benefit.

7. Similar positive effects have been identified in terms of Equality. For example, the Principles improve significantly accessibility and integration across a wide range of the population including those with mobility issues, older people, those on low incomes, people without access to cars and people from minority communities. Likewise though, there are a number of areas where it is considered the Equality benefits could be strengthened and made as inclusive as possible (see Recommendations

in Table 15). For example it is recommended that the strong partnerships that have been forged need to be maintained to ensure the support continues. Similarly it is recommended that education and awareness courses need to be targeted at the right demographics and behaviour types in order to be most effective.

8. Notwithstanding the positive aspects of the anticipated improvements in air quality and reduction in emissions, for the most part across all the Network Principles there is a general lack of consideration of one of the main key elements of the GM Vision, namely 'Protecting our Environment'. In some instances this is due to their being no relevance and this is to be expected – for example Network Principle 'A safe and secure Transport System' is concerned with eradicating deaths on our roads and perceptions of the safety of using public transport. These issues are not relevant to any of the environmental IA Objectives (though it is recognised that they do relate to other IA Objectives).

9. Where a relevance between a Network Principle and an environmental IA Objective has been identified, it has been recommended that it is possible to strengthen individual Principles to ensure that environmental matters are dealt with more specifically (see Recommendations in Table 15).

10. Overall, it has been concluded that the Network Principles would benefit from the addition of a new Network Principle that is specifically concerned with environmental matters (apart from Zero Emissions which are already covered in its own principle) and which would be 'cross cutting' to all the other Network Principles as well as applying to the Modal Principles and the Spatial Themes. Note that text proposals for this new Network Principle are detailed below.

Modal Principles

1. It is noted that the Transport Strategy will result in an attractive, efficient and well integrated public transport network. There will also be high quality walking and cycling infrastructure. All these elements will result in air quality improvements – this will be further enhanced through the pursuit of 'Clean Air Zones'. Note though that it is considered that the Strategy could expand upon these points and in some areas, for example relating to freight, there is uncertainty as to the potential outcomes. In some areas, e.g. in relation to highways, there is potential ambiguity in that this Principle may encourage further / increased car use, through a more effective highway network. Recommendations have been made in this regard (see Recommendations in Table 15).

2. It is considered that modal shifts and indeed an active modal revolution could encourage / provide economic opportunities across the region - for example, the provision of cycle hire schemes, opening of leisure facilities, design and implementation of cycle routes, and café's or retail businesses close to cycle connections. Recommendations have been made in this regard (see Recommendations in Table 15).

3. In relation to the Health Impact on the population of Greater Manchester, where applicable, the Modal Principles have been found to be positive – largely significantly so. Examples of this include improving accessibility for a range of population groups (children, Black & minority ethnic, older people, those with disabilities, those without access to a car etc). Similarly, health benefits for a wide range of groups has been found in terms of reduction in emissions – with children, people in deprived areas and the 19% of GM residents with long term breathing conditions expected to particularly benefit. Improvements in safety have also been noted and again, this will benefit a range of population groups – with pedestrians and cyclists particularly benefitting. Other positive benefits likely to be found and beneficial to health include a reduction in severance, improvements in connectivity and reduction in traffic congestion.

4. As with the Network Principles, it has been found that despite the numerous positive aspects, there are a number of areas which could be strengthened to further enhance positive effects (see Recommendations table). One example of these recommendations is to ensure that any tram-train is implemented in such a way that conflicts with other road users are minimised – their interaction with cars need to be clear, and if they are to be used in pedestrianised areas then it needs to be clear for pedestrians and cyclists when it is safe to cross the tracks. There should also be warnings discouraging cyclists from going too close to the tracks.

5. For the most part, the Modal Principles are positive in terms of Equality through improving accessibility, reducing severance, accidents and air, noise and light pollution.

6. There are though a number of areas in relation to Equality, where it is unclear whether effects from the Principle will be positive or negative. One example of this relates to affordability of transport, depending on the demand management schemes chosen.

7. As with the area of Health, it is considered that the issue of Equality could be strengthened positively by a number of recommendations (see Recommendations in Table 15). One example of this is in relation to improving accessibility etc where it is recommended that in order to maximise the beneficial impact, it will be important to target the travel information so that people are able to find the best routes for them, and it will also be important to make sure that the information is accessible, including making it available in other languages and making it available to people with disabilities.

8. In relation to Environmental issues, it has been found that there are a number of negative effects (frequently significant) anticipated from the Modal Principles. It is anticipated that in a number of areas 'hard' interventions (perhaps new road roads) and in the absence of mitigation, these type of interventions could have a negative effect on issues such as biodiversity, the water environment, the use of natural resources, production of waste etc.

9. There are though, a number of areas where the anticipated outcome is unclear – with a potential positive or negative effect. Examples of this includes in relation to the quality and distinctiveness of historic and cultural heritage, where in this instance, 'hard' interventions could have a negative effect but could also offer the opportunity to enhance settings by arresting decline and bringing the condition of assets up to a high standard.

10. In relation to the Modal Principles relevant to environmental issues, it has been recommended that the wording is changed to address the particular issues noted. Where these are negative effects, the suggested wording would act to reduce the significance of the effect, while where the effect is positive, the amended wording would act to bolster the positive (see Recommendations in Table 15).

11. As with the Network Principles, it is considered that substantial benefit could be gained from the development of a new 'cross cutting' Principle, specifically targeted at environmental issues – this would act to help ensure that environmental issues become a fundamental part of the Transport Strategy and therefore help to fulfil one of the key elements to the vision of 'Protecting our Environment'. This new 'cross cutting' Principle would also obviate the need for word changing concerning environmental issues in the other Principles as per recommendations above.

12. The following new Network Principle has been proposed for consideration by TfGM:

New Principle - Built and Natural Environment

Ambition by 2040: A transport system which will contribute to the protection and enhancement of the built and natural environment of Greater Manchester

The built and natural environment makes an important contribution to people's quality of life through providing spaces in which people live fruitful and healthy lives and which provide a safe and reassuring sense of place. An adequately protected and appropriately enhanced built and natural environment can help foster and develop a pride in our local areas and our diverse historic and cultural heritage. The built and natural environment thus has an important function in our mental and physical well-being, with a resultant effect on our cultural and economic productivity.

However, increased mobility by an increasing number of people has the potential to result in significant negative impacts on both the built and natural environments through causing congestion on roads and other elements of the transport network. There can also be unacceptable environmental cost in terms of pollution, biodiversity loss and flooding, or detrimental impacts on our landscapes, townscapes and cultural heritage

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and historic assets.

NATURAL ENVIRONMENT

In Greater Manchester, the natural environment includes a wide variety of land use types and landscapes, examples of which are urban and urban fringe, river corridors, ancient woodlands, reservoirs and waterbodies left after coal mining subsidence such as the Wigan Flashes and sites designated for nature conservation, all providing a variety of habitats for numerous species. The linear nature of many features of the transport system in Greater Manchester has created green corridors running along the side of roads and railways which are biodiversity rich.

The range of habitats and species found in Greater Manchester is long and impressive, and includes a diverse range of bird species such as barn owls, peregrine falcon and kingfisher, great crested newts, five species of bat, water voles, otter and badgers.

All the above elements come together to constitute Greater Manchester's 'Green Infrastructure'. Green Infrastructure not only helps to create more pleasant places to live, but brings important environmental, health and economic benefits. These can include improvements in physical activity opportunities, land regeneration or remediation, provision of habitat and opportunities for wildlife enhancement and movement. There is also good evidence that green space can make positive impacts on local economic regeneration, especially for job creation, business start up, increased land values and inward investment. Green space also has potential for enhancing social cohesion; it can bring people together, and can create community cohesion as different social groups engage with each other, thereby improving mental and cognitive health.

New transport projects have the potential to impact on habitats and species and more generally on the Green Infrastructure network, through direct landtake for infrastructure (which may contribute to fragmentation) and construction and operational disturbance (noise, vibration, light pollution etc) and emissions / contamination (air, water & soil), though it may also provide opportunities for enhancement.

Opportunities to enhance biodiversity and green infrastructure exist, through designing in biodiversity into transport interventions. These opportunities include for example, the development of wildflower meadows along linear features such as roads and railway lines, which will look attractive and also provide opportunities for pollinators. Similarly, biodiversity can be enhanced by the planting of suitable / native species of trees and hedgerows. Properly planned maintenance schemes can also enhance biodiversity, for example from the active control of invasive species.

There is a mix of land use types in GM e.g. heavily urbanised, suburban, urban fringe and rural locations but overwhelmingly the land use is urban. Despite the heavy urbanisation, there are areas within GM that are classified within the top grades of the Agricultural Land Classification system. The best and most versatile land is generally in the western part of the region – away from the upland Pennine areas. There is continuing pressure on greenfield areas for development and some of this pressure is driven by transport / infrastructure needs.

Transport projects must make best use of areas that are already urbanised and provide an opportunity for regeneration / improvements to land quality, including remediation of contaminated areas – a frequent legacy of GM's industrial history. Where use of agricultural land is unavoidable, measures should be taken to avoid those areas of the highest quality and aim to protect soil and agricultural holdings through avoidance of impacts such as contamination or severance.

GM has a wide range of water body types (rivers, canals, lakes, groundwater). Water bodies were frequently negatively impacted due to the industrial past of this region, but in recent decades there has been a marked and continuing improvement in water quality. Transport does pose a risk to water quality. For example, highway runoff can have relatively high pollutant loads especially after dry periods or following gritting operations. There is also of course the potential for pollution following a transport accident.

Due to the highly urban nature of GM, many rivers and other water bodies, along with ground surface types have been modified from their natural condition. This has resulted in limitations to the carrying capacity of the

drainage network and increased flood risk. Development of transport infrastructure can aggravate existing flood risk in a wide range of ways, for example by requiring land take from flood plains, or by changing the drainage regime etc. Expected climate change impacts in GM include increased risk of extreme flooding (from more frequent "heavy precipitation events") and more extreme weather events from higher temperatures and increased wind and rain in winter months.

Pollution of water bodies (including groundwater) and increased risk of flooding must be prevented, both during the construction and operation of any transport project. The challenges that a changing climate will bring must also be considered. This could be achieved via the appropriate use of SuDS in road drainage design/ transport interventions to enhance water quality and reduce pollution and flood risk. Opportunities also exist for creating blue infrastructure which can both help to manage localised flood risk and simultaneously create new habitats.

BUILT ENVIRONMENT

The built environment includes designated heritage assets such as registered parks and gardens and scheduled monuments – many of which are located across the GM area, as well as other buildings and public spaces. Industrial heritage assets are also an important component of the cultural and historic built environment of GM. Several elements of the transport infrastructure in the GM's area (bridges, stations etc) are designated heritage assets. Together, all these assets make an important contribution to the character of urban areas and can help foster a sense of community and a pride in a shared heritage. This character and sense of place can also help to make GM an attractive place to live in and visit.

Public spaces are an integral part of the built environment and can bring communities and people together. They can also encourage physical activity and recreation, restore a sense of pride in an area and attract businesses and jobs. Parts of GM's transport system e.g. station buildings and forecourts, streets and other pedestrian thoroughfares form a key element of GM's public spaces. These public spaces can be improved through tidying up the existing streetscape and decluttering the street, for example, removing unnecessary road markings and signs or merging functions, for example, moving a road sign to an existing lighting column rather than it having its own pole, and rethinking traffic management options such as reducing carriageway width and providing more generous pavements for pedestrians and green infrastructure.

Transport infrastructure and traffic can have a significant effect on the built environment and through this be detrimental to people's quality of life. New transport projects need to be sensitively designed to be sympathetic with existing character and quality and opportunities for improving built assets and their settings and public spaces should be examined. In addition, design for new transport projects needs to take into account the principles of Life Cycle Management and consider the prudent use of natural resources, minimise the production of waste and support re-use and recycling for all stages of the project from concept to decommissioning.

We will work with the DfT, Network Rail, train operating companies, Greater Manchester boroughs and other stakeholders such as Highways Agency, Natural England, the Environment Agency and Historic England to enhance the transport system's contribution to the built and natural environment. We will ensure that any activities we undertake to achieve this aim will be in accordance with the National Planning Policy Framework and all other relevant plans and policies.

11.3. Recommendations

11.3.1.   Table 15 below shows the recommendations arising from the detailed assessments presented in Appendix E.

11.3.2.   TfGM considered the results of the assessments and associated recommendations and their responses are presented in Table 15 as well. Of particular relevance is TfGM's amendment of the "low-emission" Network principle to "environmentally-responsible" to pick up on the recommendation concerning coverage of wider natural and built environmental issues.

11.3.3. Table 14 shows assessment results before and after the introduction of the new environmentally responsible principle which reflected positively on the assessment scores for most of the environmental objectives.

11.3.4. The assessments of the Spatial Themes that follow were undertaken already taking into consideration this important amendment to the Transport Strategy and this has also reflected positively on the assessment scores for most of the environmental objectives.

Spatial Themes

11.3.5. Table 14 shows the initial assessment scores for each IA objective and each Spatial Theme. A discussion of the assessment results and Table 16 compiles the assessments recommendations and TfGM's responses.

Table 14. Summary assessment for Spatial Themes

IA Objective		Global Connectivity		Delivering better city to city links		Travel to and within our regional centre	Travel across the wider city region		Connected Neighbourhoods
1	Improve air quality	-		+		+	+		+
2	Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport	-		+		+	+		+
3	Conserve and enhance biodiversity, green infrastructure and geodiversity assets	++	--	++	--	+/-	++	--	+
4	Conserve and enhance the European sites (HRA specific objective)	*See HRA Stage 1 Screening Report that accompanies the Transport Strategy*							
5	Conserve and enhance the character and quality of GM's landscapes and townscapes	+/-		+/-		+	+/-		+
6	Conserve and enhance the quality and distinctiveness of historic and cultural heritage	+/-		+/-		+	+/-		+
7	Conserve and enhance the water environment	+/-		+/-		+/-	-		+/-
8	Conserve soil and agricultural resources and seek to remediate / avoid land contamination	+/-		+/-		+/-	+/-		+
9	Reduce risk of flooding and increase resilience to the effects of a changing climate	--		--		-	++	--	+/-
10	Promote the prudent use of natural resources, minimise the production of waste and support	-		-		-	-		-

	re-use and recycling					
11	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport	+++	+++	++	++	++
12	Promote economic growth and job creation across the sub-region, and improve access to jobs for all	+++	+++	++	++	+
13	Coordinate land use and transport planning across GM	+	0	++	++	+
14	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective)	++	++	++	++	+++
15	Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective)	++	++	++	++	+++

11.3.6.   The results identify a number of areas of strength, but also some areas of weakness in relation to the performance of these Spatial Themes against the IA Objectives as follows:

1. As noted above, a new Principle will be developed by TfGM that will amend the "low-emission" network principle to "environmentally-responsible" to pick up on the recommendation concerning coverage of wider natural and built environmental issues. This new Principle is therefore an important supporting component to any potential interventions derived from the Spatial Themes and will ensure the adequate addressing of the full range of environmental issues relevant to schemes or interventions proposed.

2. The Transport Strategy will include a range of new transformational infrastructure, as well as the enhancement of existing infrastructure. Proposed examples include new and improved rail lines and associated stations, new and improved road schemes, a new wharf on the ship canal at Port Salford, as well as a range of pedestrian and cycle links. All these schemes would have the potential for effects on the environment – both positive and negative. In addition to any consideration given under the new Network Principle of "Environmentally Responsible", it is anticipated that these issues would be addressed during any environmental assessment or formal Environmental Impact Assessment (EIA) carried out for these schemes (level of assessment to be appropriate to the nature of the scheme). Negative effects would be addressed via appropriate mitigation and opportunities for enhancement would be detailed (see Recommendations table below).

3. It is also the case that the Spatial Themes propose a number of interventions which would result in a reduction in the need for new infrastructure. This includes targeted travel choice interventions, car club / sharing etc. In short, it is a key theme of the Transport Strategy to ensure that best use is made of existing infrastructure assets. This will have a range of environmental benefits such as reducing construction impacts, reducing waste and the prudent use of natural resources.

4. The Transport Strategy via interventions outlined along with the Spatial Themes provides a unique opportunity to highlight key elements of the industrial heritage of the GM area. Features such as the historic Manchester Piccadilly railway station, as well as the extensive canal network in the area could be enhanced to allow modern use, while also respecting their legacy.

5. The proposed interventions also include the development of Green Infrastructure which provides an important opportunity to enhance the environment in a range of ways – for example it could be used

to enhance biodiversity habitats, or to enhance the landscape through careful planting on native species.

6. All the Spatial themes make significant positive contributions to reducing the need to travel by car or move goods by road and promote sustainable modes of transport, more significantly so Global Connectivity and Delivering Better City to City Links.

7. All the Spatial themes make positive contributions to economic growth, more significantly so Global Connectivity and Delivering Better City to City Links. This is due to the improved public transport and walking and cycling links to jobs associated with the expansion of Manchester Airport and associated Airport Enterprise zone and the Atlantic Gateway, and the transformation change in the city-to-city rail links and associated interchange facilities, respectively.

8. All the Spatial Themes are positively aligned with the need to promote greater equality of opportunity for all citizens and the need to improve their health & well-being. Of particular note is the Spatial Theme 'Connected Neighbourhoods'.

9. Concerning the Spatial Theme 'Connected Neighbourhoods' it is suggested that the section Environmental Quality is re-worked as per recommendations in Table 15.

Table 15.   Recommendations for Network and Modal Principles

Network Principle: Integration at the heart of our Transport Strategy 2040
IA Obj.	Assessment summary	Recommendation	How has this recommendation been addressed?
1.	Working to encourage a better integrated public transport network and expanding the transport offer in GM positively impacts on this principle with a positive effect on improving air quality by reducing the amount of travel by private car. The Principle specifically comments on the provision of a low-emission car club offer in Greater Manchester as well as cycle hire schemes. Throughout the document there is a recognition of a preference towards walking and cycling and thus seeking to support improvements to air quality.	The 'supporting' modes of transport – taxis, ring and ride, demand responsive bus services are highlighted. There may be opportunity to ensure these future services are provided by cleaner vehicles – less air polluting vehicles - (which could be a commitment through the procurement process.)	The document now states that the Low Emission Strategy has identified 'stimulating the uptake of low emission vehicles' as one of the most effective ways of reducing emissions.

The detail of our proposals for air quality is in the Air Quality Action Plan referred to, which will be the subject of consultation. |
| 2. | This principle outlines policy and measures that should have a positive effect on reducing GHG emissions (including CO2) by reducing the amount of travel by private car. The Principle specifically comments on the provision of a low-emission car club offer in Greater Manchester as well as cycle hire schemes. Throughout the document there is a recognition of a preference towards walking and cycling and thus seeking to support reduced GHG emissions (including CO2). | The 'supporting' modes of transport – taxis, ring and ride, demand responsive bus services are considered. There may be opportunity to ensure these future services are provided by electric or hybrid – emitting less CO2 - (which could be a commitment through the procurement process). | The document states that the Low Emission Strategy has identified 'stimulating the uptake of low emission vehicles' as one of the most effective ways of reducing emissions.

Detailed measures are contained in the Climate Change Implementation Plan. |
| 3. | Elements of this Principle encourage the use of existing and development of new infrastructure which could potentially have positive effects on the conservation and enhancement of biodiversity e.g. by reducing the need for new infrastructure, or negative effects eg. by creating of new road infrastructure taking up biodiversity rich land, though there is no detail on what would be entailed. As such, the effects could be either positive or negative. In addition, no note is made of Green Infrastructure or other similar assets.

This Principle also notes that advice would be provided on 'Significant Planning Applications' and the 'need for developer contributions to improve transport provision', but it does not encourage the protection of biodiversity etc. Without any advice / encouragement, these significant planning applications and new transport provision could impact on biodiversity etc. This could be over a permanent time frame. | None of the Network Principles proposed cover biodiversity, green infrastructure and geodiversity. It is recommended that a new Principle is developed to ensure that any transport interventions and any advice provided in relation to 'Significant Planning Applications' is informed by the need to conserve and enhance biodiversity, provide green infrastructure, avoid severance of habitats, provide wildlife corridors etc.

This would likely reduce the potential for and significance of any negative effects. | We are amending our "low-emission" network principle to "environmentally-responsible" to pick up this wider natural and built environmental issue. |

5.	Elements of this Principle encourage the use of existing and the development of new transport infrastructure which could potentially have a positive effect on the character and quality of GM's landscapes and townscapes e.g. by reducing the need for new infrastructure, but equally could have a negative effect through the construction of new road infrastructure, though there is no detail on what would be entailed. As such, the effects could be positive or negative. In addition, no note is made of Green Infrastructure or other similar assets which contribute to landscape and townscape character. This Principle also notes that advice would be provided on 'Significant Planning Applications' and the 'need for developer contributions to improve transport provision', but it does not encourage the conservation and enhancement of the character and quality of GM's landscapes and townscapes. Without any advice / encouragement, these significant planning applications and new transport provision could impact negatively on landscapes etc. This could be over a permanent timeframe.	None of the Network Principles proposed cover landscape and townscape. It is recommended that a new Principle is developed to ensure that any transport interventions and any advice provided in relation to 'Significant Planning Applications' is informed by the need to conserve and enhance the quality of landscapes / townscapes. For example, the Principle while encouraging the use of existing infrastructure could make it clear that the repair and maintenance of infrastructure should respect and enhance the landscape etc. Similarly it could require the exploration of opportunities for landscape / streetscape enhancement by removing signage etc. This would likely reduce the potential for and significance of any negative effects.	Providing advice on planning applications regarding conserving and enhancing landscapes/townscapes is outside the remit of TfGM – we are not a statutory consultee, and only offer advice on transport issues.
6.	Elements of this Principle encourage the use of existing and the development of new transport infrastructure which could potentially have a positive impact on the historic and cultural heritage e.g. by reducing the need for new infrastructure, or by reducing traffic congestion in historic town centres or near to important sites. However, there is no detail on what would be entailed and as such, effects could be positive or negative. This Principle also notes that advice would be provided on 'Significant Planning Applications' and the 'need for developer contributions to improve transport provision', but it does not encourage the conservation and enhancement of the historic and cultural heritage. Without any advice / encouragement, these significant planning applications and transport provision could impact negatively on historic and cultural heritage etc. This could be over a permanent timeframe.	None of the Network Principles proposed cover heritage. It is recommended that a new Principle is developed to ensure that any transport interventions and any advice provided in relation to 'Significant Planning Applications' includes the need to enhance access to the regions cultural and designated / non-designated historic assets. It should also reflect the need to enhance and maintain the integrity and settings of these assets. This approach would likely reduce the potential for and significance of any negative effects.	
7.	This Principle does not consider the water environment and any new infrastructure e.g. under the Travel Choices programme may lead to schemes that have a negative effect. In fact, this principle does not	None of the Network Principles proposed cover the water environment. It is recommended that a new Principle is developed to ensure that any	We have now referred to TfGM's adopted design principles for sustainability. We have also added a reference to need to protect cultural heritage, soil and water

aim to protect the water environment from either existing or proposed infrastructure. This Principle notes that advice would be provided on 'Significant Planning Applications' and the 'need for developer contributions to improve transport provision'. No consideration of potential effects on the water environment is made in relation to the proposed advice to be provided. Impacts on the water environment from transport interventions derived from this Principle would likely be experienced from the short through to the long term.	advice to be provided relating to the development of any new transport scheme notes a requirement to protect and enhance where possible the water environment. Reference should also be made of requirements under the Water Framework Directive (WFD). This approach would likely reduce the potential and for and significance of any negative effects.	environment. However, it is not the role of the 2040 Strategy to cover detailed design considerations Do not intend to include flooding as a network principle, as it is covered by 'resilience'. Note that Environmental Protection is already a high level goal of the strategy.
8.	While this Principle could potentially help conserve soil and agricultural resources through a reduction in the need for new infrastructure, it does not seek to remediate / avoid land contamination – this could still occur from pollution incidents taking place on existing infrastructure, or negative impacts could occur from any new infrastructure developed, for example, under the Travel Choices programme. Impacts on soil would be experienced from the short through to the long term and in the absence of remediation could be considered to be permanent.	None of the Network Principles proposed cover soil and contamination. It is recommended that a new Principle is developed to ensure that any new transport infrastructure promoted by TfGM and any advice provided in relation to new infrastructure notes a requirement to conserve soil and agricultural resources and avoid land contamination. It should also be encouraged for opportunities to be taken in relation to remediation of land. This approach would likely reduce the potential for and significance of any negative effects.	Do not intend to include recycling as a principle. The new text added on Environmental Responsibility refers to how sustainability is achieved within infrastructure projects.
9.	While this Principle notes the need to 'maximise the best use of existing infrastructure', it does not provide detail on how this infrastructure can be protected / improve resilience – particularly in the light of a changing climate. It is noted that a separate principle covers Resilient Network issues and that these aspects in relation to TfgM's networks are covered there. This Principle does not consider the need to reduce the risk of flooding and any new infrastructure e.g. under the Travel Choices programme may lead to schemes that have a negative effect. In fact, this principle does not aim to reduce the risk of flooding from either existing or proposed infrastructure. Advice is to be provided under this Principle in relation to 'Significant	None of the Network Principles proposed cover flooding but Principle Resilient Networks deals with resilience to the effects of a changing climate. It is recommended that a new Principle is developed to ensure that any new transport infrastructure and advice provided in relation to new infrastructure notes a requirement to consider flood risk. This approach would likely reduce the potential for and the significance of any negative effects.	

	Planning Applications' and the 'need for developer contributions to improve transport provision'. No consideration is made of the need to ensure that the risk of flooding or other extreme events associated with climate change is addressed. In the absence of adequate advice, negative effects from a changing climate such as increased flooding could be considered to be permanent.		
10.	This Principle could reduce the use of natural resources and minimise waste by reducing the need for new infrastructure – thereby leading to less construction etc. as well as reducing use of the car (thereby reducing fuel use) by promoting a shift to more sustainable forms of transport. It could equally lead to negative effects on this objective through the need to construct and run new transport infrastructure. However, the Principle does not address the requirement to ensure recycling etc. It also notes the potential for new infrastructure, for example, under the Travel Choices programme. No note is made of the need for prudent use of natural resources, minimising the production of waste etc.	None of the Network Principles proposed cover the use of natural resources and waste production. It is recommended that a new Principle is developed to increase the alignment of the Strategy with the IA Objective by ensuring that recycling is encouraged where possible e.g. during maintenance of existing infrastructure and that the need for waste reduction etc during the development of new infrastructure is noted.	
12.	A better integrated network will improve access to jobs and potentially increase travel horizons of those in employment and the unemployed. This could significantly boost employment and economic growth. This principle supports the development of technology and job creation through application development for the provision of more online information, and staff involved in travel choices programmes. There are opportunities to enhance the existing transport system through the provision of new technological services, and the transport offering such as the fitting of real time passenger information systems and the creation of cycle hire and car sharing companies. The travel choices agenda is targeted at getting people into work eg jobseekers to interviews. The flexible ticketing options will make it easier for people to travel and therefore should facilitate job creation and economic growth. There may be some reduction in employment from the increase in automation and the potential reduction in ticketing and enforcement	The links to the potential benefits to the economy through the development of new transport systems, information provision and application development is not recognised in this principle and could be enhanced.	The potential of technology to boost the economy has been made clearer by the introduction of the infographic in 'Developing an innovative city-region' (Part 1).

	staff. The principle specifically references the sharing economy and the concept of car sharing schemes – this may depend on people having access to the internet, and as such may disadvantage the elderly or those without access.		
14.	This principle will improve access to facilities and services across the region, in particular for those without access to a car. It will improve walking and cycling connectivity and reduce severance, as well as reducing accidents for pedestrians and cyclists with improved, safer infrastructure. The integration of fares across different modes and operators should reduce the cost of travel as it will reduce the need to buy multiple tickets. The encouragement of sustainable modes of travel should lead to mode shift, which will reduce air, noise and light pollution, and low-emissions car sharing clubs will help to minimise the impacts of some car trips.	Travel information should be made available in other languages, and in formats accessible for people with disabilities (especially people with visual impairments and learning difficulties). Transport services and interchanges should also be made accessible for people with disabilities – mobility impairments and also visual impairments in particular. The new fare pricing structure should be designed to be as affordable as possible.	All TfGM projects and programmes are subject to Equalities Impact Assessment, and provision is made for all these groups, e.g. via the Language Line and provision of alternative formats. TfGM works with diversity and disability groups on transport issues, including its award winning Disability Design Reference Group. A reference to accessible information has been included in 'An Inclusive Network' (Part 2), but we consider that further detail is not appropriate for this high level.
15.	This principle will improve access to healthcare facilities and services across the region, in particular for those without access to a car. It will improve walking and cycling connectivity and reduce severance, as well as reducing accidents for pedestrians and cyclists with improved, safer infrastructure. Higher levels of active travel in the area will be beneficial for health, and help to reduce obesity levels. The encouragement of sustainable modes of travel should lead to mode shift, which will reduce air, noise and light pollution, and low-emissions car sharing clubs will help to minimise the impacts of some car trips. This reduction in air pollution will be of particular benefit to those with long term conditions such as asthma, but will also improve health overall.	It will be important when considering the integration of transport services that the needs of people accessing healthcare are considered – services need to be regular and offer as direct access as possible. It will also be important to ensure that services are accessible for people with disabilities.	The need for specialist accessible transport is referred to in 'Integration at the heart of our 2040 transport strategy'. The issue of access to healthcare is specifically referred to in 'Connected Neighbourhoods (Part 3) – Access to facilities.
Network Principle: An Accessible and Inclusive Network			
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**

12.	This principle supports potential job creation (although not necessarily within the sub-region) through the design, deployment and procurement of new transport system vehicles. Increasing numbers of public transport services will create more jobs for drivers. The flexible ticketing options will make it easier for people to travel and therefore should facilitate job creation and economic growth. There may be some reduction in employment from the increase in automation and the potential reduction in ticketing and enforcement staff. The integration may overall reduce income from fares. And reduction in car travel will reduce income from fuel sales for public accounts, yet potentially keep more transport revenue within Greater Manchester. This principle recognises the importance of PT to young people exploring work opportunities and jobseekers. Increasing youth employment will, in particular, look to grow the national economy.	The links to the potential benefits to the economy through the procurement and driving of new vehicles is not recognised in this principle and could be enhanced.	The role of transport in driving growth is a fundamental element of the Greater Manchester Strategy, which sits above the 2040 strategy.
14.	This principle will improve accessibility and inclusivity for everyone in Greater Manchester, particularly to employment, training, health and leisure opportunities. Ensuring all new infrastructure and vehicles are accessible will be of particular benefit to people with mobility restrictions (older people and those with a disability). The increase in flexible ticketing options will be of greatest benefit to those in part time employment or work, job seekers and part-time or flexible workers. This will not only encourage people to use public transport over using a car, but will provide additional transport opportunities for people on lower incomes or with mobility restrictions.	It is recommended that information on the infrastructure and vehicle improvements should be publicised widely, particularly using a method suitable for people with visual impairments and learning difficulties. Furthermore, it is recommended that information on new ticketing options should also be widely publicised, and easy to understand and use.	TfGM works with the DDRG on these particular issues. All TfGM projects and programmes are subject to Equalities Impact Assessment and as a result, these issues are always considered when producing information for the public. This is too detailed for inclusion in this high level Strategy.
15.	This principle will improve access, in particular to education, employment and healthcare facilities. The improvements will be experienced most by people with no access to a car (likely to be on lower incomes), younger people in part time education, people in part time employment, and people suffering from mobility restrictions (older people and disabled people). This principle is likely to instigate some people changing travel mode from cars to public transport. As a consequence this would reduce	To ensure the principle is as inclusive as possible, the future infrastructure and vehicle improvements will have to be widely and clearly advertised, in order to ensure people who were previously unable to use the services due to mobility restrictions, are now aware of the changes and options available to them. Similarly, changes to the availability of flexible ticketing options should be publicised	All TfGM projects and programmes are subject to Equalities Impact Assessment and as a result, these issues are always considered when producing information for the public. This is too detailed for inclusion in this high level Strategy.

	the level of air pollution, which would particularly benefit those with long term conditions such as asthma, but will also improve health overall. A reduction in noise pollution would benefit children the most, as high noise levels have an adverse impact on children's' cognitive ability.	extensively, ensuring they are available in a number of languages.	

Network Principle: A Resilient Network			
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**
1.	This Principle notes the move towards increased electrification of the network. This could have a positive benefit on local air quality. There could be national / global issues with air quality depending on the national energy strategy and choice of fuel. It is noted that the national energy strategy is seeking to make energy greener but this is out of the control of GM and could therefore have a positive or negative benefit. There is acknowledgement that replacement bus services may be required when rail or Metrolink services are unavailable but there is no outline of the likely measures to enhance the resilience of the network and the types of vehicles that would be deployed. There are no clear commitments to air quality in this principle and there could be positive or negative impacts to air quality depending on the measures and interventions deployed.	Clearer commitments to the types of measures and vehicles that would be procured for backstopping measures may enhance this principle in relation to this specific IA objective.	TfGM includes a minimum quality vehicle specification in its contracts. However the deployment of replacement bus services is too detailed for inclusion in this high level Strategy.
2.	This Principle notes the need to encourage modal shift and increase electrification of the network. There is acknowledgement that replacement bus services may be required when rail or Metrolink services are unavailable but there is no commitment to the types of vehicles that would be deployed. There are no clear commitments to emission reduction in this principle and there could be positive or negative impacts depending on the measures and interventions deployed.	Clearer commitments to the types of vehicles that would be procured for backstopping measures may enhance this principle in relation to this specific IA objective.	This is likely too much detail for the strategy document, though the point is a relevant one that decisions on the procurement of vehicles requires analysis across a range of factors.
7.	This Principle relates to management and maintenance of transport networks and notes the requirement for key roads to be gritted and rail and tram routes to be de-iced. These activities are likely to have a negative impact on the water environment, though this is likely to be of short term duration and only during particular weather conditions.	It is recommended that the Principle is amended to reflect the need to protect the water environment (while maintaining public safety), or that alternatively it refers to the proposed Natural and Built Environment New Principle.	This is too detailed for the document. Greater Manchester's geography/topography makes winter gritting an important issue and authorities are increasingly working across boundaries on this issue.

9.	This Principle notes the need to adapt to a changing climate e.g. from more extreme weather and flooding events. However, no further information is provided as to how this adaptation would be accomplished. This adaptation may have an impact (positive or negative).	It is recommended that the Principle is amended to provide more information of proposals for adaptation to a changing climate, or that alternatively it refers to the proposed Natural and Built Environment New Principle.	Para 70 amended to make clear that the 'unplanned events' referred to include extreme weather events.
12.	This Principle relates to management and maintenance of transport networks and no specific reference is made to the potential job creation this could deliver. There is some potential for job creation through monitoring and evaluation of measures.	There is no recognition of the economic benefit of providing a more resilient network (e.g. where services are not cancelled/delayed or need re-building meaning a network can continue to function as normal.) There is huge potential to demonstrate the links between providing this resilience and the economic savings caused from maintaining a regular system and timetable operation.	A reference has been added to this section on the economic benefit of a resilient network, but note that resilience is referred to as a 'key challenge' in supporting sustainable economic growth (Part 1).
14.	This principle will ensure access to facilities and services across the region are sustained during times when the transport network is under stress. This will be particularly beneficial to those who do not have a car, and therefore are less able to vary their route. It will also benefit those who require access to schools, employment and health facilities. The encouragement of sustainable modes of travel should lead to mode shift, which will reduce air, noise and light pollution, and low-emissions car sharing clubs will help to minimise the impacts of some car trips.	It is recommended that up to date communication methods are used to relay messages when there are travel disruptions. Additionally people should be made aware of alternative methods of travel and how to obtain more information on them. This information should be made available in other languages, and in formats accessible for people with disabilities (especially people with visual impairments and learning difficulties). Transport services and interchanges should also be made accessible for people with disabilities – mobility impairments and also visual impairments in particular. The new fare pricing structure should be designed to be as affordable as possible.	All TfGM projects and programmes are subject to Equalities Impact Assessment and as a result, these issues are always considered when producing information for the public. This is too detailed for inclusion in this high level Strategy. Making transport services and infrastructure accessible for people with disabilities is referred to in 'an Inclusive network' but also in 'Connected Neighbourhoods (Inclusive Neighbourhoods). Affordability is referred to in 'An Inclusive Network'.
15.	This principle will maintain access to healthcare facilities and services across the region, in particular for those without access to a car. Higher levels of sustainable travel in the area will lead to more active travel and be beneficial for health, and help to reduce obesity levels. The encouragement of sustainable modes of travel should lead to mode shift, which will reduce air and noise pollution. This	It is recommended that up to date communication methods are used to relay messages when there are travel disruptions. Additionally people should be made aware of alternative methods of travel and how to obtain	Agreed, but too detailed for this high level strategy. TfGM includes a minimum quality vehicle specification in its contracts. However the deployment of replacement bus services

	reduction in air pollution will be of particular benefit to those with long term conditions such as asthma, but will also improve health overall. The reduction in noise will be of benefit to children in particular, who can be adversely affected by noisy environments.	more information on them. When implementing replacement methods of travel, all users should be taken into account. For example alternative routes and vehicles should be suited for use by people with all levels of mobility, including older people and disabled people.	is is too detailed for inclusion in this high level Strategy.

Network Principle: A Safe and Secure Transport System

IA Obj.	Assessment summary	Recommendation	How has this recommendation been addressed?
12.	Improving the safety and security, and the perception of crime on GM's streets will seek to enhance the visitor and night time economy. This could increase visitor numbers and residents visiting different parts of GM boosting employment, in particular in the leisure industry.	The links to the potential benefits to the visitor and night time economy/entertainment are not recognised in the text and could be enhanced.	A reference added. The night time economy is an important part of the GM's economic strategy and as such is supported within the 2040 strategy.
14.	The principle will contribute to the achievement of national and local targets for road safety, with a long term ambition is to eradicate road deaths in Greater Manchester by 2040. Additionally it will tackle crime and antisocial behaviour on Greater Manchester's bus and tram network. This will achieve these through both making the road network safer and ensuring a reduction in crime on public transport. The principle will promote community safety and reduce the number of accidents and other incidents.	Education and awareness courses need to be targeted at the right demographics and behaviour types in order to be most effective. Furthermore it is imperative that the co-ordinated approach to road safety is continued and monitored, to effectively deliver joint road safety projects. Customer perception should also be monitored for people using public transport, in order to ascertain the extent of the improvements on fear of crime. The upgrading of public transport interchanges to make them safe also needs to be closely monitored, in order to ensure lighting, CCTV and customer help points are all working and have not been tampered with.	The GM Casualty Reduction Partnership does target its awareness courses but this is too detailed for this high level strategy. A detailed performance Measurement Framework will be included in the final version of the strategy. Appropriate management regimes are in place for interchanges but this is too detailed for this high level strategy.
15.	The principle will improve personal security on public transport and at its facilities to improve accessibility to key facilities. It will also promote training for drivers to promote safe driving, promote road safety awareness with children and young people and it aims to	To ensure the principle is as inclusive as possible, the road safety awareness and driver training will have to be widely and clearly available, ensuring as many people are reached as possible, particularly children and	The GM Casualty Reduction Partnership does make its courses widely available but this is too detailed for this high level strategy.

		young drivers.	A detailed performance Measurement Framework will be included in the final version of the strategy.
	reduce casualty numbers, particularly for vulnerable groups.	Customer perception should also be monitored for people using public transport, in order to ascertain the extent of the improvements on fear of crime.	
		The upgrading of public transport interchanges to make them safe also needs to be closely monitored, in order to ensure lighting, CCTV and customer help points are all working and have not been tampered with.	Appropriate management regimes are in place for interchanges but this is too detailed for this high level strategy.

Network Principles: Moving Towards Zero Emissions			
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**
1.	This Principle is concerned with reducing emissions including NO2 and PM10 and there is recognition of the need to address current levels and achieve the AQMA targets and ensuring 'air quality problems will be a thing of the past'. The strategy makes reference to the statutory Air Quality Action Plan including a commitment to carry out a feasibility study into solutions that can be implemented without impacting business however there are no clear commitments to what the air quality targets are and how these will be achieved in the strategy.	The strategy makes no specific commitments to the levels of impact that are hoped to be achieved for the levels of NOx and PM10 reduction, nor the solutions that will be implemented to achieve reduction. More clearly defined objectives (as from the Air Quality Action Plan or elsewhere) are required within the strategy document. See comment below – on making clear the strategy for tackling air quality.	The Greater Manchester Air Quality Action plan covers this. Detailed proposals are contained in the Low Emission strategy and the Climate Change Implementation Plan. A link to that document will be included in the final version of the strategy. The Interventions, which are included at the end of Part 2 (latest version) have cross-refer to the Climate Change Implementation Plan.
2.	This Principle is concerned with reducing CO2 emissions and there is recognition of the need to address current levels and move towards meeting the EU targets. The strategy makes bold claims to be a world leader in zero emission transport technologies and techniques and references a 'Low Emissions Strategy' and 'Climate Change Implementation Plan' that identifies the measures for the reduction of emissions. As such there are no clear commitments to how 'zero tailpipe emissions from transport' will be achieved. There is potentially some confusion in terminology between air quality and carbon dioxide plans and which emissions each strategy will	The strategy makes no specific reference to the solutions that will be implemented to achieve the zero emission target. More clearly defined objectives (as from the Low Emissions Strategy, the 'Climate Change Implementation Plan' or elsewhere) are required within the strategy document. Document to more clearly articulate the	Detailed proposals are contained in the Low Emission strategy and the Climate Change Implementation Plan. A link to that document will be included in the final version of the strategy. The Interventions, which are included at the end of Part 2 (latest version) have cross-refer to the Climate Change

		principles for:	Implementation Plan.
		1. Tackling CO2 emissions; and	
		2. Tackling air quality pollutants eg NO2 and PM10	
3.	While the Principle is about reducing emissions, it is unclear without reference to other strategies as to how this will be accomplished. Methods used could potentially result in positive effects on biodiversity e.g. by removing harmful emissions on biodiversity.	It is recommended that the Principle is amended to provide more information on the solutions that will be implemented to achieve reduced emissions.	The detail will remain in the AQAP and the Climate Change Implementation Plans,
5.	This Principle is concerned with reducing emissions and if implemented could lead to positive effects on townscape e.g. by reducing particulate deposition on buildings. It is unclear though without reference to other strategies as to how this could be accomplished.		
6.	This Principle is concerned with reducing emissions and if implemented could lead to positive effects on cultural heritage e.g. by reducing particulate deposition on historic buildings. It is unclear though without reference to other strategies as to how this could be accomplished.		
10.	This Principle is concerned with reducing emissions and would include a reduction in car use – this will lead to a reduction in fuel (natural resource) consumption. No note is made though of the need to minimise waste production or the need for recycling. It is also unclear without reference to other strategies as to how this could be accomplished.		
11.	The principle hints at changing travel behaviour to reduce car use to achieve zero emission targets. However, it is not explicit in the measures that will be implemented to achieve this. It is unclear without reference to other strategies as to how this could be accomplished.	It is recommended that the Principle is amended to provide more information on the methods to be implemented for reducing emissions and how this links into this IA objective.	Changing travel behaviour is covered in the section 'Integrated Travel Choices' under the 'Integration' principle.
12.	This Principle does not currently contribute to the achievement of this objective as economic growth is not discussed. There is the potential to create jobs dependent upon the measures identified (not clearly stated) e.g. by establishing GM as a "world leader in zero emission transport technologies and techniques".	The links to the potential benefits to the economy need to be clearly defined dependent upon the measures proposed. This objective could be further enhanced.	The infographic added to Part 1 makes clear the economic consequences of not tackling climate change.

	Modal Principle: Highway – The Arteries of our City Region		
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**
1.	This objective is clearly related to this Principle, however the connections are not clearly acknowledged, and there is limited commitment to reducing overall car use and therefore improving air quality.	The Principle could make further acknowledgement of changing vehicle fleet, in the advent of Euro 6 and the move towards electric/hybrid or alternative-fuelled vehicles. A stronger commitment to reducing the need to travel by car should be stated in the 'future role of the car' or 'demand management' sections for this objective to be enhanced.	As above
2.	This objective is clearly related to this Principle, however the connections are not clearly acknowledged, and there is limited commitment to reducing overall car use and therefore reducing CO2 emissions.	The Principle could make further acknowledgement of changing vehicle fleet, in the advent of Euro 6 and the move towards electric/hybrid or alternative-fuelled vehicles. A stronger commitment to reducing the need to travel by car should be stated in the 'future role of the car' or 'demand management' sections for this objective to be enhanced.	Covered in the text added to 'Environmental Responsibility'.
3.	This Principle relates for the most part to Demand Management and future scenarios to deliver a reliable and resilient network, but it does also highlight the need for Highway Investment etc – this could result in 'hard' interventions which may potentially have a negative effect on biodiversity, which could be considered permanent.	It is recommended that the Principle is reworded to note the requirement to protect or enhance biodiversity when possible. For example this could include planting of wildflowers or native species of plants etc at new road verges. This approach would likely reduce the significance of negative effects.	Covered in the text added to 'Environmental Responsibility'.
5.	This Principle relates for the most part to Demand Management and future scenarios to deliver a reliable and resilient network, but it does also highlight the need for Highway Investment etc – this could result in 'hard' interventions which may potentially have a negative effect on the character and quality of GMs landscapes / townscapes, which could be considered permanent.	It is recommended that the Principle is reworded to note the requirement to protect or enhance the character and quality of GM's landscapes and townscapes when possible from any new infrastructure development. An example of how this could be done would be through native species of screening planting.	

		This approach would likely reduce the significance of any negative effects.	
6.	This Principle relates for the most part to Demand Management and future scenarios to deliver a reliable and resilient network. While this Principle is likely to result in hard interventions that could have negative effects, part of the aims of the Principle involve effective maintenance which would potentially enhance the historic and cultural heritage settings by arresting decline and bringing the condition of assets up to a high standard. Therefore it is considered that this Principle could have positive and negative effects.	It is recommended that the Principle is reworded to note the requirement to protect or enhance the quality and distinctiveness of GMs historic and cultural heritage when possible during both construction of new infrastructure and maintenance to existing infrastructure. This approach would likely reduce negative effects, while also benefiting positive effects.	
7.	This Principle relates for the most part to Demand Management and future scenarios to deliver a reliable and resilient network, but it does also highlight the need for Highway Investment etc – this could result in 'hard' interventions which may potentially have a negative effect on the water environment, which could be considered permanent.	It is recommended that the Principle is reworded to note the requirement to protect the water environment during the construction and operation of any new infrastructure. This could be accomplished by the use of SuDS and this approach would likely reduce the negative effects.	
8.	This Principle relates for the most part to Demand Management and future scenarios to deliver a reliable and resilient network, but it does also highlight the need for Highway Investment etc – this could result in 'hard' interventions which may potentially have a negative effect on soil and agricultural resources. There could though be a potential opportunity in certain circumstances to remediate areas of land contamination. As such effects could be positive or negative and could be considered to be permanent.	It is recommended that the Principle is reworded to note the requirement to protect soil and agricultural resources when possible and to take opportunities for land remediation as appropriate.	
9.	This Principle relates for the most part to Demand Management and future scenarios to deliver a reliable and resilient network. This Principle also recognises the need for new infrastructure to be designed with built in resilience and recognises the increasing impact of a changing climate over the period to 2040. As part of this recognition, appropriate mitigation measures will be identified and implemented. However, this Principle does not clearly consider the need to reduce the risk of flooding and any new infrastructure may lead to schemes that have a negative effect. In fact, this principle does not aim to reduce the risk of flooding from either existing or proposed infrastructure.	It is recommended that the Principle is amended to provide more information of proposals for adaptation to a changing climate and on how reduction of risk of flooding will be achieved.	

10.	This Principle relates for the most part to Demand Management and future scenarios to deliver a reliable and resilient network but does not make note of the prudent use of natural resources, minimising waste or supporting recycling. All of these issues are likely to be relevant due to the requirement in the Principle for highway investment that could result in new infrastructure. New infrastructure is likely to result in a negative effect on these issues. These issues are also relevant to any maintenance carried out.	It is recommended that the Principle is reworded to ensure that in the design of any new infrastructure, prudent use of natural resources, waste minimisation and recycling are considered during both construction of new infrastructure and maintenance to existing infrastructure.	
11.	This Principle relates to the promotion of a reliable highway network generating efficient and effective movements (by car). Improving the efficiency and effectiveness of the existing road network supports further use of the car, which will not achieve the stated objective. There is recognition of the need for demand management and the encouragement of people to use other modes, however there is no firm commitment that sets out how people will be discouraged from using the car – particularly if the highway network will be more efficient in the future.	This Principle would benefit from some clearer commitments to how car use will be actively discouraged. There is only a commitment to encouraging mode shift, but the effectiveness of this may be invalid if in parallel the road network becomes more efficient.	Demand Management in Integration Section.
12.	This objective is relevant to this Principle, however the connections are not clearly acknowledged, and there is limited commitment to promoting economic growth. The potential to improve the efficiency of the network, thus improving journey time reliability, will generate economic benefits through the reduction of congestion, however this may be counter-productive as more people choose to utilise the more efficient road network and contribute to further delay.	It is recommended that the Principle is amended to provide more information of proposals for supporting economic growth.	Contribution of highways to supporting economic growth is covered in the 'spatial theme chapters in Part 3.
13.	This Principle may impact negatively on this IA objective as through promoting a reliable highway network which generates efficient and effective movements (by car) and improves the efficiency and effectiveness of the existing road network supporting further use of the car may send the wrong signals in terms of achieving compact land use served by sustainable modes of transport.	This Principle would benefit from some clearer commitments to how car use will be actively discouraged.	Demand management is covered under Integration. Sections on public transport and cycling make clear the commitment to mode shift.
Modal Principle: Developing a Comprehensive Walking and Cycling Network			
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**
1.	This Principle relates to the provision of high quality walking and cycling infrastructure enabling people to travel on foot or bicycle. There is likely to be significant benefits to air quality where active	Greater acknowledgement of the impact of this Principle to this objective could be clearly	Section already refers to the potential for active travel to reduce the number of car trips, but reference added to the fact that

	travellers have shifted from other modes, particularly use of the car. The positive association to this objective is not explicit in the text however there are clear benefits within this Principle.	stated.	this means reduced emissions.
2.	This Principle relates to the provision of high quality walking and cycling infrastructure enabling people to travel on foot or bicycle. There is likely to be significant benefits to CO2 reductions where active travellers have shifted from other modes, particularly use of the car. The positive association to this objective is not explicit in the text however there are clear benefits within this Principle.	Greater acknowledgement of the impact of this Principle to this objective could be clearly stated.	Section already refers to the potential for active travel to reduce the number of car trips, but reference added to the fact that this means reduced emissions.
3.	This Principle relates for the most part to future strategies and investment plans but does also note the need for the identification of future opportunities for further off road improvements. These off road opportunities could include green infrastructure and this could have consequent positive effects on biodiversity.	Amend the Principle to make it clearer that any future opportunities being taken for the development of new Greenways should also include an aspiration to enhance biodiversity.	
5.	This Principle relates for the most part to future strategies and investment plans but does also note the need for the identification of future opportunities for further off road improvements. These off road opportunities could include green infrastructure and this could have consequent positive effects on the landscape of GM.	Amend the Principle to make it clearer that any future opportunities being taken for the development of new Greenways should also include an aspiration to enhance the landscape etc.	Agreed, text added.
6.	This Principle relates for the most part to future strategies and investment plans but does also note the need for the identification of future opportunities for further off road improvements. These off road opportunities could include green infrastructure and this could have consequent positive effects on the cultural heritage setting of GM.	Amend the Principle to make it clearer that any future opportunities being taken for the development of new Greenways should also include an aspiration to enhance the setting of any historic or cultural heritage features.	
8.	This Principle relates for the most part to future strategies and investment plans but does also note the need for the identification of future opportunities for further off road improvements. These off road opportunities could include green infrastructure and this could have consequent positive effects by offering an opportunity for land remediation.	Amend the Principle to make it clearer that any future opportunities being taken for the development of new Greenways should also include an aspiration to remediate land or reuse brownfield sites as appropriate.	
12.	This Principle does not have any clear impact to this IA Objective, however it is likely that an active mode revolution could create economic opportunities across the region. For example, the provision of cycle hire schemes, opening of leisure facilities, design and implementation of cycle routes, and café's or retail businesses close to cycle connections. Improved cycle connections linked in with Manchester's commitment to provide bicycles to those seeking	The Principle could better develop the connections of the active mode revolution created with the development of a comprehensive walking and cycling network to potential economic growth scenarios and accessibility to employment.	The link between active travel and access to employment is covered in the various 'spatial theme' chapters.

	job opportunities (although not specifically referenced here) provides a clear positive benefit for those without a car to access employment opportunities.		
14.	This principle will help to improve access to facilities and services for those without access to a car, and will also improve the connectivity of pedestrian and cycle networks. The networks will be designed to improve safety for pedestrians and cyclists, and any reduction in vehicle km due to mode shift will also reduce accidents, as well as reducing severance, noise, air and light pollution.	It is recommended that if pedestrian and cycle routes are developed in more isolated areas (e.g. along waterways, disused railway lines), they should be well lit and have good visibility to minimise the risk of crime.	This is a level of detail too great for a high level strategy. A reference has been added to cycle infrastructure in the 'Safe and Secure' section.
15.	This principle will help to improve access to facilities (including healthcare) for those without access to a car, and will also improve the connectivity of pedestrian and cycle networks. The networks will be designed to improve safety for pedestrians and cyclists, and any reduction in vehicle km due to mode shift will also reduce accidents, as well as reducing severance, noise, air and light pollution. These improved networks will help to promote active travel, and so improve health in the area.	It is recommended that if pedestrian and cycle routes are developed in more isolated areas (e.g. along waterways, disused railway lines), they should be well lit and have good visibility to minimise the risk of crime.	This is a level of detail too great for a high level strategy. A reference has been added to cycle infrastructure in the 'Safe and Secure' section.

Modal Principle: Public Transport – Keeping GM Moving in 2040

IA Obj.	Assessment summary	Recommendation	How has this recommendation been addressed?
1.	This Principle relates to the provision of an attractive, efficient and well integrated public transport network that aims to increase the numbers of people travelling by bus, rail and Metrolink. This would have the potential to improve air quality, however this is not directly acknowledged.	The Principle could be enhanced with further recognition of the potential beneficial impacts from improved air quality.	Reference to emissions added section 111.
2.	This Principle relates to the provision of an attractive, efficient and well integrated public transport network that aims to increase the numbers of people travelling by bus, rail and Metrolink. This would have the potential to reduce CO2 emissions, however this is not directly acknowledged.	The Principle could be enhanced with further recognition of the potential beneficial impacts from reduced CO2 emissions.	Reference to emissions added section 111.
12.	This principle references use of the canal network and the development of the coach and taxi offering. Each of these would allow for the development of an improved tourist and leisure	This Principle could be enhanced through the recognition of the role transport has to play in developing and promoting the tourist and	These references can be found in Part 3 e.g. in relation to the Regional Centre, and

	economy that requires much enhancement in the city. There would be many potential spin off opportunities following better transport provisions for tourists, and potential development of the tourist economy. These benefits are not recognised in this Principle.

The principle recognises the benefits from TfGM operating stations, including longer-term development plans (including retail offering and secondary activities at stations). There is strong potential to enhance the transport hubs, generating economic activity at interchange hubs, and linking into the creation of jobs at these key sites.

The principle also recognises the economic stimulus in Manchester that will follow from the arrival of HS2 and local electrification schemes. Whilst this may have a push-effect for movements away from Manchester, there is likely more potential for Manchester to create a pull-effect, shifting the economic balance from the south of England towards the north. The economic benefits from this, including the relocation of business and knowledge to the North has the potential to provide significant agglomeration impacts that are not specifically recognised in this principle. | leisure economy. Particularly where transport is geared towards the needs of visitors, and the associated benefits that come with this.

The Principle could benefit from stronger connections to the role of transport and the development of economies, particularly with the development of large scale infrastructure and investment including HS2. | in references to the Peak District.

The importance of infrastructure such as HS2 to the Economy is covered in Part 3. |
| 14. | This principle aims to provide better public transport connections to facilities and services across the Greater Manchester area, which will be particularly beneficial for those without access to a car. It aims to provide more consistent pricing, and to improve the security of transport interchanges. This principle should lead to a reduction in vehicle km, which will help to reduce severance and also reduce air, noise and light pollution. | It will be important when considering the integration of transport services that the needs of people accessing healthcare are considered – services need to be regular and offer as direct access as possible. It will also be important to ensure that services are accessible for people with disabilities. It will also be important to mitigate any potential safety impacts of running tram-train into the city centre. | Access to healthcare and access for people with disabilities are covered in Connected Neighbourhoods

The need for specialist transport for people with disabilities is covered under 'Integration'.

Add a reference to how we deal with safety in new schemes to the 'Safe and Secure' section. |
| 15. | This principle aims to provide better public transport connections to facilities (including healthcare) across the Greater Manchester area, which will be particularly beneficial for those without access to a car. It aims to provide more consistent pricing, and to improve the security of transport interchanges. This principle should lead to a reduction in vehicle km, which will help to reduce severance and also reduce air, noise and light pollution. The improved walking and cycling access to transport interchanges will help to encourage active travel as part of longer journeys, and so be beneficial for | It will be important when considering the integration of transport services that the needs of people accessing healthcare are considered – services need to be regular and offer as direct access as possible. It will also be important to ensure that services are accessible for people with disabilities. It will also be important to mitigate any potential safety impacts of running tram-train into the | Access to healthcare and access for people with disabilities are covered in Connected Neighbourhoods.

The need for specialist transport fr people with disabilities is covered under 'Integration'.

Add a reference to how we deal with |

	health.	city centre.	safety in new schemes to the 'Safe and Secure' section.

Modal Principle: Goods and Servicing			
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**
1.	This objective has a specific focus for considering the role of Freight and its movements in GM. There is recognition of the impact of freight on air quality and there are proposed measures to address this, including the pursuit of Clean Air Zones (not referenced in the network principles) in key urban centres, and the use of consolidation centres to minimise goods movements – notably last mile logistics. Implementation of a Clean Air Zone will have a clear positive impact on areas that have the biggest concerns with air quality	The Principle could make further acknowledgement of changing vehicle fleet, in the advent of Euro 6 and the move towards electric/hybrid or alternative-fuelled vehicles.	Agreed, this is an important part of the GM Logistics strategy, currently in drafting.
2.	This Principle relates to the role of Freight within GM. There is recognition of the growth in freight movements, however the mitigations include better linkages with land use planning, and the GM Spatial Framework, identifying sites with multi-modal capability and maximising where possible the movement of freight by rail and waterways. The Northern Hub rail enhancements may have the potential to provide additional rail freight capacity, however it is likely that much of this capacity is taken by increasing passenger trains. This may lead to a business as usual situation where freight continues to be moved on the highway therefore having positive or negative impacts to this objective.	The Principle could make further acknowledgement of changing vehicle fleet, in the advent of Euro 6 and the move towards electric/hybrid or alternative-fuelled vehicles.	Agreed, this is an important part of the GM Logistics strategy, currently in drafting.
3.	This Principle relates to the role of Freight and its movements in the economy of GM and notes that there is a requirement to ensure that infrastructure is capable of meeting future growth and demand. These requirements are likely to result in 'hard' interventions such as road widening which are likely to result in significant adverse effects on biodiversity etc. It is recognised, however, that most interventions will be of a 'softer' nature through signalling, Smart Motorway and modal shift reducing the significance of effects.	It is recommended that the Principle is reworded to note the requirement to protect or enhance biodiversity when possible. For example this could include planting of wildflowers or native species of plants etc at new road verges.	Biodiversity etc has been added to the Environment section.
5.	This Principle relates to the role of Freight and its movements in the economy of GM and notes that there is a requirement to ensure that infrastructure is capable of meeting future growth and demand. These requirements are likely to result in 'hard' interventions such as	It is recommended that the Principle is reworded to note the requirement to protect or enhance the character and quality of GM's landscapes and townscapes when possible	

	road widening which are likely to result in significant adverse effects on the quality of landscapes and townscapes. It is recognised, however, that most interventions will be of a 'softer' nature through signalling, Smart Motorway and modal shift reducing the significance of effects.	from any new infrastructure development. An example of how this could be done would be through native species of screening planting. This approach would likely reduce the significance of any negative effects.
6.	This Principle relates to the role of Freight and its movements in the economy of GM and notes that there is a requirement to ensure that infrastructure is capable of meeting future growth and demand. These requirements could potentially result in 'hard' interventions such as road widening which would likely result in significant adverse effects to cultural and historic heritage if these take place in the vicinity of these assets. It is recognised, however, that most interventions will be of a 'softer' nature through signalling, Smart Motorway and modal shift reducing the significance of effects.	It is recommended that the Principle is reworded to note the requirement to protect or enhance the quality and distinctiveness of GMs historic and cultural heritage when possible. This could be accomplished for example by careful screening (ideally using native species) of the historic asset from any new infrastructure and this approach would likely reduce the significance of any negative effects.
7.	This Principle relates to the role of Freight and its movements in the economy of GM and notes that there is a requirement to ensure that infrastructure is capable of meeting future growth and demand. These requirements could potentially result in 'hard' interventions such as road widening which would likely result in significant adverse effects on the water environment – both during construction and operation. It is recognised, however, that most interventions will be of a 'softer' nature through signalling, Smart Motorway and modal shift reducing the significance of effects.	It is recommended that the Principle is reworded to note the requirement to protect the water environment during the construction and operation of any new infrastructure. This could be accomplished by the use of SuDS and this approach would likely reduce the negative effects.
8.	This Principle relates to the role of Freight and its movements in the economy of GM and notes that there is a requirement to ensure that infrastructure is capable of meeting future growth and demand. These requirements could potentially result in 'hard' interventions such as road widening which would likely result in significant adverse effects on soil and agricultural resources. There could though be a potential opportunity in certain circumstances to remediate areas of land contamination. As such effects could be positive or negative and could be considered to be permanent. It is recognised, however, that most interventions will be of a 'softer' nature through signalling, Smart Motorway and modal shift reducing the significance of effects.	It is recommended that the Principle is reworded to note the requirement to protect soil and agricultural resources when possible and to take opportunities for land remediation as appropriate.
9.	This Principle relates to the role of Freight and its movements in the economy of GM and notes that there is a requirement to ensure that infrastructure is capable of meeting future growth and demand. No note is made of a changing climate or the potential risk of flooding.	It is recommended that the Principle is reworded to recognise the threat of flooding and a changing climate in the design of any new infrastructure. This would likely reduce

	Any new infrastructure could be subject to these pressures and likely suffer a negative (and permanent) effect.	any negative effects.	
10.	This Principle relates to the role of Freight and its movements in the economy of GM but does not make note of the prudent use of natural resources, minimising waste or supporting recycling. All of these issues are likely to be relevant due to the requirement in the Principle for ensuring that infrastructure is capable of meeting future growth and demand. New infrastructure is likely to result in a negative effect on these issues. It is recognised, however, that most interventions will be of a 'softer' nature through signalling, Smart Motorway and modal shift reducing the significance of effects.	It is recommended that the Principle is reworded to ensure that in the design of any new infrastructure, prudent use of natural resources, waste minimisation and recycling are considered.	
11.	This Principle relates to the role of Freight within GM. There is recognition of the growth in freight movements, however the mitigation includes better linkages with land use planning, and the GM Spatial Framework, identifying sites with multi-modal capability and maximising where possible the movement of freight by rail and waterways. The Northern Hub rail enhancements may have the potential to provide additional rail freight capacity, however it is likely that much of this capacity is taken by increasing passenger trains. This may lead to a business as usual situation where freight continues to be moved on the highway therefore having positive or negative impacts to this objective.	This Principle would benefit from some clearer commitments to modal shift, and how this will be supported by TfGM.	Agreed, this is an important part of the GM Logistics strategy, currently in drafting.
12.	There is little recognition of the importance of freight movements for this objective. Whilst freight and logistics is largely dominated by private sector businesses who will benefit directly from increasing numbers of goods movements through the region (due to the growth of the Port of Liverpool and Manchester Airport) there will be secondary impacts for the region including job creation, economic growth and prosperity. The growth of freight movements may however contribute to existing congestion concerns, notably on the key route network and in the urban centres for 'last mile' logistics. There are opportunities to stimulate a diversified offering for the last leg of movements, with a shift towards cycle logistics – stimulating new business opportunities.	This Principle would benefit from recognition of the roles of growth at both the Port of Liverpool (Liverpool 2 Superport) and Manchester Airport (Airport City). Both of these investments will generate significant economic growth in the freight and logistics sector, including the potential relocation of companies and warehouses to Manchester, and the increasing numbers of goods that flow through the region. Both of these will have significant economic benefits and create vast numbers of employment opportunities.	Agreed, this is an important part of the GM Logistics strategy, currently in drafting.

Table 16. Recommendations for Spatial Themes

Spatial Theme: Global Connectivity			
IA Obj.	Assessment summary	Recommendation	How has this recommendation been addressed?
1.	The expansion of Manchester Airport through an increase in passenger numbers and service destinations, along with the growth at the Enterprise Zones are likely to have an adverse effect on local air quality. However, managing and improving the surface access to the Airport will limit the localised impact, particularly reducing the proportion of workers who travel to the Airport by car and the wider integration of rail connectivity to the Airport. This approach will also benefit the Atlantic Gateway / Port Salford area.	The spatial theme could articulate further the importance of tacking air quality particularly in the AQMAs in this area of GM.	Reference to be added
2.	The expansion of Manchester Airport through an increase in passenger numbers and service destinations, along with the growth at the Enterprise Zones are likely to have an adverse effect on carbon dioxide emissions. However, managing and improving the surface access to the Airport will limit the impact on carbon emissions, particularly reducing the proportion of workers who travel to the Airport by car and the wider integration of rail connectivity to the Airport. This approach will also benefit the Atlantic Gateway / Port Salford area.	This spatial theme could further outline the relationship between reducing carbon emissions and the proposed transport strategy.	Reference to be added
3.	There will be a number of infrastructure developments including new rail links to the airport, cycle-and pedestrian links and in some instances new roads / road improvements, as well as a new wharf on the Ship Canal. These Infrastructure interventions could have a negative effect on biodiversity e.g. through direct landtake or severance of habitat, but also provide an opportunity for biodiversity enhancement, for example through designing in biodiversity such as wildflower verges to provide opportunities for pollinators or planting suitable native species of trees and hedgerows. It should also be noted that this Spatial Theme also includes a range of interventions which will result in a reduced need for new infrastructure e.g. targeted travel choice interventions, car club / sharing etc. These interventions will therefore have a positive	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance biodiversity during construction and critically during the operational phase through planned maintenance schemes that recognise the importance of protecting biodiversity e.g. by controlling invasive species. In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment or Environmental Impact Assessment (level of	Environmental Responsibility section makes these points.

	(though likely indirect) effect on biodiversity.	assessment to be appropriate to the nature of the scheme). These assessments should provide greater clarity on how biodiversity will be protected (through mitigation) and /or enhanced during the development of any new transformational infrastructure.	
5.	Development of new infrastructure could have effects on landscape / townscape – positive for example by reducing congestion in some areas of townscape, or negative e.g. by introducing new 'hard' features into the landscape. The standard of design will dictate the effect this will have on these assets, with a good design, taking into account local factors likely providing an enhancement. It should also be noted that this Spatial Theme also includes a range of interventions which will result in a reduced need for new infrastructure – a number of these are based on good management e.g. managing demand for travel by car to reduce bottlenecks on the motorway network. Making better use of existing infrastructure will impact on positively on townscapes by reducing congestion etc.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance the landscape / townscape. This could include appropriate natural screening (which will also enhance biodiversity), as well as the enhancement of public spaces such as station forecourt, or the decluttering of streetscapes. Good design is a key component of this new Principle. In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment. These assessments should make it clearer that careful design of new infrastructure is critical to ensure that effects on landscape / townscape are a positive enhancement.	Environmental impact of schemes has been referred to, but note that this would be a requirement of planning permission in any event.
6.	Development of new infrastructure could impact negatively on cultural / historic heritage assets, for example, by impacting on the setting of these features. Conversely it also offers the opportunity to enhance assets directly or through their settings by good design. In this Spatial Theme, interventions relating to the Ship Canal, for example, will directly impact on an historic feature – not least in that it will herald a new lease of life for this asset and provide the opportunity to highlight many of its features and the role it played in the history of the region.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance these assets. In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment. These assessments should encourage sympathetic design in relation to cultural / historical assets with a view to positive enhancement of these	

		and their settings.	
7.	All new development could impact on the water environment. Of particular note in this instance is the proposed wharf on the Ship Canal. Negative effects are most likely during construction but could also occur during operation e.g. through accidental spills. This Spatial Theme though, through a number of interventions, does reduce the need for new infrastructure, as well as the potential for accidental spillages. For example, reducing demand for travel by car, will reduce the need for new roads, but also reduce the potential for accidents – these interventions will therefore have both a direct and indirect positive effect on the water environment.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing the potential risk to the water environment from transport schemes. In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment and the mitigation developed from this assessment should ensure that the water environment is protected during construction and operation of any transport scheme.	
8.	Development of new rail links and other infrastructure such as new roads, will have an effect on soil and agricultural resources in that some areas may be permanently lost. Development of this infrastructure does though also represent an opportunity to remediate areas of contaminated land – a widespread problem in a formerly heavily industrialised area like Manchester. Therefore the Transport Strategy could have positive and negative effects on this IA Objective. This Spatial Theme though, also encourages the use of existing infrastructure where possible – this includes the Ship Canal and related assets within the Port Salford area. This will lead to a reduction in road freight and along with other measures to reduce car use, will avoid the need for new infrastructure like roads / road widening.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing the need to protect very good agricultural land and to protect soil (if it is not possible to avoid impacts altogether). This Principle also encourages transport projects to remediate land and make use of opportunities for regeneration. The assessment undertaken of any scheme derived from the Transport Strategy should also encourage this approach as appropriate.	
9.	No consideration is made of the potential for flooding on any of the new potential infrastructure being proposed and there are likely significant negative effects. Likewise, no consideration is made of the effects of a changing climate on any of the new Infrastructure.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing a changing climate and increased risk of flooding and requiring all transport projects to consider these issues – for both the construction and operational phases.	

		These issues would also be considered during any environmental assessment carried out.	
10.	The HS2 and Norther Powerhouse rail proposals provide the potential to significantly improve connectivity to Manchester Airport from key city regions by sustainable modes and reduce the need to access the Airport by car. This directly aligns with the IA objective. The acknowledgement that 24hr a day public transport services to the Airport on key services, particularly to the Regional Centre, are required will assist employees in accessing their workplace sustainably, along with parking management strategies to encourage car sharing. Rail access improvements to the Atlantic Gateway Corridor will provide the opportunity to move more freight by rail, thereby reducing the movement of good by road which also directly aligns with the objective.	The Strategy states that 'fewer people will drive to work at the Airport' – it suggested that a clarification is added as with the planned expansion/ increase in jobs more people will drive, although the proportion of those driving may reduce overall.	Wording amended.
11.	This principle is to support improved global connectivity for freight and passengers via Manchester Airport and via Manchester Ship Canal for international freight movements. In order to accomplish this, a number of improvements to both the highway network and public transport network are proposed. These will include infrastructure improvements in particular to the rail and highway networks, which will provide more opportunities for people travelling to employment, education and healthcare. Furthermore, new key rail hubs will strengthen connections to other major city regions across the network, and will be vital in supporting the movement of freight (by rail), skills and information. If Greater Manchester is to benefit fully from access to global trade, the area must be accessible from across the city region. Therefore, this will require improvements to both orbital and radial public transport connectivity, supported by appropriate ticketing products and fare structures.	It should be noted that the full potential of Manchester Airport will only be realised if surface access to the gateway matches the quality of the transformed Airport facilities and services. While there has already been significant investment in connectivity improvements to the airport in recent years, much more will need to be done. In particular, they will need good transport connectivity by public transport to enable both passengers and employees to travel easily and seamlessly to the Airport without a car, coupled with carefully designed demand management measures, to ensure that congestion does not undermine the Airport's long-term growth potential. It was also proposed that other potential travel options would be considered, such as express bus and coach services, new models of car club operation and car sharing and taxi provision to provide a range of alternatives for international travellers. It is recommended that all travel options must be carefully designed and marketed to make them as easy to use as possible, particularly for those unfamiliar with	Agreed Marketing is an important element when introducing new services. Any changes to ticketing products would be informed by research.

		Greater Manchester. Furthermore, it is recommended that research is undertaken in deciding which ticketing products to offer, ensuring they can be used over a variety of modes. Having flexible ticketing options will be beneficial to those on lower incomes and people in part time education or employment.	
14.	This principle aims to expand the Airport's passenger numbers dramatically, which will also mean a large number of jobs will be created. In order for this to be successful, the Airport will need a good road and rail network supporting it. People travelling to the airport must be able to plan their journey easily, including having access to good sustainable transport links with flexible ticketing options, along frequent public transport services or on un-congested roads. Additionally, an increase in rail travel for both passengers and freight would decrease the level of air, light and noise pollution, and improvements to walking and cycling opportunities will increase the levels of active travel and the health of the area.	It is recommended that information on improved airport facilities and transport links to them are easy to understand and widely advertised, particularly using a method suitable for people with visual impairments and learning difficulties. Similarly, changes to the availability of flexible ticketing options should be publicised extensively, ensuring they are available in a number of languages.	This is too detailed for a high level strategy. Information is routinely provided in formats that are easy to understand.
Spatial Theme: Delivering Better City to City Links			
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**
1.	The overall Strategy of improving city-to-city connectivity by public transport will contribute to a mode shift away from the private car towards more sustainable modes. Rail electrification and localised improvements on motorways and other strategic road links will reduce congestion. An indirect impact of all of these will be a slightly beneficial improvement in air quality in GM.	A balance needs to be struck between highway improvements that reduce congestion and generate associated air quality improvements and highway interventions that generate significant additional new traffic that could worsen air quality.	Agreed
2.	The overall Strategy of improving city-to-city connectivity by public transport will contribute to a mode shift away from the private car towards more sustainable modes. Rail electrification and localised improvements on motorways and other strategic road links will reduce congestion. An indirect impact of all of these will be a slightly	A balance needs to be struck between highway improvements that reduce congestion and generate associated air quality improvements and highway interventions that generate significant additional new traffic that could	Agreed

	beneficial reduction in carbon dioxide emissions.	increase carbon emissions.	
3.	There will be a number of infrastructure developments including in some instances new roads / road improvements such as for example the bypass for Mottram and Tintwistle, but also significant rail links such as between Manchester and Leeds. These infrastructure interventions could have a negative effect on biodiversity e.g. through direct landtake or severance of habitat, but also provide an opportunity for biodiversity enhancement, for example through designing in biodiversity such as wildflower verges to provide opportunities for pollinators or planting suitable native species of trees and hedgerows. This Spatial Theme though also encourages the use of existing infrastructure where possible e.g. the rolling out of the Smart Motorways initiative which will allow greater capacity to the network. This will reduce the need for new infrastructure that could affect biodiversity.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance biodiversity during construction and critically during the operational phase through planned maintenance schemes that recognise the importance of protecting biodiversity e.g. by controlling invasive species. In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment or Environmental Impact Assessment (level of assessment to be appropriate to the nature of the scheme). These assessments should provide greater clarity on how biodiversity will be protected (through mitigation) and /or enhanced during the development of any new transformational infrastructure.	These elements have been included in the 'Environmental Responsibility' section.
5.	Development of new infrastructure could have an effect on landscape / townscape – both positive for example by reducing congestion in some areas of townscape, or negative e.g. by introducing new 'hard' features into the landscape. The standard of design will dictate the effect this will have on these assets, with a good design, taking into account local factors likely providing an enhancement. Improvements to existing infrastructure will also be made through for example interventions at Piccadilly, Victoria, Stockport, Bolton and Wigan stations. This will have a positive effect in the townscape of these areas.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance the landscape / townscape. This could include appropriate natural screening (which will also enhance biodiversity), as well as the enhancement of public spaces such as station forecourt, or the decluttering of streetscapes. Good design is a key component of this new Principle. In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment. These assessments should make it clearer that careful design of new infrastructure is critical to	

		ensure that effects on landscape / townscape are a positive enhancement.	
6.	Development of new infrastructure could impact negatively on cultural / historic heritage assets, for example, by impacting on the setting of these features. Conversely it also offers the opportunity to enhance assets directly or through their settings by good design.

Of particular note in this instance is the focus on Manchester Piccadilly rail station – this station was opened in 1842 and is of significant historic interest. | The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance these assets.

In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment. These assessments should encourage sympathetic design in relation to cultural / historical assets with a view to positive enhancement of these and their settings. | |
| 7. | No note is made of the water environment but development of transformational infrastructure could have a negative effect on the water environment. Negative effects are most likely during construction but could also occur during operation e.g. through accidental spills.

It is noted that the Spatial Theme aims to reduce freight movements by road and onto rail. This could potentially reduce the number of accidents and therefore the risk of accidental fuel spills to watercourses and therefore indirectly benefit the water environment. | The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing the potential risk to the water environment from transport schemes.

In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment and the mitigation developed from this assessment should ensure that the water environment is protected during construction and operation of any transport scheme. | Agreed, but too detailed. |
| 8. | Development of new rail links and new roads / road improvements will have an effect on soil and agricultural resources in that some areas may be permanently lost. Development of this infrastructure does though also represent an opportunity to remediate areas of contaminated land – a widespread problem in a formerly heavily industrialised area like Manchester. Therefore the Transport Strategy could have positive and negative effects on this IA | The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing the need to protect very good agricultural land and to protect soil (if it is not possible to avoid impacts altogether). This Principle also encourages transport projects to remediate | |

	Objective. This Spatial Theme though also encourages the use of existing infrastructure where possible e.g. the rolling out of the Smart Motorways initiative which will allow greater capacity to the network. This will reduce the need for new infrastructure that could affect areas of soil etc.	land and make use of opportunities for regeneration. The assessment undertaken of any scheme derived from the Transport Strategy should also encourage this approach as appropriate.	
9.	No consideration is made of the potential for flooding on any of the new potential infrastructure and there are are likely significant negative effects. Likewise, no consideration is made of the effects of a changing climate on any of the new Transformational Infrastructure.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing a changing climate and increased risk of flooding and requiring all transport projects to consider these issues – for both the construction and operational phases. These issues would also be considered during any environmental assessment carried out.	
14.	This principle will improve accessibility and inclusivity for everyone in Greater Manchester up to 2040 and beyond. There will be infrastructure improvements in particular to the rail network and highway network, which will provide more opportunities for people travelling to employment, education and healthcare. Along with new key rail hubs, this will strengthen connections to other major city regions across the network, and will be vital in supporting the movement of freight (by rail), skills and information. Further research into being more prepared for adverse weather and the need to increase capacity will result in fewer delays, congestion, accidents and noise and air pollution. The increase in flexible ticketing options will be of greatest benefit to those in part time employment or work, job seekers and part-time or flexible workers.	It is recommended that improved train services and ticketing systems are easy to understand and widely advertised, particularly using a method suitable for people with visual impairments and learning difficulties. Additionally, there is a need for all of the partners to work together well over the coming years in order to deliver the transformational improvements to the city-to-city links needed to achieve the 2040 Transport Vision and to play a key role in delivering a Northern Powerhouse economy.	Agreed, these issues will all be considered as TfN proposals crystallise.
15.	This principle will improve accessibility and inclusivity for everyone in Greater Manchester up to 2040 and beyond. There will be infrastructure improvements in particular to the rail network and highway network, which will provide more opportunities for people travelling to employment, education and healthcare. Along with new key rail hubs, this will strengthen connections to other major city regions across the network, and will be vital in supporting the	It is recommended that information on improved train services are easy to understand and widely advertised (in particular shorter journey times and more frequent services), particularly using a method suitable for people with visual impairments and learning difficulties.	Agreed, equality and diversity issues such as these will be an important issue in information and ticketing development.

| | movement of freight (by rail), skills and information.

Further research into being more prepared for adverse weather and the need to increase capacity will result in fewer delays, congestion, accidents and noise and air pollution. The increase in flexible ticketing options will be of greatest benefit to those in part time employment or work, job seekers and part-time or flexible workers.

An increase in rail travel for passengers and freight would decrease the level of air, light and noise pollution. This would particularly benefit those with long term conditions such as asthma, and would also improve health overall. A reduction in noise pollution would benefit children the most, as high noise levels have an adverse impact on children's' cognitive ability. | Similarly, changes to the availability of flexible ticketing options should be publicised extensively, ensuring they are available in a number of languages. | |

Spatial Theme: Travel To and Within Our Regional Centre			
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**
1.	The principle outlined for this theme that 85% of peak hour trips into the Regional Centre will be undertaken by sustainable modes aligns with the IA objective as the mode shift will indirectly improve air quality. Furthermore accommodating a 24/7 economy across the Regional Centre via appropriate sustainable transport provision, will indirectly support this objective.	The spatial theme could articulate further the importance of tacking air quality in the AQMAs in the regional centre.	This is already covered, and one of the key interventions listed is a feasibility study into a CAZ. The Environmental responsibility section makes clear that the Regional Centre is a particular problem re air quality.
2.	This spatial theme outlines the intention to create a transport network that has a greatly reduced environmental impact. By encouraging as many people as possible to travel to the Regional Centre by non-car mode, such that growth can be accommodated without increasing the levels of traffic congestion within the Regional Centre. The aim to keep peak period traffic levels at 2016 volumes, with at least 70% of peak hour trips to the Regional Centre made by public transport and a further 15% by bicycle/ on foot indirectly aligns with the IA objective of reducing carbon dioxide emissions, particularly from road transport.	This spatial theme could state further the positive benefits on carbon emission reductions.	It is clear from the Environmental Responsibility section that more car traffic will increase carbon emissions.
14.	This principle aims to improve interchange between different modes and so facilitate multi-stage journeys for people without access to a car. It aims to ensure that travel by all modes is safe and secure, so that vulnerable groups are not discouraged from using available services, and aims to remove freight vehicles from the city centre as	It will be important to ensure that all interchanges are suitable for people with disabilities, and that extra crossings over the canal are suitable for both pedestrians and cyclists. Any Metrolink extensions above	Agreed, DDRG cover these issues very well. Metrolink Safety audits are also a very

	much as possible. It aims to reduce the levels of motorised vehicles in the city centre to create a pedestrian and cyclist focussed environment.	ground should consider the potential for conflict with other modes.	important part of scheme design. The issue of disabled access to interchanges is covered in Public Transport: Keeping GM moving (s115). Text added to the section on Walking and Cycling network to make clear that new links should be suitable for both. The section on Highways includes a section on providing for sustainable modes on the highway. Text added to this to make clear the need to resolve conflicts between different on-street modes.
15.	This principle aims to improve interchange between different modes and so facilitate multi-stage journeys for people without access to a car. It aims to ensure that travel by all modes is safe and secure, so that vulnerable groups are not discouraged from using available services, and aims to remove freight vehicles from the city centre as much as possible, which will reduce accident rates and also improve air and noise pollution levels, which will be beneficial to health. It aims to reduce the levels of motorised vehicles in the city centre to create a pedestrian and cyclist focussed environment, and where car journeys are necessary, it will promote ULEVs, so that the levels of pollution are minimised.	It will be important to ensure that all interchanges are suitable for people with disabilities, and that extra crossings over the canal are suitable for both pedestrians and cyclists. Any Metrolink extensions above ground should consider the potential for conflict with other modes.	Agreed, this is explored in scheme design and in partnership with DDRG.
Spatial Theme: Travel across the wider city region			
IA Obj.	**Assessment summary**	**Recommendation**	**How has this recommendation been addressed?**
1.	This spatial theme articulates the support for greater use of public transport and active modes through an enhanced. The potential mode shift from private car to use more sustainable modes may be slightly beneficial to this objective. Furthermore, by aiming to deliver a more efficient and reliable highway network, addressing localised congestion and liaising with businesses to develop freight/ delivery re-timing strategies to ensure these do not add to peak congestion problems will all indirectly contribute to improved air quality.	The spatial theme could articulate further the importance of tacking air quality in the AQMAs in this area of GM.	Agreed, Air quality reference added into town centres section.

3.	There will be a number of infrastructure developments including for example new rail, cycle-ways, rapid transit, pedestrian links and in some instances new roads. These Infrastructure interventions could have a negative effect on biodiversity e. through direct landtake, but also provide an opportunity for biodiversity enhancement – for example through the development / utilisation of 'green corridors'. The Spatial Theme notes though that the priority is to make better use of existing infrastructure e.g. roads and this will reduce the need for new infrastructure.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance biodiversity during construction and critically during the operational phase through planned maintenance schemes that recognise the importance of protecting biodiversity e.g. by controlling invasive species. In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment or Environmental Impact Assessment (level of assessment to be appropriate to the nature of the scheme). These assessments should provide greater clarity on how biodiversity will be protected (through mitigation) and /or enhanced during the development of any new transformational infrastructure.	Environmental Responsibility section covers these.
5.	Development of new infrastructure could have an effect on landscape / townscape – both positive for example by reducing congestion in some areas of townscape,or negative e.g. by introducing new 'hard' features into the landscape. The standard of design will dictate the effect this will have on these assets, with a good design, taking into account local factors likely providing an enhancement. The reduction of traffic / reducing the dominance of the car, will have a positive impact on townscapes, as will the improved maintenance proposed.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance the landscape / townscape. This could include appropriate natural screening (which will also enhance biodiversity), as well as the enhancement of public spaces such as station forecourt, or the decluttering of streetscapes. Good design is a key component of this new Principle. In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment. These assessments should make it clearer that careful design of new infrastructure is critical to ensure that effects on landscape / townscape	

		are a positive enhancement.
6.	Reducing the dominance of the car may provide the opportunity to enhance positively the setting of cultural heritage assets, or the historic centres of towns.

Conversely new infrastructure also has the potential to impact negatively on some areas of cultural or historic heritage for example by impacting on the setting. | The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy as it will encourage a range of approaches to protect and enhance these assets.

In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment. These assessments should encourage sympathetic design in relation to cultural / historical assets with a view to positive enhancement of these and their settings. | |
| 7. | No note is made of the water environment but development of transformational infrastructure could have a negative effect on the water environment. Negative effects are most likely during construction but could also occur during operation e.g. through accidental spills.

It is noted that interventions are proposed to reduce congestion and improve flows – this will potentially reduce the number of accidents and therefore the risk of accidental fuel spills to watercourses and therefore indirectly benefit the water environment. | The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing the potential risk to the water environment from transport schemes.

In addition, it should be made clear in the Strategy document that any scheme to be derived from the Transport Strategy will be subject to environmental assessment and the mitigation developed from this assessment should ensure that the water environment is protected during construction and operation of any transport scheme. | |
| 8. | Development of High Speed Rail links and associated transformational infrastructure will have an effect on soil and agricultural resources in that some areas may be permanently lost. Development of this infrastructure does though also represent an opportunity to remediate areas of contaminated land – a widespread problem in a formerly heavily industrialised area like Manchester. Therefore the Transport Strategy could have positive and negative effects on this IA Objective. | The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing the need to protect very good agricultural land and to protect soil (if it is not possible to avoid impacts altogether). This Principle also encourages transport projects to remediate land and make use of opportunities for | |

	The Spatial Theme notes though that the priority is to make better use of existing infrastructure e.g. roads and this will reduce the need for new infrastructure.	regeneration. The assessment undertaken of any scheme derived from the Transport Strategy should also encourage this approach as appropriate.	
9.	No consideration is made of the potential for flooding on any of the new potential infrastructure. Likewise, no consideration is made of the effects of a changing climate on any of the new Transformational Infrastructure.	The proposals within this Spatial Theme reinforce the need for the new Principle relating to the Built and Natural Environment to be included in the Transport Strategy addressing a changing climate and increased risk of flooding and requiring all transport projects to consider these issues – for both the construction and operational phases. These issues would also be considered during any environmental assessment carried out.	
11.	By ensuring that the significant new developments will be accessible by public transport and supported by Travel Choices promotional measures improves will reduce the need to access these developments by the private car. This Principle directly aligns with the IA objective. Furthermore, the provision of more attractive alternatives to car travel - including orbital public transport connections all effectively reduce the need to travel by car thereby supporting this objective. The strategy states the need to balance highway improvements with demand management measures.	Given the complex travel patterns, particularly associated with orbital movements, reference could be made to multi-modal journeys eg bike-bus/ tram/ train. In particular, to promote using multiple sustainable travel modes.	Reference added in 'Access to employment etc' to multi-modal travel.
14.	This principle aims to improve interchanges and public transport services so that more people are able to easily make journeys without access to a car. It aims to reduce the impact of freight on vulnerable road users and people with health issues, and plans to encourage mode shift so that the impact of motorised vehicles can be minimised.	Travel information should be made available in other languages, and in formats accessible for people with disabilities (especially people with visual impairments and learning difficulties). Transport services and interchanges should also be made accessible for people with disabilities – mobility impairments and also visual impairments in particular. The new fare pricing structure should be designed to be as affordable as possible.	As described earlier. Access to healthcare is covered. The detailed design of services is outside the scope of this document.
15.	This principle aims to improve interchanges and public transport services so that more people are able to easily make journeys without access to a car, including promoting sustainable access to hospitals. It aims to reduce the impact of freight on vulnerable road	It will be important when considering the integration of transport services that the needs of people accessing healthcare are considered – services need to be regular and offer as	As described earlier.

		direct access as possible. It will also be important to ensure that services are accessible for people with disabilities.	

Spatial Theme: Connected Neighbourhoods			

IA Obj.	Assessment summary	Recommendation	How has this recommendation been addressed?
3.	This theme refers vaguely to the benefits of both 'Green' & 'Blue' infrastructure under the section Environmental Quality but no concrete approaches or interventions are proposed in this regard. The creation of such type of infrastructure has the potential to enhance positively biodiversity.	It is recommended that a better explanation is provided in the Strategy of the approaches and interventions regarding 'Green' & 'Blue' infrastructure and that this explanation is provided under its own heading rather than under Environmental Quality. In addition, the proposed new 'Environmentally-Responsible' principle covers this aspect and many other Environmental Quality aspects and applies across the Spatial themes. The current text under Environmental Quality under this theme is too generic and missing in many key aspects. It is recommended that the topic of Environmental Quality is removed from this Spatial theme, apart possibly from providing further explanation about 'Green' and 'Blue' infrastructure proposals as mentioned above, if indeed this is important from a Connected Neighbourhoods perspective only. Otherwise, it is suggested that better explanation is provided with regards to other relevant spatial themes.	The Connected Neighbourhoods text is written from the perspective of creating a pleasant living environment and one which encourages more people to travel on foot or by bike. An additional reference to green and blue infrastructure has been included under 'Environmental Responsibility, but the references within Connected Neighbourhoods will remain, for the reasons stated above.
5.	Development of 'Green & Blue' Infrastructure will offer the opportunity for further landscape / townscape enhancement through careful design of screening etc. Proposals are however unclear in this regard.		
6.	Making better use of the canal network by the development of 'Blue' infrastructure will provide the opportunity to highlight these industrial heritage assets. Proposals are however unclear in this regard.		
7.	Development of Blue infrastructure could provide the opportunity to enhance the water environment, though negative effects could also be experienced. Proposals are however unclear in this regard.		
8.	The development of 'Green' Infrastructure could provide the opportunity to protect and enhance soil resources, as well as remediate areas of contamination – a widespread problem in a formerly heavily industrialised area like Greater Manchester. Proposals are however unclear in this regard.		
9.	Developing 'Green' and 'Blue' Infrastructure and utilising the river and canal network may assist in reducing the risk of flooding but it may also exacerbate the potential for flooding along these assets to occur. Proposals are however unclear in this regard.		
11.	By encouraging and supporting both active travel modes and public transport trips, the intervention aligns with this IA objective. The	The Strategy states it aims for '10% of shorter journeys will be made by bicycle'. It is	Key evidence box refers to these as being

	desire to promote the use of local facilities aims to further reduce the need/ distance to travel.	recommended that a definition is provided of what a 'shorter journey' is.	trips of 5 miles or less.

12. Assessment of Delivery Plan 1

12.1. Introduction

12.1.1. In order to deliver the vision of 'World class connections that support long-term sustainable economic growth and access to opportunity for all', the Greater Manchester Transport Strategy 2040 is supported by a series of short term (5 year) Delivery Plans, which will be reviewed and updated annually. Through these Delivery Plans, TfGM will be able to respond quickly to needs arising from new development and regeneration opportunities, as well as to additional funding opportunities and regulatory changes. The first Delivery Plan covers the years 2016/17 – 2021/22 and has been subject to assessment as described below.

12.1.2. TfGM have identified in the Delivery Plan for 2016/17 – 2021/22 schemes for delivery over this first five year period.

12.1.3. The Delivery Plan contains two broad types of scheme:

- Committed Schemes i.e. fully funded and being developed at the time of this assessment.

- Indicative Schemes and Programmes to be delivered subject to funding – these will be subject to further assessment and consideration

12.1.4. The Delivery Plan includes the continued implementation of schemes that were identified in the 'Greater Manchester Local Transport Plan 3 Capital Programme 2015/16 – 2020/21' and funded under the Local Growth Fund (committed schemes). It is important to note that these committed schemes have been developed and assessed in accordance to the relevant guidance and legislation applicable at that time and have not been considered further as part of this IA. The focus of this IA is therefore the Indicative Schemes and Programmes shown in Table 17. Note that committed schemes are marked as 'green' in the table below and are shown for completeness.

12.1.5. The Delivery Plan element of the Strategy document took on a role of a bidding document for the July 2016 Growth Deal, As such, interventions were included within the document at a later stage than would usually be the case. This means that Table 17 may not mirror exactly the schemes that are in the consultation version of the Delivery Report.

12.1.6. However, when aggregated into sectors, they clearly set out a proposed demonstration of anticipated future transport programmes.

Table 17. Delivery Plan 1 Proposed Schemes

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
Highways	Schemes	New Highway Link	G.6 Western Gateway Infrastructure Scheme	'Part-WGIS' highway package (A57 alterations, lifting bridge & bridge access links), providing access to Port Salford.
			C.3 A57(T) to A57 Link Road	New link from A57(T) at Mottram Moor to A57 at Woolley Bridge - Reduce congestion in the Longdendale area
			South Heywood M62 J 19 Harehill Road	Link road between M62 Junction 19 and the Hareshill Road/Manchester Road junction to provide access to

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
				existing and planned employment sites and relieve congestion in and around Heywood Town Centre.
			M6 J26/M58	Junction improvements to support the delivery of the M58 Link road committed scheme.
			Carrington Spine Road	Improvement of the A1 internal road (former industrial site) to adoptable standard.
			Wigan A49 Link Road (committed scheme)	A link road to complete a dual carriageway link between J25 of the M6: Improve access to the southern part of Wigan Town Centre, and Westwood Park employment area.
			Wigan M58 Link Road (committed scheme)	A link road between Junction 26 of the M6 and the A571: Provides an alternative link into Wigan from the M58, relieving congestion on the A577, and supporting new employment development.
			Mottram Moor Link Road (committed scheme)	New link road from the M67 to A57(T) at Mottram Moor: Reduce congestion in the Longdendale area
			A556 Knutsford to Bowden (Cheshire East) (committed scheme)	Replacement of A556 from M56 J7/8 to the M6 J19: Reduce congestion and improve safety
		Highway Infrastructure Improvements	RC.12 KRN Pinch Points	Package of prioritised schemes on the Key Route Network - Tackle congestion pinch points and improve safety
			RC.12 Highways Management	Package of prioritised schemes on the Key Route Network - Improve traffic flow and inform road users
				A package of highways measures, with a particular focus on the GM Key Route Network, to improve access across the wider city region and to the motorway network for city-to-city links,

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
				encompassing improved traffic management technologies, pinch-point resolution measures, bus priority measures and access to development sites, in support of key growth points and to address localised issues of traffic congestion that undermine their productivity potential.
			Wellington Road Viaduct & Merseyway Precinct	Re-construction of viaduct and precinct structure - Improve resilience of highways in Stockport town centre
			M60 Junction 8 to M62 Junction 20 Smart Motorway	Smart motorway M60 J8 to J18; Smart motorway with all lane running M62 J18-20: Improve capacity and reliability of motorway
			M62 Junctions 10-12 (committed scheme)	Smart motorway including hard shoulder running: Improve capacity and reliability of motorway
			M6 Junctions 21A-26 (committed scheme)	Smart motorway including hard shoulder running: Improve capacity and reliability of motorway
			M60 Junctions 24-27 & J1-4 (committed scheme)	Smart motorway including hard shoulder running: Improve capacity and reliability of motorway
			M56 Junctions 6-8 (committed scheme)	Smart motorway including hard shoulder running: Improve capacity and reliability of motorway
			M60 Junction 18 (committed scheme)	Improvement to Simister Island interchange: Reduce congestion
			M62 Junctions 20-25 (committed scheme)	Smart motorway: Improve capacity and reliability of motorway

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
			Manchester and Salford Inner Relief Route: Regent Road (committed scheme)	Measures to improve reduce the Regent Road junction on its approaches and at adjacent junctions (Trinity Way/Irwell Street, Chapel Road and the merge from Chester Road roundabout): Reduce congestion
			M62 J19 Link Road (committed scheme)	Link road between M62 Junction 19 and the Hareshill Road/Manchester Road junction to provide access to existing and planned employment sites and relieve congestion in and around Heywood Town Centre.
	Studies		G.4 & G.9 Studies and business case development for road infrastructure to improve connectivity and relieve congestion on the motorway network in the Port Salford and Airport areas.	No detailed assessment undertaken for these studies as proposals are not sufficiently developed.
			C.7 & C.9 Work with Highways England to further develop packages of measures emerging from the North West Quadrant Study	
			C.4 Studies and business case development for improved access to the M6 and M58	
			A6 to M60 Study Development of a	

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
			Highways Strategy Delivery Plan	
			Feasibility study into new link from A57(T) at Mottram Moor to A57 at Woolley Bridge (HE)	
			Study to identify the key risks to the Key Route Network and other transport infrastructure from flooding	
Rail	Schemes	Rail Links	G.6 Port Salford Rail Link	Rail link to the Chat Moss line, enabling transfer of goods to/from rail - reduce congestion by enabling movement of freight by sustainable modes.
			Hope Valley	Hope Valley capacity and Journey time improvements
			G.2 Airport Rail Services	Extension of Derby-Crewe services to Airport through East Midlands Rail Franchise - reduce congestion by providing an alternative to the car
			Bolton - Wigan	Bolton-Wigan Route electrification and associated works.
			G.7 Further development of the consulted Airport - Picadilly HS2 Route	Ensuring that Manchester Airport has a HS2 Station, and that the route then accesses Piccadilly via tunnel.
		Rail Infrastructure Improvements	Ordsall Chord (committed scheme)	West of Victoria track layout changes, Castlefield and Ordsall Lane junction capacity and performance improvements: Part of the Northern Hub rail scheme to increase capacity
			Manchester-Preston (committed scheme)	Manchester-Preston electrification and journey time improvements: Improve journey speeds, reduce emissions
			Manchester-	Manchester Victoria-Stalybridge electrification and

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
			Stalybridge (committed scheme)	journey time improvements: Improve journey speeds, reduce emissions
			Calder valley (committed scheme)	Calder Valley Journey Time Improvements: Manchester-Bradford via Calder Valley: Faster journey times
			Guide Bridge-Stalybridge (committed scheme)	Guide Bridge-Stalybridge electrification and journey time improvements: Improve journey speeds, reduce emissions
			Trans-Pennine (committed scheme)	Trans-Pennine route upgrade Electrification Stalybridge-Leeds-York/Selby, line speed improvements: Improve journey speeds, reduce emissions
		Station Upgrade	C.6 Stockport Station	Initial elements of Stockport Station Masterplan
			Minor Works (<£5M)	Package of targeted rail station improvement activities across GM in support of the devolved management of rail stations, which was agreed in the GM Devolution Agreement in order to significantly improve the travel experience, accessibility and attractiveness of rail for existing and new users, and to support GM's ambitions to develop a more integrated public transport network.
			Platform Lengthening (committed scheme)	North West Train lengthening 4 cars length at Diggle line, Mid Cheshire, Buxton, Bolton-Clitheroe, Southport line stations. Hadfield/Glossop line

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
				capacity improvements: Improves capacity by allowing longer trains to stop
			Salford Central Additional Platforms (committed scheme)	Three additional platforms to accommodate increased passenger numbers and additional services post completion of the Ordsall Chord: Improving access to the rail network from the Central Salford/Spinningfields area
			Rochdale capacity (committed scheme)	Turnback at Rochdale station
			Bolton Station (committed scheme)	Bolton station remodelling and extra platform
	Studies		C.6 Develop masterplans/designs for improvements at National Hub rail stations	No detailed assessment undertaken for these studies as proposals are not sufficiently developed.
			C.7 & C.9 Study of potential for additional rail freight interchanges	
			RC.7 Development of a masterplan for Piccadilly Hub	
			RC.9 Studies to identify capacity improvements needed at Regional Centre rail stations	
			Work with Transport for the North and Network Rail to identify the potential for rail capacity improvements	
Public Transport (excl. Rail)	Schemes	Metrolink & Bus	G.1 Metrolink Airport Western Loop (Initial Phase)	Deliver early parts of Metrolink Airport Western Loop as part of T2 redevelopment - reduce congestion by providing an alternative to car travel/improve access to western part of Enterprise

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
				Zone and HS2.
			Oldham Mumps Interchange	Covered Bus / Metrolink Interchange
			Bus Access	Package of prioritised measures to Improve bus access and reduce delay
			Low Emission Buses	Accelerate replacement/retrofit of pre-Euro IV buses
			Trafford Centre Metrolink extension (committed scheme)	Extend Metrolink to Trafford Centre: reduce congestion by providing an alternative to car travel
			Metrolink Service Improvement Package (committed scheme)	Additional light rail vehicles (LRVs) and supporting infrastructure to provide increased resilience across the network: Increasing capacity to encourage a shift from car use.
			Salford-Bolton Bus Network Improvements (committed scheme)	Improvements to bus routes, passenger interchange and waiting facilities to improve quality, frequency, journey times and reliability.
		Minor Works	Regional Centre Minor Works Package	A package of Regional Centre access measures, including a series of bus priority, active travel and wayfinding schemes - Support effective integration between principal public transport gateways and the city centre, reduce severance by major roads, reduce congestion and promote enhanced permeability and increased levels of footfall.
				A package of measures to support improved access to key employment, education and training locations across the wider city region, focused on improving walking, cycling and public transport connectivity and smarter choices activities.
			Town Centre Connectivity	Packages of minor schemes in the key town centres - Reduce car trips through improved

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
				access by sustainable modes
			Minor Works (schemes <£5m)	Package of neighbourhood connectivity schemes focussed on improving access to local rail stations, Metrolink stops and local bus hubs from their adjacent communities, so as to promote sustainable commuting patterns and to support adjacent housing/employment growth points.
				A package of town centre access measures, including a series of bus priority, active travel and wayfinding schemes across key centres in GM to support effective integration between principal public transport gateways and town/city centres, reduced severance by major roads, reduced congestion and to promote enhanced permeability and increased levels of footfall in centres.
				A package of measures to support improved access to key employment, education and training locations across the wider city region, focused on improving walking, cycling and public transport connectivity and smarter choices activities.
			Minor Works Programme 2016/17 (committed scheme)	Programme of schemes costing <£5 million, covering town centre connectivity, local access to public transport, access to development sites and active travel schemes.
			Stockport Town Centre Access Package (committed scheme)	Measures to improve access for sustainable modes (bus priority, cycle and pedestrian links, public realm enhancements and signage), rationalise traffic movements and improve access to interchanges and development sites.
			Cycle City Ambition	Programme of measures including cycleways, Cycle

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
			Grant 2 (committed scheme)	Friendly District Centres, Partner Schools Programme, cycle parking, cycle and ride stations and promotional activity.
		Station & Interchange Works	Leigh Interchange	Re-modelling of existing interchange - Improve public transport interchange following arrival of Leigh Busway
			Bury Interchange	Re-modelling of existing interchange - Improve passenger facilities and linkage with the core shopping area
			Pendleton Bus Station	Bus facility in town centre - Improve public transport interchange and access to employment
			Stockport Interchange (committed scheme)	Replacement of the existing Interchange to improve passenger facilities and bus-rail interchange, and make provision for the future extension of Metrolink.
			Tameside Interchange (committed scheme)	New Interchange with bus and Metrolink on a single site, replacing the existing bus station.
			Wigan Interchange (committed scheme)	Improvement of the existing Wigan bus station, including telemetry with the two rail stations and connections to key town centre destinations.
			Rail Station Improvement Strategy Tranche 6 (committed scheme)	Improvements to passenger help points, CCTV, real time information screens and public announcement systems at smaller rail stations.
	Studies		Study of Options for increasing Metrolink capacity in the City Centre and to Salford Quays	No detailed assessment undertaken for these studies as proposals are not sufficiently developed.
			Studies and business case development for public transport schemes to improve access to the Airport,	

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
			Enterprise Zone and Port Salford, including rapid transit, bus links, rail stations and services	
			RC.5; RC.12 Further development of a transport strategy for the City Centre, including bus routeing and interchange and review of the highway network	
			GM.13 Cycle hire feasibility study	
			Develop a preferred option, potentially using powers included in the Buses Bill, for the integration and harmonisation of standards across the bus network	
Various	Schemes	EV Facilitation	Electric Vehicle Charging	Expansion of network of EV charging points which will include more than 200 fast charging bays across GM. About one quarter of these will be in fleet depots and private car parks with the remainder in public car parks and on-street parking bays.
	Studies		Identification of the infrastructure requirements of development areas identified through GMSF	No detailed assessment undertaken for these studies as proposals are not sufficiently developed.
			South East Manchester Multi-Modal Study (SEMMMS) Refresh	
			Studies into options for relieving congestion at prioritised locations, including the	

Sector	Scheme or study	Type of Intervention	Name	Scheme Description
			potential of strategic park and ride	
			Scoping studies for potential rapid transit schemes, including orbital links, and business case development as appropriate	
			Develop business cases for improvements to prioritised interchanges	
			Identification of priority areas for noise reduction and development of measures	
			Develop an integrated fares and ticketing system and work with Transport for the North to develop a cross-modal payment system, compatible across the North	
			Safety and security programmes (committed scheme)	
			Travel Choices programmes (committed scheme)	
Sustainable Freight Infrastructure	Schemes	Waterways	Port Salford Wharf	Wharf on the Manchester Ship Canal, allowing movement of goods by canal from Port of Liverpool.
	Studies		N/A	N/A

12.1.7. The assessments have been undertaken per type of schemes rather than individual schemes as the information available for each scheme is relatively high level. The schemes have been assessed against the IA Objectives using the following significance scale:

Assessment Scale		Assessment Category	Significance of Effect
+++		Large beneficial	Significant
++		Moderate beneficial	
+		Slight beneficial	Not Significant
0		Neutral or no obvious effect	
-		Slight adverse	
--		Moderate adverse	Significant
---		Strong adverse	
?		Effect uncertain	
+/-		Combination of slight beneficial and adverse effects	Not significant
++	--	Combination of moderate beneficial and adverse effects	Significant

12.1.8.   A summary of the assessment findings for the different types of schemes and an overview of recommendations arising from these assessments are presented below. Tables detailing the assessments are provided in Appendix F to this report.

12.1.9.   Table 18 provides an overview of the anticipated effects on the IA Objectives in relation to each scheme type that has been identified. The following scheme types have been considered:

- New Highway Links
- Highway Infrastructure Improvements
- Rail Links
- Rail Infrastructure Improvements
- Station Upgrade
- Metrolink & Bus
- Minor Works
- Station & Interchange Works
- EV Facilitation
- Sustainable Freight Infrastructure

12.1.10.   The above types of scheme have been assessed against the IA Objectives as follows:
1. Improve air quality

2. Reduce carbon dioxide (CO2) emissions from transport overall, with particular emphasis on road transport

3. Conserve and enhance biodiversity, green infrastructure and geodiversity assets

4. Conserve and enhance the European sites (HRA specific objective)

5. Conserve and enhance the character and quality of GM's landscapes and townscapes

6. Conserve and enhance the quality and distinctiveness of historic and cultural heritage

7. Conserve and enhance the water environment

8. Conserve soil and agricultural resources and seek to remediate / avoid land contamination

9. Reduce risk of flooding and increase resilience to the effects of a changing climate

10. Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling

11. Reduce the need to travel by car or move goods by road and promote sustainable modes of transport

12. Promote economic growth and job creation across the sub-region, and improve access to jobs for all

13. Coordinate land use and transport planning across GM

14. Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective)

15. Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective)

12.2. Assessment Results

12.2.1.   An analysis of the summary assessment results in Table 18 shows that the proposed schemes demonstrate a mix of effects on the IA Objectives, ranging from Strong adverse to Strong beneficial. Where appropriate, mitigation measures for each type of scheme have been proposed. It is important to note that this typical mitigation may, or may not, be applied to an individual scheme – the mitigation to be applied will depend upon the precise design of the scheme, the landscape and environment into which it is to be placed, the level of environmental protection required and the overall economic and social objectives of the scheme. In short, any mitigation to be put in place will be bespoke to and appropriate for, that scheme.

12.2.2.   The schemes with most negative effects are those within the 'New Highway Links' type. These schemes are considered to be Strongly adverse in terms of how they can, without strong mitigation, affect soil and agricultural resources, interact with the issue of flooding, use of natural resources and will not encourage a reduction in travel by car, nor a reduction of the movement of goods by road. However, on the plus side, they are considered to be Strongly beneficial in terms of promoting economic growth and job creation and will improve access to jobs for all.

12.2.3.   'Highway Infrastructure Improvement' schemes are also for the most part adverse – strongly so in relation to reducing travel by car and reducing the movement of goods by road. On the plus side, these types of scheme will be strongly beneficial in terms of promoting economic growth and job creation and will improve access to jobs for all.

12.2.4.   'Rail Links' and 'Rail Infrastructure Improvements' are strongly beneficial in both reducing the need to travel by car and reducing the movement of goods by road, as well as promoting economic growth and job creation and improving access to jobs for all. It is also considered that they will be moderately beneficial in terms of improving air quality and reducing carbon emissions. However, it is considered that they can have moderate adverse effects on a range of issues such as biodiversity, landscapes, cultural heritage, the water environment and flooding and the use of natural resources if expanding beyond the current railway footprint. New rail links are also anticipated to have a strong adverse effect on soil / agricultural resources.

12.2.5.   In addition to 'Rail Links' and 'Rail Infrastructure Improvements', improving air quality and reducing carbon emissions is anticipated to be promoted by schemes progressed under 'Station Upgrades', 'Metrolink & Bus', the Minor Works programmes, 'Station and Interchange Works', as well as the proposed expansion of the EV charging network and supporting infrastructure at the new Port Salford wharf. The schemes relating to Highway Links and Improvements are also anticipated to have some benefits in this regard.

12.2.6. Overall, the schemes proposed are also anticipated to be, for the most part, beneficial in terms of promoting economic growth and job creation and improving access to jobs for all, as well as reducing the need to travel by car and reducing the movement of goods by road (notwithstanding the strong adverse effects of the highway related schemes in this regard). The programme of 'Minor Works' is considered to be frequently beneficial (often strongly or moderately so) which demonstrates that schemes do not need to be large, high profile schemes in order to achieve IA objectives.

12.2.7. As a result of the assessments, a range of typical mitigation measures that could be applied to the proposed schemes have been identified relating to each IA objective, with an overview of each provided in Table 19. As indicated earlier, any mitigation to be put in place will be bespoke to and appropriate for each scheme, and not all mitigation measures noted below will necessarily apply and some further bespoke measures are likely to arise as a result of more detailed assessments at a later stage.

Table 18.   Assessment results by scheme type

Scheme Type	IA Objective														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
New Highway Links	-- / ++	-- / ++	--	--	--	--	--	---	---	---	---	+++	+	+/-	+/-
Highway Infrastructure Improvements	-- / ++	-- / ++	--	--	-- / ++	-- / ++	-- / ++	-	--	--	---	+++	++	+/-	+/-
Rail Links	++	++	--	--	--	--	--	---	--	--	+++	+++	+	+/-	+/-
Rail Infrastructure Improvements	++	++	--	--	+/-	-- / ++	--	-	-	--	+++	+++	0	+	+/-
Station Upgrades	++	++	0	0	+	+	0	+	+	-	++	+	0	0	0
Metrolink & Bus	++	++	0	0	+	+/-	0	+	0	-	++	+++	+	+	+
Minor Works	+++	+++	0	0	+	+/-	0	+	0	-	++	+++	++	++	++
Station & Interchange works	+++	+++	0	0	+	+/-	0	+	0	-	++	+	0	+	+
EV Facilitation	+++	+++	0	0	0	0	0	0	0	-	--	0	+	0	+
Sustainable Freight Infrastructure	++	++	--	0	---	++	--	---	--	--	+++	++	++	0	+

Table 19. Overview of Recommended Mitigation for each IA Objective

No.	IA Objective	Overview of Recommended Mitigation
1	Improve Air Quality	It will be important to reduce emissions and protect air quality as much as possible. Mitigation measures may affect the project design, layout, construction, operation and/or may comprise measures to improve air quality in pollution hotspots beyond the immediate locality of the scheme. Measures could include, but are not limited to, changes to the route of the new scheme, changes to the proximity of vehicles to local receptors in the existing route, physical means including barriers to trap or better disperse emissions, and speed control. The implementation of mitigation measures may require working with partners to support their delivery.
2	Reduce carbon dioxide (CO2) emissions from transport overall, with a particular emphasis on road transport	Due to the potential threats posed by a changing climate and in order to meet Government commitments to reducing carbon emissions, measures should be taken to reduce the amount of carbon from our transport system. Reductions would mainly be from vehicles and can be found in many of the measures suggested to reduce air pollution emissions, but further reductions to the carbon footprint can be found in the construction and operation of transport network assets – for example by using more energy efficient lights. The carbon footprint can be readily measured at construction and operation by use of an appropriate carbon calculator.
3 & 4	Conserve and enhance biodiversity, green infrastructure and geodiversity assets & Conserve and enhance the European sites (HRA specific objective)	Opportunities to enhance biodiversity and green infrastructure exist, through designing in biodiversity into schemes. These opportunities include for example, the development of wildflower meadows along linear features such as roads and railway lines, which will look attractive and also provide opportunities for pollinators, or could include simple measures such as bird / bat boxes. More complex measures such as animal over or under passes can be considered. Similarly, biodiversity can be enhanced by the planting of suitable / native species of trees and hedgerows. Properly planned maintenance schemes can also enhance biodiversity, for example from the active control of invasive species.

Particular consideration needs to be made to protection measures in relation to any scheme which may impact directly, or indirectly, on any site designated for nature conservation purposes – particularly those designated as SSSI or Natura 2000. |
| 5 | Conserve and enhance the character and quality of GM's landscapes and townscapes | Projects need to be designed carefully, taking account of the potential impact on the landscape / townscape. Reducing the scale of a project or making changes to its operation can help to avoid or mitigate the visual and landscape effects of a proposed project. Consideration during planning should also be given to appropriate siting, design of the scheme (including choice of materials) and landscaping schemes. Note |

		that ideally native species should be used in any planting. Subject to appropriate planning, screening can also take place 'off site' e.g. by planting out gaps in tree lines / hedgerows. Particular consideration is to be given to conserving landscape and scenic beauty in any nationally designated areas, with encouragement given to avoiding these areas if possible. Opportunities for landscape / townscape enhancement should be taken when possible.
6	Conserve and enhance the quality and distinctiveness of historic and cultural heritage	The historic environment includes all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora. Heritage assets may be buildings, monuments, sites, places, areas or landscapes. Consideration should be made of the character and setting of the heritage asset, its significance (and level of protection afforded to it), the potential for loss or harm and need for conservation. Opportunities should be taken when possible for the enhancement of heritage assets. It should also be noted that due to its nature, not all heritage features may be apparent at the planning / design stage and precautions for unexpected discovery should be taken – perhaps through an archaeological watching brief.
7	Conserve and enhance the water environment	Impact on local water resources can be addressed through planning and design for the efficient use of water, including water recycling. Consideration should be given to the use of SuDS (including permeable paving), but it is also recognised that conventional drainage will play an important role. Protection and good pollution control measures are to be utilised during both construction and operation of transport schemes.
8	Conserve soil and agricultural resources and seek to remediate / avoid land contamination	Protection of soil resources, particularly those of higher quality / areas of better agricultural lands should always be considered – this could be done during scheme planning by careful route selection. If areas of good quality soil cannot be avoided, care should be taken during construction to store topsoil for later reuse – either on site as landscaping or further afield. Opportunities should also be taken to utilise areas of previously developed land and to remediate contaminated land when possible. This could include the removal / appropriate treatment of any invasive species such as Japanese Knotweed.
9	Reduce risk of flooding and increase resilience to the effects of a changing climate	Flooding poses a particular risk to the transport network and this situation is likely to get worse with a changing climate. However, new infrastructure developments or improvements to existing infrastructure can also contribute to an additional flood risk elsewhere. Opportunities can be taken to lower flood risk by considering flood protection measures, improving flow routes, flood storage capacity and using Sustainable Drainage Systems (SuDS). The appropriate use of SuDS will be critical and it should be the intention that site layout and surface water drainage systems should cope with events that exceed the design capacity of the system, so that excess

		water can be safely stored on or conveyed from the site without adverse impacts. Infrastructure should only be located in flood zones when there is no other option.
10	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling	Consideration during design and construction of transport schemes should be given to the waste hierarchy of prevention, reuse, recycling and disposal. All waste should be handled in accordance to applicable waste management legislation and the emphasis should be to minimise the volume of waste produced and the volume sent for disposal, unless it can be demonstrated that this is the best environmental outcome. Consideration should be given to the use of recycled materials in construction.
11	Reduce the need to travel by car or move goods by road and promote sustainable modes of transport	Congestion is a major issue on the roads of GM and reducing the need to travel by car, or move goods by road would improve the congestion situation – perhaps by the development of more sustainable and active modes, through interventions such as bus priority measures, high occupancy lanes, cycle lanes and adequate footpaths. Encouraging a shift to more sustainable modes such as Metrolink, rail etc. could come about through the provision of better facilities etc. Further key components would include better accessibility and connectivity between different sustainable transport modes.
12	Promote economic growth and job creation across the sub-region, and improve access to jobs for all	It is vital that the transport network provides and where possible improves, the access to employment opportunities and effectively connects business areas with residential areas. Connectivity between business and residential centres and key infrastructure such as Airports is a major consideration to be made, as is connectivity between urban centres across the region. Issues such as the attractiveness of the region as a better place to live and work can also influence and enhance inward investment or tourism and thereby increase employment opportunities across the region.
13	Coordinate land use and transport planning across GM	All of the proposed schemes will require adherence to the relevant planning requirements for any development in Greater Manchester. As such consideration of these requirements will be made at the design stage of all relevant schemes.
14	Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective)	During the Planning and Design stages of any transport scheme, it is vital that consideration is given to the need for access to key public services such as health, education community and leisure facilities by all members of society. Access should be considered in relation to all modes, with an emphasis on more active and sustainable types. Affordability should also be a key consideration, with a particular emphasis placed on effects on lower income groups. It should also be a priority to enhance access to key services for vulnerable groups.
15	Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective)	The consideration of health & safety (including security / crime) is critical as part of scheme planning and design and should include the introduction of the most modern and effective safety measures where proportionate. Safety considerations should apply to the construction phase, as well as when the transport infrastructure is operational. It

| | | should always be the consideration to minimise the risk of deaths or injury arising from the scheme and contribute to an overall improvement in societal safety levels. Consideration during scheme planning and design also has to be given to reducing emissions and other aspects such as noise, vibration dust, light pollution and severance which potentially effect health and well-being. Access to public services (health, education, community facilities etc.) is also another key consideration. |

12.3. Recommendations

12.3.1.   The GM 2040 Transport Strategy Delivery Plan 1 indicates in the Funding Prioritisation and Scheme Assessment Chapter that all schemes will undergo assessment before receiving funding and sets out a two stage approach for the assessment as shown below:
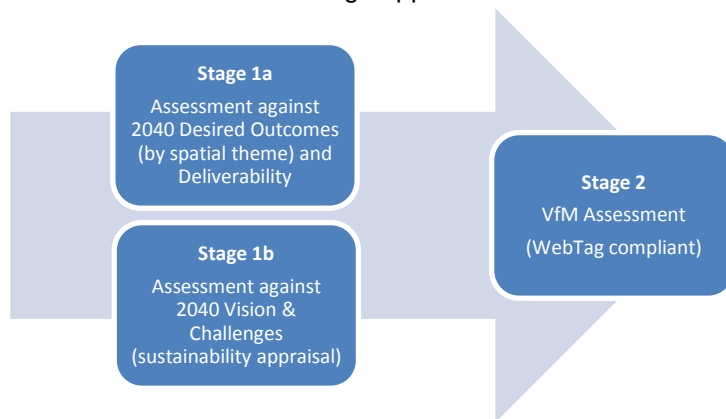
12.3.2.   At Stage 1b it is recommended that the series of bullet points listed under 'Protecting our Environment' is amended to reflect more closely the range of environmental objectives of this IA, namely:

- Improving air quality and reducing emissions including carbon

- Biodiversity, including protecting sites designated for nature conservation

- Water, including flood risk

- Land and natural resources

- Increasing resilience to a changing climate

- The built environment, including townscape and cultural heritage assets

- Reducing the need to travel by car and encouraging more sustainable transport

- Making the best use of existing assets and infrastructure including reducing waste and encouraging recycling

12.3.3.   Under the heading 'Improving Quality of Life', it is recommended that the following objective of the IA is added:

- Improving health and reducing inequality

12.3.4.   It is noted in the Delivery Plan that as Schemes are taken forward for further assessment (Stage 2), they are subject to a more detailed WebTAG compliant appraisal which will allow for the identification of appropriate mitigation. However, it is recommended that the text is amended to include a paragraph after the list of groups of criteria to note the importance of appraisal that is proportionate to the type of scheme, the need to identify and assess options to arrive at best performing option(s) and recognise that HRA may also be a requirement for some schemes:

'Appraisal should be undertaken in a proportionate manner, but should aim to ensure that schemes have been developed in a robust manner, supported by fit for purpose and proportionate analysis, providing a sound basis for identifying problems and developing solutions. This should result in an auditable and documented process which identifies the best performing option to be taken forward'.

12.3.5.   The environmental impact of schemes will be minimised through the design process, and assured through the WebTAG appraisal and the planning process, which involves statutory Environmental Impact Assessment and may also involve Habitats Regulations Assessment for large schemes.' The text above would be more in keeping with the Overview of the 2040 Delivery

Plan Assessment Process flowchart shown in the Delivery Plan document. It is understood that the recommendations above have been taken on board by TfGM in the preparation of the final Draft Delivery Plan 1 for consultation.

13. Cumulative effects

13.1.   As noted in Section 3, there is a requirement to consider Cumulative, Synergistic and Indirect Effects of policies and interventions in the Transport Strategy and associated Delivery Plan 1. Secondary and Indirect effects are effects that are not a direct result of the plan, but occur away from the original effect or as the result of a complex pathway. Cumulative effects arise where several proposals individually may or may not have significant effect but in-combination have a significant effect due to spatial crowding or temporal overlap. Synergistic effects are when two or more effects act together to create an effects greater than the simple sum of the effects acting alone. See Section 3 for more detail on these terms and the methodology used.

13.2.   The results of the assessments of direct effects of the Transport Strategy and Delivery Plan 1 proposals are discussed in Sections 11 and 12. As required by the SEA Regulations, cumulative, synergistic and indirect effects have also been considered during the IA. The identification of these effects already takes into account the fact that TfGM has taken on board many of the recommendations to improve the sustainability performance of the Transport Strategy and Delivery Plan 1. Table 20 lists the results of this analysis.

Table 20.   Summary of Cumulative, Synergistic and Indirect Effects

Effects	Causes	Significance
Air Quality	It is considered that the Transport Strategy will have a cumulative beneficial effect on air quality. This beneficial effect will be derived from integration of the travel network and delivery of better linkages, as well as the development and increased use of sustainable modes of transport. Note that some aspects of interventions, for example new road links such as those in Delivery Plan 1, may have some negative effects but these will also bring positive effects and overall the cumulative effects of all interventions etc will be positive. These elements will have a temporal overlap and which will be all located within the same spatial area of GM and will benefit air quality across the region.	Anticipated medium to long term benefits as measures are implemented.
Carbon dioxide emissions	Under the Transport Strategy, it is considered that carbon dioxide emissions, particularly from road transport, will fall across Greater Manchester relative to that which would be expected under a 'Continue as Normal' approach. This relative fall in carbon dioxide emissions will be derived from aspects of the Strategy such as extension of Rapid Transit, use of zero emission vehicles for both private transport, as well as goods	Anticipated medium to long term benefits as measures are implemented.

	delivery, as well as new technologies. Some aspects of the Strategy and the proposed interventions such as highway developments or improvements in Delivery Plan 1 may result in some slight negative effects but overall it is considered that the cumulative effects will be positive. There will be a temporal overlap to the implementation of these aspects of the Strategy and benefits will be experienced across GM.	
Biodiversity	The Transport Strategy and the schemes derived from it (such as those in the Delivery Plan 1) will result in a mix of cumulative positive and negative effects on biodiversity. For example, some aspects such as integration of transport modes and the development of a comprehensive cycling and walking network will allow the potential for beneficial effects to occur, but other aspects such as highway developments or improvements may result in negative effects – though even these will offer some opportunities for enhancement.	Anticipated positive and negative effects over the medium to long term as measures are implemented.
Sites designated for nature conservation (European sites)	The Transport Strategy (and associated Delivery Plan 1) may result in a mix of cumulative positive and negative effects on European sites. For example, some aspects such as Integration of transport modes and the development of a comprehensive cycling and walking network will allow the potential for beneficial effects to occur, but other aspects such as highway developments or improvements, as well as the development of the public transport network may result in negative effects.	Anticipated positive and negative effects over the medium to long term as measures are implemented.
Landscapes / townscapes	It is anticipated that the Transport Strategy (and associated Delivery Plan 1) will have a mix of cumulative positive and negative effects on the landscape and townscape of Greater Manchester. Integration of transport modes offers the best opportunities for positive effects, but this is also counteracted by potential negative effects. Negative effects are also likely through the development of, or improvement to, the highway network.	Anticipated positive and negative effects over the medium to long term as measures are implemented.
Water environment	It is anticipated that the Transport Strategy (and associated Delivery Plan 1) will result in cumulative negative, or at best, neutral effects. Negative	Anticipated negative effects over the medium to long term as measures are

	effects will be derived from integration of transport modes and development of or improvement to, the highway network. There will be a temporal overlap to the implementation of these aspects of the Strategy and effects will be experienced across GM.	implemented.
Soil, agricultural resources and contaminated land	There will be a range of cumulative positive and negative effects on soil, agricultural resources and contaminated land. For example, the development of the highway network provides an opportunity for positive effects relating to contaminated land, but it may also provide an opportunity for further land to become contaminated and could potentially lead to the loss of soil / agricultural resources. Some aspects of the Strategy, for example, increasing the resilience and security of the network, will have neutral effects. Effects will be experienced across GM.	Anticipated positive and negative effects over the medium to long term as measures are implemented.
Risk of flooding and resilience to the effects of a changing climate	While a range of aspects of the Transport Strategy will be neutral (for example increasing accessibility to the network), other aspects such as integration of the network may lead to cumulative negative effects. Further development of the highway network such as proposed under Delivery Plan 1 is also likely to result in an increase in impermeable area and contribute to increased flood risk by increasing runoff. It is considered that overall the cumulative effect will be negative.	Overall negative effect in the medium to long term as measures are implemented.
Use of natural resources, production of waste and recycling	There are some cumulative positive and negative effects to be derived from aspects of the Transport Strategy in relation to the use of natural resources and waste. For example, positive effects could be anticipated from 'moving toward zero emissions'. Conversely, schemes such as those in Delivery Plan 1 which require the development of hard infrastructure will likely result in negative effects.	Overall slight positive and negative effects in the medium to long term as measures are implemented.
Reducing the need to travel by car or move goods by road and the promotion of sustainable modes of	The Transport Strategy will result in cumulative positive effects on the objective of reducing the need to travel by car and the movement of goods by road. These benefits will be particularly derived from the integration of transport modes, increasing the accessibility of the transport network, developing a	Anticipated large positive effects over the medium to long term as measures are implemented.

transport	comprehensive cycling and walking network and the development of public transport. Development of the highway network (such as under Delivery Plan 1) may result in some negative effects but the cumulative effect of the other positive aspects will outweigh these. There will be a temporal overlap to these positive effects which will be experienced across GM.	
Economic growth and job creation across the sub-region and access to jobs for all	The Transport Strategy (and associated Delivery Plan 1) will result in cumulative positive effects on economic growth and job creation across GM and improve accessibility to jobs for all citizens. This will be particularly the case for aspects such as integrating the transport network, developing public transport and changes to the goods and service sector.	Anticipated positive effects over the medium to long term as measures are implemented.
Improving health and well being for all citizens and reducing inequalities in health.	Cumulatively, the Transport Strategy will result in moderate to large beneficial effects in improving the health of all citizens and reducing health inequalities across GM. Particular benefits will be experienced through the development of the Public Transport network and the connection of neighbourhoods. There may be some negative aspects relating to specific schemes such as the road schemes proposed under Delivery Plan 1, but overall effects will be positive.	Anticipated positive effects over the medium to long term as measures are implemented.

14. Monitoring

14.1.   The SEA Directive states that 'member states shall monitor the significant environmental effects of the implementation of plans and programmes…..in order, inter alia, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action' (Article 10.1). In addition, the Environmental Report should provide information on a 'description of the measures envisaged concerning monitoring' (Annex I (i)) (Stage E).

14.2.   IA monitoring will cover significant sustainability effects and it involves measuring indicators that will enable the establishment of a causal link between the implementation of the plan and the likely significant effects (both positive and negative) being monitored. In line with the SEA Directive, these significant positive and negative effects should be monitored with the implementation of Transport Strategy.

14.3.   The following potentially significant effects (direct as well as cumulative effects) have been identified by the assessment and form the basis of the monitoring programme:

Beneficial effects

- IA Objective 1: Improve air quality
- IA Objective 2: Reduce carbon dioxide (CO_2) emissions from transport overall, with particular emphasis on road transport
- IA Objective 11: Reduce the need to travel by car or move goods by road and promote sustainable modes of transport
- IA Objective 12: Promote economic growth and job creation across the sub-region and improve access to jobs for all
- IA Objective 15: Improve health and well-being for all citizens and reduce inequalities in health

Mix of positive and negative effects

- IA Objective 3: Conserve and enhance biodiversity, green infrastructure and geodiversity assets
- IA Objective 4: Conserve and enhance the European sites (HRA specific objective)
- IA Objective 5: Conserve and enhance the character and quality of GM's landscapes and townscapes
- IA Objective 8: Conserve soil and agricultural resources and seek to remediate / avoid land contamination
- IA Objective 10: Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling

Adverse effects

- IA Objective 7: Conserve and enhance the water environment
- IA Objective 9: Reduce risk of flooding and increase resilience to the effects of a changing climate

14.4.   The proposed monitoring programme is outlined in Table 21 below.

Table 21. Proposed Monitoring Programme

No.	IA Objective against which a significant effect has been predicted (without mitigation)	Indicator(s) to be Used	Targets	Suggested frequency of analysis of monitoring data/mitigation	Responsibility for undertaking monitoring
1	Improve air quality	Nitrogen dioxide and PM10 levels in AQMAs and on major roads	Reduce	Annually	All relevant GM Local Authorities
		Take up of Electric Vehicles	Increase	Annually	TfGM
		Private car, HGV and goods vehicle levels in Manchester city centre and key town centres	Reduce	Annually	TfGM
		Levels of cycling and walking journeys	Increase	Annually	TfGM
2	Reduce carbon dioxide (CO_2) emissions from transport overall, with particular emphasis on road transport	As indicators for IA Objective 1, plus CO_2 emissions from vehicles on major roads	Reduce	Annually	TfGM
3	Conserve and enhance biodiversity, green infrastructure and geodiversity assets	Length of greenways / blueways or other sustainable transport routes	Increase	Annually	TfGM / All GM Local Authorities
		Area of new planting of native species of wildflowers and other species suitable for screening	Increase	Annually	TfGM / All GM Local Authorities
		Area of invasive / non-native species appropriately treated / cleared / remediated	Increase	Annually	TfGM / All GM Local Authorities
		Number of street lamps with a downward beam	Increase	Annually	All GM Local Authorities
4	Conserve and enhance the European sites (HRA Specific)	Number of transport schemes located in or impacting on designated areas	Zero	Annually	All relevant GM Local Authorities
5	Conserve and enhance the character and quality of GM's landscapes and	Countryside Quality Counts (focus on any changes in the landscape quality due to transport effects)	No noticeable changes in landscape quality	As and when CQC results are published	Natural England
		Transport facility (stations etc), street and environmental	Increase	Annually	TfGM, All GM Local

	townscapes	cleanliness - levels of a) litter, b) detritus, c) graffiti and d) fly posting			Authorities
		% of transport schemes applications that incorporate improvements to public realm and sympathetic design	Increase	Full record – constantly update	All GM Local Authorities
7	Conserve and enhance the water environment	Number of new transport schemes with improved drainage standards / use of SuDS	Increase	Full record – constantly update	TfGM / All relevant GM Local Authorities
		Number of water pollution incidents attributable to transport	Zero	Full record – constantly update	All GM Local Authorities / Environment Agency
8	Conserve soil and agricultural resources and seek to remediate / avoid land contamination	Numbers and % of transport schemes on previously developed land	Increase	Annually	All relevant GM Local Authorities
		Area of grade 1, 2 or 3a agricultural land permanently lost as a result of transport schemes	Zero	Annually	All GM Local Authorities
		Number of land pollution incidents attributable to transport	Zero	Full record – constantly update	All GM Local Authorities / Environment Agency
9	Reduce risk of flooding and increase resilience to the effects of a changing climate	Number of new transport schemes in flood risk areas	Zero	Full record – constantly update	TfGM / All relevant GM Local Authorities/ Environment Agency
		Number of new transport schemes with improved drainage standards / use of SuDS	Increase	Full record – constantly update	TfGM / All GM Local Authorities
		% of floodplain changing due to new/planned transport related schemes	Zero	Annually	TfGM / All relevant GM Local Authorities
		Number of new transport schemes integrated with green infrastructure (green corridors and spaces)	Increase	Annually	TfGM / All GM Local Authorities
10	Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling	Proportion of recycled materials used in transport related construction	Increase	Annually	TfGM
		Number of locations for refuse and recyclables with improved accessibility	Increase	Annually	All relevant GM Local Authorities / GM Waste Disposal Authority
11	Reduce the need to travel by car or move goods by road and promote sustainable	Access to public transport services	Increase	Annually	All GM Local Authorities
		Levels of cycling and walking journeys	Increase	Annually	All GM Local Authorities
		Proportion of short trips by walking & cycling	Increase	Annually	TfGM

	modes of transport	Public transport (bus, Metrolink and rail) punctuality and service reliability	Increase	Annually	TfGM
		Goods moved by rail or more sustainable modes of transport	Increase	Annually	TfGM
		Number of initiatives to improve access by sustainable transport modes to essential facilities	Increase	Full record – constantly update	All GM Local Authorities
		Number of improvement schemes for pedestrian and cycle routes and green networks, including the RoW network	Increase	Full record – constantly update	All GM Local Authorities
		Levels of private car and HGV use and goods vehicles entering Manchester city centre and key town centres	Reduce	Annually	TfGM
		Bus patronage	Increase	Annually	TfGM
		Rail patronage	Increase	Annually	TfGM
		Metrolink patronage	Increase	Annually	TfGM
12	Promote economic growth and job creation across the sub-region and improve access to jobs for all	Mode Split Travel to Work	Increase	Annually	TfGM / All GM Local Authorities
		Mode split of trips to Manchester Key Centre, key town centres and Manchester Airport	Increase	Annually	TfGM / All GM Local Authorities
		Access to Public Transprt Services	Increase	Annually	TfGM / All GM Local Authorities
15	Improve health and well being for all citizens and reduce inequalities in health (HIA specific)	Personal security on public transport	Reduce	Annually	TfGM informed by British Transport Police
		DDA compliance of bus stops, bus vehicles and rail stations	Increase	Full record – constantly update	TfGM

15. Conclusions

15.1.1.   The process of Integrated Assessment (IA) throughout the development of the Transport Strategy has been thorough and comprehensive. Iterations of assessment have been employed, with continuous dialogue between the TfGM team and the IA team. This has resulted in a positive progression from the draft to the final proposed Transport Strategy in terms of environmental protection and enhancement, improvements to health and greater equality of opportunity.

15.1.2.   Based on the findings of the IA, it is possible to draw a number of key conclusions with regards to the Greater Manchester Transport Strategy 2040 and its associated Delivery Plan 1 (2016/17 – 2021/22). Table 22 below outlines how the Final Draft Strategy improved on the original draft Strategy, along with an overview of the key conclusions drawn for the performance of the Strategy in relation to the IA Objectives.

Table 22.   Overview of key conclusions regarding the performance of the Transport Strategy and associated Delivery Plan 1

Improve air quality		
Draft Strategy	The draft Strategy was generally strong on the need to protect and improve air quality, with a number of positive aspects identified – for example the development of high quality walking and cycling infrastructure. However, a few areas for strengthening measures to improve air quality were identified.	**Conclusion Overview:** The Transport Strategy now provides a strong positive basis on which to protect and enhance air quality across GM, with urban centres particularly benefitting. Reference is also made to the statutory Air Quality Action Plan.
Final Strategy	The final Strategy was enhanced with a number of aspects, including appropriate cross reference to other strategies and Air Quality Action Plans.	
Reduce carbon dioxide emissions from transport overall, with particular emphasis on road transport		
Draft Strategy	As with the need to protect and enhance air quality, the draft Strategy was generally positive in relation to the need to reduce carbon emissions, though measures were identified to strengthen the performance of the Strategy further.	**Conclusion Overview:** The Transport Strategy now provides a strong positive basis on which to help reduce carbon emissions and help to meet the ambitious targets set for GM. Reference is also made to the Climate Change Implementation Plan.
Final Strategy	The final Strategy was enhanced with a number of aspects, including appropriate cross reference to other strategies. Detailed measures are contained in the Climate Change Implementation Plan.	
Conserve and enhance biodiversity, green infrastructure and geodiversity assets		
Draft Strategy	The draft Strategy was found to be lacking in terms of conserving or enhancing biodiversity. It was also noted that the need for further studies such as EIA were not detailed. Therefore it was recommended that	**Conclusion Overview:** The new Principle of 'Environmental Responsibility' includes specific reference to impacts

	the Strategy was amended to include a new Principle to specifically address these issues.	on habitats and species and looking for 'opportunities to enhance biodiversity and green infrastructure'.
Final Strategy	A new Principle (called 'Environmental Responsibility') which included the need to protect and enhance biodiversity was developed and included in the final Strategy. The issue of further assessment of Transport schemes through EIA, HRA etc was included in Delivery Plan 1.	It is therefore considered that through this new Principle and the need for further assessment outlined in the Delivery Plan 1, conserving and when possible enhancing biodiversity will be possible as the new Strategy is implemented.
Conserve and enhance the European sites (HRA specific objective)		
Draft Strategy	The draft Strategy was found to be lacking in terms of protecting designated sites. It was also noted that the need for further studies such as EIA were not detailed. Therefore it was recommended that the Strategy was amended to include a new Principle to specifically address these issues.	**Conclusion Overview:** The new Principle of 'Environmental Responsibility' includes specific reference to how 'any development that would have an adverse impact on an important environmental site should be avoided as far as possible'. The need for HRA is also specifically noted in relation to European designated sites.
Final Strategy	A new Principle (called 'Environmental Responsibility') which included the need to protect important environmental sites was developed and included in the final Strategy. The issue of further assessment of Transport schemes through EIA, HRA etc was included in Delivery Plan 1.	It is therefore considered that through this new Principle and the need for further assessment outlined in the Delivery Plan 1, protection of European sites will be ensured as the new Strategy is implemented.
Conserve and enhance the character and quality of GM's landscapes and townscapes		
Draft Strategy	The draft Strategy did not directly note the need to protect landscape and townscape and it was therefore recommended the Strategy was amended to include a new Principle to conserve and enhance the landscape / townscape.	**Conclusion Overview:** While TfGM only have an advisory role in relation to transport issues and providing advice relating to landscape / townscape is outside their remit, it is noted in the Transport Strategy that there is a need to ensure an attractive and pleasant environment (including public realm) and minimise the impact on townscape and landscape from transport projects. It was also noted how transport schemes can be an important factor / key element in regeneration and that large transport schemes will be subject to statutory
Final Strategy	A new Principle (called 'Environmental Responsibility') was developed that recognised the need to minimise the impact of transport on the built and natural environment including townscape (and) landscape.	

| | | assessment as required by the Planning process.

It is therefore considered that through these aspects of the Strategy and the need for further assessment (as well as established principles for design) outlined in the Delivery Plan 1, protection and enhancement of landscape and townscape will be appropriately considered as part of the implementation of the Transport Strategy. |
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| **Conserve and enhance the quality and distinctiveness of historic and cultural heritage** | | |
| **Draft Strategy** | The draft Strategy did not specifically note the need to protect and enhance the quality and distinctiveness of historic and cultural heritage. It was therefore recommended that a new Principle to specifically note these elements was developed. | **Conclusion overview:** Although it is not in the remit of the 2040 Strategy to consider detailed design, it is considered that through the implementation of the 'Environmental Responsibility' element of the Strategy and the need for further assessment (as well as established principles for design) outlined in the Delivery Plan 1, protection and enhancement of historic and cultural heritage will be appropriately considered as part of the implementation of the Transport Strategy. |
| **Final Strategy** | A new Principle (called 'Environmental Responsibility') was developed that recognised the need to minimise the impact of transport on the built and natural environment including cultural heritage. | |
| **Conserve and enhance the water environment** | | |
| **Draft Strategy** | It was recognised that the draft Strategy would benefit from a new Principle that would specifically recognise the need to conserve and enhance the water environment, as it was recognised that there were likely to be interventions which could lead to negative effects on this objective. | **Conclusion overview:** Specific reference is made within the Strategy to how 'Transport can pose a risk to water quality… Pollution of water bodies (including groundwater… must be prevented, both during construction and operation'. It further goes on to state that there is a need to 'minimise the impact of transport on the built and natural environment including… water'.

As such, it is considered that through the implementation of the 'Environmental Responsibility' element of the Strategy and the need for further assessment outlined in the Delivery Plan 1, protection and enhancement |
| **Final Strategy** | A new Principle (called 'Environmental Responsibility') was developed that recognised the need to protect the water environment. | |

		of the water environment will be ensured as the new Strategy is implemented.
Conserve soil and agricultural resources and seek to remediate / avoid land contamination		
Draft Strategy	It was recognised that the draft Strategy would benefit from a new Principle that would specifically recognise the need to conserve soil and agricultural resources, as well as remediate / avoid land contamination as it was recognised that there were likely to be interventions which could lead to negative effects on this objective.	**Conclusion overview:** It is recognised within the final strategy that transport schemes can lead to contamination of soil resources (through construction & operation), though there may also be opportunities for enhancement.
Final Strategy	A new Principle (called 'Environmental Responsibility') was developed that recognised the need protect the soil resource etc.	It is also recognised that large transport schemes will be subject to statutory assessment as required by the Planning process. It is therefore considered that through these aspects of the Strategy and the need for further assessment (as well as established principles for design) outlined in the Delivery Plan 1, protection of soil resources etc will be appropriately considered as part of the implementation of the Transport Strategy.
Reduce risk of flooding and increase resilience to the effects of a changing climate		
Draft Strategy	The draft Strategy did not specifically note the need to reduce the risk of flooding. It was therefore recommended that a new Principle to specifically note these elements was developed.	**Conclusion overview:** It is recognised in the final Strategy (under considerations relating to 'A reliable and Resilient network') that as the climate changes there will be a need for the transport system to adapt to different or more extreme weather.
Final Strategy	A new Principle (called 'Environmental Responsibility') was developed that recognised the need to prevent an increased risk of flooding. Climate change is considered under the Principle 'A reliable and resilient network'.	The effect of flooding is also recognised under the consideration of a reliable and resilient network. Flooding is further addressed through the new Principle of 'Environmental Responsibility' which recognises that the increased risk of flooding must be prevented during both

		construction and operation of any transport project. It is therefore considered that through these aspects of the Strategy and the need for further assessment (as well as established principles for design) outlined in the Delivery Plan 1, that flooding issues will be appropriately considered as part of the implementation of the Transport Strategy.
Promote the prudent use of natural resources, minimise the production of waste and support re-use and recycling		
Draft Strategy	The draft Strategy did not specifically note the need for prudent use of natural resources etc. It was therefore recommended that a new Principle to specifically note these elements was developed.	**Conclusion overview:** The Principle 'Environmental Responsibility' notes that there is a need to 'minimise the impact of transport on the built and natural environment, including… use of resources'. In addition, making the best use of existing resources is noted specifically within Delivery Plan 1 and this will help ensure aspects such as minimising the production of waste and achieved. This approach, along with the need for further assessment (as well as established principles for design) outlined in the Delivery Plan 1, will ensure that the use of resources will be appropriately considered as part of the implementation of the Transport Strategy.
Final Strategy	A new Principle (called 'Environmental Responsibility') was developed that recognised the need to reduce use of resources etc.	
Reduce the need to travel by car or move goods by road and promote sustainable modes of transport		
Draft Strategy	It was considered that the draft Strategy was strongly positive in terms of reducing the need to travel by car and the movement of goods by road and the promotion of sustainable modes of transport. As such limited recommendations were made to 'tease out' certain elements of the existing elements of the draft Strategy.	**Conclusion overview:** The final strategy remains strongly positive in terms of reducing the need to travel by car and the movement of goods by road and the promotion of sustainable modes of transport.
Final Strategy	The Demand Management section (contained with the Integration with Spatial Planning section of the final strategy) highlight elements of reducing the need to travel by car and the need to work with other	It is also likely that this objective will be addressed through further ongoing work such as the development of

	relevant authorities etc.	the GM Logistics Strategy.
Promote economic growth and job creation across the sub-region, and improve access to jobs for all		
Draft Strategy	It was recognised that the draft Strategy would play a positive role in economic growth and job creation across the region, though a number of recommendations for enhancement of aspects of the strategy were made.	**Conclusion overview:** The Strategy has been strengthened to ensure that its contribution to economic growth and job creation is maximised.
Final Strategy	The final strategy was amended appropriately e.g. by the use of 'infographics' or by additional text to expand upon and enhance the positive aspects of the contribution the Strategy could make to the economic growth and job creation of the region.	It should also be noted that the role of transport to drive growth is a fundamental element of the wider GM Strategy and will also be included in further ongoing work such as the development of the GM Logistics Strategy.
Coordinate land use and transport planning across GM		
Draft Strategy	It was recognised that the draft Strategy would play a positive role in planning. As such recommendations made were limited.	**Conclusion overview:** It is recognised that TfGM have an advisory role in planning matters, but the Strategy and Delivery Plan to recognise that large transport schemes will be subject to statutory assessment as required by the Planning process. Further coordination will be enhanced by the links between this Transport Strategy and Delivery Plan 1 to wider land use planning Strategies relevant to GM e,g. the Spatial Framework.
Final Strategy	The final strategy noted the recommendations made and it was ensured that these aspects were considered across the document.	
		It is therefore considered that through these aspects of the Strategy and the need for further assessment (as well as established principles for design) outlined in the Delivery Plan 1, the coordination of land use and transport planning across GM will be enhanced and strengthened by the implementation of the Transport Strategy.
Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society (EqIA specific objective)		
Draft Strategy	It was considered that the draft Strategy played a strongly positive role in terms of Equality and would benefit a wide range of	**Conclusion overview:** It is to be noted that all TfGM projects and programmes are

| | the population including those with mobility issues, older people, those on low incomes, people without access to cars and people from minority communities. Nevertheless, a number of recommendations were made to strengthen the equality performance of the Strategy further. | subject to EqIA and therefore these aspects are always considered.

A detailed Performance Measurement Framework is also included in the final Strategy that will allow the measurement of how the Strategy works to promote equality. |
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| **Final Strategy** | A number of amendments were made to text within the final Strategy to 'tease out' and expand upon aspects which would strengthen the equality performance of the Strategy. | It is therefore considered that through these aspects of the Strategy and the need for further EqIA of proposed schemes (along with the assessment such as WebTAG outlined in the Delivery Plan 1), the Strategy will continuously allow progress to the goal of equality of all citizens as its implementation progresses. |
| **Improve health and well-being for all citizens and reduce inequalities in health (HIA specific objective)** | | |
| **Draft Strategy** | It was considered that the draft Strategy was strongly positive in terms of improving health etc. Key aspects included improving air quality, improving safety & security, reduction in accidents and reduction in noise. Nevertheless a number of recommendations were made to strengthen the performance of the strategy further. | **Conclusion overview:** It is to be noted that all TfGM projects and programmes are subject to further assessment relating to health and therefore these aspects are always considered.

A detailed Performance Measurement Framework is also included in the final Strategy that will allow the measurement of how the Strategy works to promote health improvements. |
| **Final Strategy** | A number of amendments were made to text within the final Strategy to 'tease out' and expand upon aspects which would strengthen the health performance of the Strategy – for example a reference to how safety in new schemes is dealt with was added. | It is therefore considered that through these aspects of the Strategy and the need for further assessment of proposed schemes (such as WebTAG outlined in the Delivery Plan 1), the Strategy will continuously allow progress to the improvement of health across GM. |

15.1.3.   An IA monitoring programme has been proposed which, if adopted by TfGM, will allow the early establishment of a causal link between the implementation of the Transport Strategy (via the Delivery Plan 1) and the likely significant effects (positive or negative). This will provide TfGM and other relevant authorities the information to make appropriate and informed decisions and take appropriate action as soon as practicable. The results of this monitoring will also help inform future iterations of the Delivery Plan and the Transport Strategy itself.

15.1.4.   Overall the Transport Strategy represents a well balanced approach in terms of its sustainability, health impact and equality impact performance and would ensure that the vision for Greater Manchester to have 'World class connections that support long term, sustainable economic growth and access to opportunity for all' can be achieved in a sustainable and integrated fashion.

16. References

Directive 2001/42/EC "on the assessment of the effects of certain plans and programmes on the environment", European Commission (2001) Available at: http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_197/l_19720010721en00300037.pdf

The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004/1633)

A Practical Guide to the Strategic Environmental Assessment Directive, ODPM (September 2005). Available at: https://www.gov.uk/government/publications/strategic-environmental-assessment-directive-guidance

Sustainability Appraisal of Regional Spatial Strategies and Local Development Guidance for Regional Planning Bodies and Local Planning Authorities, ODPM (November 2005). Available at: http://webarchive.nationalarchives.gov.uk/20061101024838/http:/www.communities.gov.uk/pub/346/SustainabilityAppraisalofRegionalSpatialStrategiesandLocalDevelopmentDocuments_id1161346.pdf

National Planning Policy Framework, DCLG (March 2012). Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2