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Pathways to Achieving Radically Different Urban Walking and Cycling Futures in the UK by 2030

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Abstract

This paper builds upon earlier work which was presented at Walk21 in 2009 and 2010 which outlined the development of a number of radically different visions for the role of walking and cycling in urban areas in the year 2030. These visions, which were developed through consultation with a wide range of stakeholders, present a 2030 where walking and cycling play a significantly greater role in urban transportation than is currently the case, accounting for as much as 80% of urban trips in the most extreme vision. Previous reported work had focussed on the kinds of measures, contextual background and lifestyle changes which would be required to support such visions, how urban areas may appear and the practicalities of daily life. Subsequent research (not yet reported in the public domain) has developed methods for constructing pathways to show how these visions might be reached. A pathway (in a specific city) to the successful occurrence of a vision is defined as being made up of a combination of developments on two separate levels: a Macro level, involving both developments external to the transport system and developments within the transport system but “out of control” of the local authority of the city concerned; and a Micro level, involving developments within the control of the city’s local authority. The trajectory of developments on a particular level is referred to as a ‘storyline’, so that a distinction is made between *Macro-storylines* and *Micro-storylines*. Whilst generic macro-storylines have been developed which are relevant to all UK cities, micro-storylines can only be constructed ‘locally’ by those with sufficient knowledge of a particular city.

The focus of the current paper is upon two workshops carried out in the summer of 2011 in the UK cities of Leeds and Norwich. The main purpose of these workshops was to explore how one of the visions could be mapped/adapted to their specific local circumstances and to develop pathways for achieving this vision, taking into account three alternative macro-storylines. The workshops aimed to attract relatively senior people from the local authorities in each area and representatives of stakeholder groups. The workshop size was between 10-15 people. The underlying aim of such exercises is to encourage city authorities and stakeholders to think in a more structured, systematic way about how the various potentially-conflicting issues concerning walking and cycling would play out in a long-term future, taking into account that the ‘external environment’ (e.g. the national economy) is highly unpredictable. The paper presents the results from the Leeds and Norwich workshops in terms of the local visions and pathways that they produced. Special attention is paid to results concerned with policies that directly facilitate walking, whilst recognising that a large number of factors (all urban transport modes, land use patterns, ‘society’) have impacts (direct or indirect) on walking. Various conclusions are presented, both with regard to transport policy and the methodology for constructing the visions/pathways and running the workshops.

Author biographies

Paul Timms has been a transport researcher for 25 years, involved in various activities across Europe, Asia and Latin America. His current research concentrates upon thinking about long-term futures for transport/mobility and on how narratives of the future are constructed, trying to understand these narratives in terms of metaphors and myths.

Miles Tight is a senior lecturer in transport planning. He has been researching sustainable travel for over 25 years. He is leading a stream of research which is looking at alternative transport futures including the project on which this paper is based - 'Visions for the Role of Walking and Cycling in 2030'.

David Watling's expertise is in the conceptualisation, mathematical modelling and analysis of transport systems, on which he has researched and published for the last 25 years. He has particular interest in developing techniques for new or challenging problems and/or application areas.

Astrid Gühnemann is a senior lecturer in transport policy with more than 15 years experience in transport research. Her main research interests are the environmental and sustainability assessment of transport and the development of appraisal methods.

Andrew Miles works on the dynamics of cultural and social participation. He has particular interests in the impacts of social and spatial mobility on cultural engagement and identity, and in the development of mixed methods approaches to social and cultural research.

Niamh Moore is a Research Fellow at the Centre for Research on Socio-Cultural Change at the University of Manchester. She is particularly interested in methods, including qualitative and mixed methods approaches to understanding everyday environmental practices.

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Introduction

Context and focus of paper

This paper builds upon previous papers presented at Walk21 conferences, in New York (Tight et al, 2009) and The Hague (Tight, 2010), describing visions of walking and cycling for an imaginary city (with approximate population of 250,000) in the UK in the year 2030. As was reported in these papers, the work starts from the premise that, in the UK, the current walking environment, perceptions of walking, provision for walking and the status and role that this mode plays, both in society and individuals' lives, could be substantially enhanced and improved. Although the focus is upon a typical UK urban environment, it is likely that the kinds of changes suggested in the visions are relevant to cities in other countries. Subsequent research (not yet reported in the public domain) has developed methods for constructing pathways to show how these visions might be reached.

The focus of the current paper is upon two workshops carried out in the summer of 2011 in the UK cities of Leeds and Norwich. The main purpose of these workshops was to explore how one of the visions could be mapped/adapted to their specific local circumstances and to develop pathways for achieving this vision, taking into account three alternative *macro-storylines* (defined below). The underlying aim of such exercises is to encourage city authorities and stakeholders to think in a more structured, systematic way about how the various potentially-conflicting issues concerning walking and cycling would play out (and how barriers might be overcome) in a long-term future, taking into account that the 'external environment' (e.g. the national economy) is highly unpredictable.

Overview of method for building generic visions

Essentially the visions have been built according to a two-step process:

- (1) The first step has been to create visualisations of a number of street scenes in 2010 and three sets of visualisations of these scenes in 2030, each showing an improved walking and cycling environment. Although these street scenes are from an 'imaginary city', they were motivated by adaptations of real-life street scenes in several locations. The three sets of visualisations have been labelled *Vision One* (V1), *Vision Two* (V2) and *Vision Three* (V3). Figure 1 shows a selection of the street scenes created for 2010 and Figure 2 shows equivalent street scenes for Vision 1. More examples of visualisations are given on the project website (<http://www.visions2030.org.uk>) and in Tight et al. (2009), Tight (2010), Tight et al. (in press), and Timms and Tight (2010), with the last of these concentrating on aesthetic aspects of the street scenes and visualisations.

(2) The second step has been to create *vision narratives* which describe various aspects of society and its transport system that are consistent with the visualisations. An overview of these visions narratives is given in Table 1.



Figure 1: Street scenes in 2010 (source: <http://www.visions2030.org.uk>)

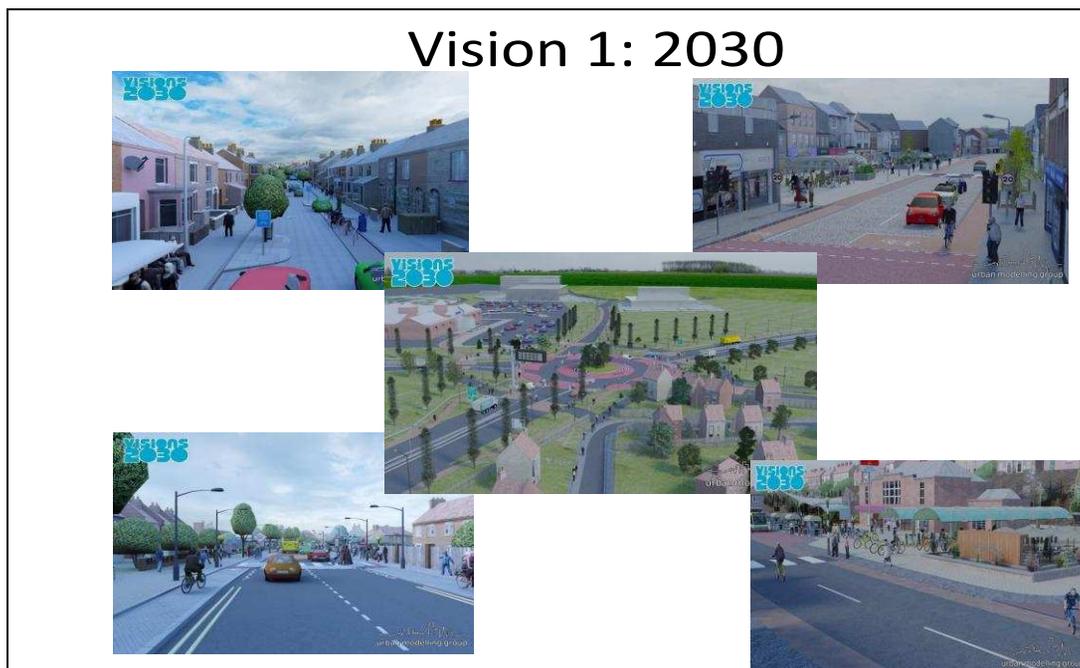


Figure 2: Street scenes in Vision 1 in 2020 (source: <http://www.visions2030.org.uk>)

Table 1: Summary of vision narratives for 2030

	Vision One (V1)	Vision Two (V2)	Vision Three (V3)
Summary of vision	Step change: universal (or near) application of current European best practice in relation to walking/cycling in UK urban areas	Step change – major reduction in car use in urban areas, large increase in walking and cycling, enhanced public transport	Step change – walking and cycling technology significantly enhanced, walking and cycling fulfil most transport requirements in urban areas
Exogenous scenario	‘Business as usual’	Major social change in society	Extreme shortage of fuel in UK
Governance	Similar to today, though with heightened focus on need for planning (in all sectors)	More decentralised governance at national level than at present though with strong coordination of policies at the urban level	Strong government at national level (to cope with fuel shortages) but more decentralised governance at local level than at present
City population (within city boundary)	Same as today	Same as today	Many people have moved from the city to its hinterland
% walking (by trip stage)	32 (2006 28%)	37	40
% cycling (by trip stage)	13 (2006 1%)	23	40
% public transport (by trip stage)	25 (2006 12%)	35	15
% car (by trip stage)	30 (2006 59%)	5	5

Overview of method for building pathways

Definition of pathways

A pathway (in a specific city such as Leeds or Norwich) to the successful occurrence of a vision is made up of a combination of developments on two separate levels:

- Macro level, involving developments external to the transport system and developments within the transport system but “out of control” of the local authority of the city concerned; and a
- Micro level, involving developments within the control of the city’s local authority

The trajectory of developments on a particular level is referred to as a ‘storyline’, so that a distinction is made between *Macro-storylines* and *Micro-storylines*. Whilst generic macro-storylines have been developed (as described below) which are relevant to all UK cities, micro-storylines can only be constructed ‘locally’ by those with sufficient knowledge of a particular city.

Construction of macro-storylines

Macro-storylines have been developed for each of V1, V2 and V3. Essentially the main difference between these macro-storylines concerns the state of the economy and how that might impact, on a national level, on walking and cycling. The macro-storylines for V1 (which is most relevant for the Leeds and Norwich workshops) is shown in Table 2.

Table 2: Macro-storylines for Vision One

1A	<ul style="list-style-type: none">• Current economic crisis lasts until around 2020, after which there is a recovery• Increase in walking and cycling due to perceived high cost of alternative modes (both car and public transport)
1B	<ul style="list-style-type: none">• Fast recovery from current economic crisis, but a further economic crisis around 2020 (since lessons from current crisis were not learnt)• Government support (including funding) for walking and cycling similar to before current crisis
1C	<ul style="list-style-type: none">• Fast recovery from current economic crisis, with no more crises before 2030 (since lessons from current crisis were learnt)• High government support (including funding) for walking and cycling

The workshops

Overview

As stated above, the purpose of the workshops in Leeds and Norwich was to explore with relevant city stakeholders how one of the generic visions for our imaginary city could be mapped/adapted to their specific local circumstances and how to create pathways for reaching this (local) vision. The workshops focussed on Vision One (V1), though there was also a final session of each workshop which looked more briefly at V2 and V3. This was to explore whether the participants felt it was possible for their urban area to go further than V1 (which is essentially European best practice).

Figure 3 provides an overview of the process of constructing visions and pathways in the workshops. Pre-workshop tasks are shown in boxes with dashed lines and workshop tasks in boxes with unbroken lines.

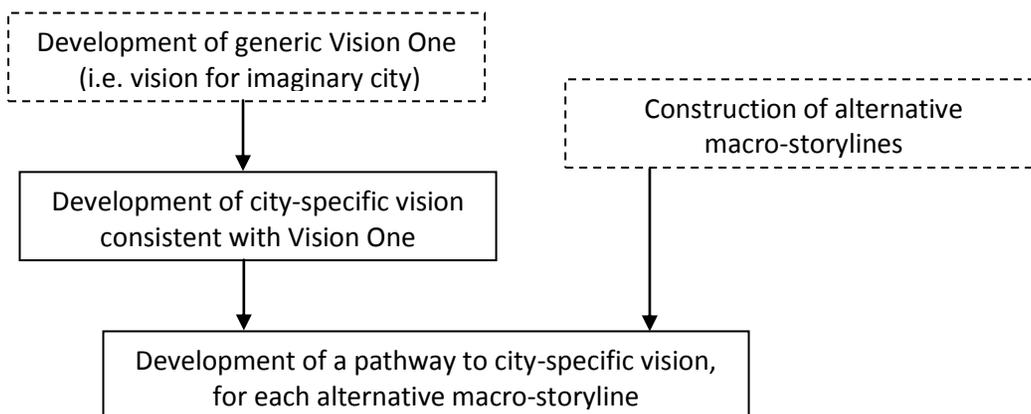


Figure 3: Process to develop city-specific visions and pathways (pre-workshop tasks in boxes with dashed lines)

Participants were supplied with background materials in advance of the workshop to permit them to discuss more widely within their organisations, but also to give them an opportunity to think through ideas (concerning long term futures) which might be beyond their normal remit. We also held some pre-meetings to consider how best to increase the workability and usefulness of the workshops. The research team spent time in advance of each workshop familiarising themselves with the relevant background to the urban area, recent changes and future plans (including where relevant the most recent Local Transport Plans which currently document planned transport strategy over a 15 year period to 2026), and the transport planning and other planning context.

The workshops took place over a day. Most of the morning for each workshop was devoted to constructing a 'local' version of Vision One, and most of the afternoon to looking at potential pathways to achieve this vision. The workshops aimed to attract relatively senior people from the local authorities in each area and representatives of stakeholder groups. We deliberately did not focus on people who are especially pro (or anti) walking and cycling. Workshop size was between 10-15 people (not everyone attended for the whole day). Some follow-up with participants is being undertaken post-workshop.

Summary of the information presented to workshop participants about generic visions.

Participants were provided with examples of visualisations (such as those shown in Figures 1 and 2) in both a presentation and in a hand-out. A further hand-out was provided giving extended vision narratives for all three visions. These narratives included the information given in Table 1 along with more detailed information organised according to the following categories: land use patterns; walking/cycling; public transport; car travel; use of hinterland (i.e. the region, outside the city boundary, which has the city as an urban centre); and urban logistics and freight vehicles. Such information for V1 is given in Table 3.

Summary of the information presented to workshop participants about pathways

Participants were provided with the definition of pathways, in terms of macro- and micro-storylines, as given above. A short presentation was made about the distinction between the two different types of storylines which recommended the avoidance of both an extreme 'voluntarist' approach (in which it is assumed that a local authority can do whatever it chooses in terms of policy implementation) and an extreme 'determinist' approach (in which the local authority is effectively carrying out policy that has been decided elsewhere, such as by national government). A *compromise formulation* was suggested:

- The local authority is restricted in what it can do by the external environment, policy of national government etc. ; but
- There is still some 'room for manoeuvre' by the local authority.

It follows that visions are achieved by a combination of a favourable external environment and local authority actions. Three macro-storylines for Vision One (labelled 1A, 1B and 1C), as shown in Table 2 (above), were presented.

Table 3: Characteristics of Vision 1

Summary of vision	Step change: universal (or near) application of current European best practice in relation to walking/cycling in UK urban areas.
Land use patterns	Land use patterns are altered by land use policies which encourage shorter trip distances, and hence walking and cycling, though there have been no major shifts in such patterns. Greater degree of localisation than at present, though urban structure and fabric (buildings etc) largely similar to now.
Walking/cycling	Infrastructure universally in place to support walking and cycling with many routes for these modes segregated from car, public transport and freight use. Infrastructure is maintained to high standards. Walking and cycling networks have a high degree of connectivity and where they intersect with traffic routes crossing facilities are provided. Portrayal of walking and cycling in the media is more positive than at present.
Public transport	Public transport is geared up to link with walking and cycling and provide the means for using these modes as part of longer journeys. Public transport vehicles will increasingly be able to carry bicycles. In general public transport is substantially improved over the current situation in terms of key indicators such as reliability, comfort etc. Public transport is much more attentive than at present to the specific needs of different groups such as the disabled, elderly and children.
Car travel	There are considerably fewer private cars in our urban areas than today (i.e. a reduction of 50%) and a greater degree of control over their actions, using measures such as ISA, parking restrictions, parking charges, road pricing, street bans etc. Also, many current car users will be attracted by improved public transport and cycle/walking facilities.)
Use of hinterland (i.e. the region, outside the city boundary, which has the city as an urban centre)	The hinterland is generally used as a residential zone for people commuting to the city. However, there is a small increase in local production in such areas, and an increase in people tele-commuting (who do not need to travel often to the city). Park-and-ride facilities exist at the city boundary for car users to switch easily to public transport and cycling.
Urban logistics and freight vehicles	Freight transport is integrated with (public) city planning more rationally than at present, with large distribution centres outside urban areas, feeding goods to local distribution centres. Electric vehicles running on renewable energy sources are more common. Greater regulation of freight vehicle sizes than are allowed into specific areas at specific times (large vehicles to be used on major corridors and small vehicles in other areas). Greater innovation in 'last mile' deliveries by electric tricycles and hand-pulled carts.

Summary of the tasks given to participants in the group sessions

Morning

Participants were divided into groups, with each group being asked to construct a vision for their urban area which reflects the characteristics of the generic Vision 1 (including mode split percentages) which has been developed for our imaginary city. Questions to help with this discussion were given as follows:

- What will their urban area look like in 2030 if it meets the V1 criteria and how will the transport system work? More specifically this considered some of the following questions: Where will the areas in the urban area be which have higher than average mode-share, and which areas will have less than average? Which kinds of trips are using walk/cycle most, which elements of the population are using it most? What is the integration with public transport provision? How much does the mode share vary with time of year and/or weather? Where do people live, work, shop and access schools and other facilities? What are trip lengths like? How about commuting from outside Leeds/Norwich? How do deliveries and freight fit in with the vision?
- What measures will be in place that are consistent with the V1 end point for their urban area?
- What are the implications of such a future for their urban area?
- Is such a future believable?

Afternoon

In the afternoon the groups addressed the following principle question:

- What policies would Leeds/Norwich implement between now and 2030 in order to achieve Vision One (taking into account the (external) contexts provided by the macro storylines)?

This discussion was structured according to two sessions.

Session (i) considered the following preliminary questions:

- What problems exist for implementing the policies required for achieving the 2030 vision? How can these problems be overcome?
- What are the transport consequences of each of the macro-storylines in terms of:
 - Attitudes towards walking and cycling
 - Congestion
 - Availability of finance for walking and cycling policies
 - Other relevant factors
- Picking one macro-storyline, what policy measures (for achieving the 2030 vision) will be implemented by 2015, 2020 and 2025?
- For all three macro-storylines, what policy measures (for achieving the 2030 vision) will be implemented by 2015, 2020 and 2025?

Session (ii) completed the exercise by constructing, for all three macro-storylines, sets of policy measures (for achieving the 2030 vision) to be implemented by 2015, 2020 and 2025, thus creating policy pathways. The pathways were to be presented by filling in the empty cells in the chart shown in Table 4 (with policy measures).

Table 4: Format for presentation of pathways

	Macro-storyline 1A	Macro-storyline 1B	Macro-storyline 1C
2015			
2020			
2025			
2030 (the vision)			

Results and comments

Results of group discussions about local versions of Vision One

Once the groups had devised and presented their (local) visions for 2030, a member of the project team created a *combined vision* by aggregating the visions. Table 5 shows the combined visions for Leeds and Norwich, organised according to the following headings: land use patterns; walking/cycling; public transport; car travel; urban freight; and society. It will be seen that this list is very similar to the list of headings in Table 3. However, issues about the hinterland were not discussed in the group sessions, whilst on the other hand there was much discussion about society.

As can be seen from Table 5, the visions for the two cities covered a full range of transport and non-transport issues, most of which have some impact on walking (for example, the design of public transport is of importance in terms of access and egress from bus stops, train stations etc). However, of particular relevance to walking were the following aspects:

- Local services (education, shopping, health) (Leeds)
- Higher density; Mixed development (Norwich)
- Improved walking infrastructure; Reallocation of space for walking (Leeds)
- Car free city centre; Speed limits (and enforcement); Traffic calming enforcement (Norwich)

Results of group discussions about the pathways

As stated above, in both workshops, most of the afternoon was devoted to an exercise in which the groups devised pathways for reaching their respective combined visions, taking into account the three alternative macro-storylines summarised in Table 2. Most of the measures included in these pathways are under the control of the local authority (i.e. they comprise micro-storylines according to the definition given above). However, in some instances they depend upon 'outside' intervention (e.g., from national government).

At the outset, it is worth commenting that this exercise proved much more challenging for the groups than the morning exercise. In some groups, the discussion of barriers for implementing policies dominated the session. In fact, in each workshop, only one group managed in the time available to complete pathways for all three macro-storylines. Furthermore, also due to given time constraints, no attempt was made to provide *combined pathways*. It follows that the results now presented are restricted to the groups which completed the pathways (shown in Tables 6 and 7 respectively).

It can be seen from Tables 6 and 7 that a number of measures should be implemented as soon as possible (i.e. by 2015), whether the national economy recovers soon (Macro-storylines 1B and 1C) or not (Macro-storyline 1A). In general, these are low cost measures. In addition, high cost measures are

included (in the near future) for Macro-storylines 1B and 1C. Additional measures are included in Macro-storyline 1C to reflect the fact that it is a better environment for planning (compared to 1B) and, since there are no more financial crises before 2030, there is a higher need for constraint on car use.

The following measures, which are directly aimed at increasing walking, are included in the pathways:

- 20 mph zones (Leeds: all Macro-storylines by 2015)
- Lobby for speed limiters (Norwich: all Macro-storylines by 2015)
- High quality walk routes (Leeds: Macro-storylines 1B and 1C by 2015, Macro-storyline 1A by 2025)
- Constraints for car use – prevent rat-running (Norwich: Macro-storyline 1C by 2020)
- Reallocation of road space (*Copenhagenise*) (Leeds, Macro-storyline 1C by 2025)

In addition, measures such as improved public transport and reduction of car use through increased prices (e.g. parking charges, road charges) contribute indirectly to an improved walking environment.

Conclusions

The following conclusions can be made about the exercise described above:

- The workshop exercises were carried out very much in a fast-moving ‘brainstorm’ type format and the results, in terms of the policy measures given above, do not represent a process of careful planning and should be considered in this light. On the other hand, many interesting measures did emerge, some less conventional than others, which are of interest. In particular, it was encouraging that both workshops developed a wide number of measures that could be implemented as soon as possible (i.e. by 2015), whether the national economy recovers soon (Macro-storylines 1B and 1C) or not (Macro-storyline 1A). In general, these are low cost measures. Measures of particular relevance to walking were 20 mph zones and lobbying for speed limiters.
- The visions and pathways were broad in terms of the aspects that they considered (all urban modes of transport, land use and society). From the specific point of view of walking policy, such an approach is important since a large number of factors have direct impact on walking.
- The approach used in the workshops is ‘under development’ and in fact details about the format used in the first workshop (in Leeds) were revised for the second workshop (in Norwich). In particular, the questions given to participants at the start of the afternoon session were more ‘directed’ in the Norwich workshop compared to the Leeds workshop. Also, the format for the presentation of pathways (Table 4) resulted from the group session in Leeds and was then used to guide the Norwich discussions. It is envisaged that the approach will continue to be revised in future workshops. It is intended that such workshops will be held in cities with very different population sizes (both large and small), with different existing walking and cycling cultures and outside the UK.
- As mentioned above, participants found the ‘pathway session’ more difficult than the ‘vision session’. It seemed that this was due to the difficulty for planning in a context where the future external environment (with respect to the economy, society and other factors) is highly unpredictable. The exercise, which demanded that three different external futures be considered simultaneously, was challenging. Future workshops need to address this issue so that that all groups can finish the construction of their pathways, probably by allocating more time to this task.
- Whilst the distinction between *macro-storyline* and *micro-storyline* is useful as a theoretical construct, it was clear from the workshops that reality is more complicated. In particular, there is not a simple borderline between policy ‘under the control of the local authority’ and policy ‘out of its control’.

Table 5: Visions of Leeds and Norwich

	Leeds	Norwich
Land use patterns	<ul style="list-style-type: none"> • City centre still main employment centre • Local services <ul style="list-style-type: none"> ○ education, shopping, health ○ near or accessible 	<ul style="list-style-type: none"> • Higher density • Eco-town • Integrated development (more control) • Mixed development
Walking/cycling	<ul style="list-style-type: none"> • Improved walking and cycling infrastructure • Reallocation of space for walking and cycling • Park+cycle sites at key points on urban fringe • Enforcement / training for car drivers+ cyclists • Safety for cyclists – improvements in both perception and reality 	<ul style="list-style-type: none"> • One lane radials and own lanes • Measures to increase cycle confidence, eg cycle trains • Cycle parking at workplaces, with shower facilities and hair straighteners • Segregation • Multi-level cycling network • Cycling is norm & fashionable • Cycling is safer and perceived to be safer ⇒ conveying information on this
Public transport	<ul style="list-style-type: none"> • High quality public transport information, ticketing (Leeds* Oyster), maps, capacity, integration, cleanliness, frequency (*or wider) • P.T. integration / hubs • Park+ride sites at key points on urban fringe • Shared taxis 	<ul style="list-style-type: none"> • Integrated/touchless tickets • High quality mass transit PT <ul style="list-style-type: none"> ○ well connected ○ low cost • Tram (major routes) – high quality, mass, attractive, cheap
Car travel	<ul style="list-style-type: none"> • Demand management • Restricted parking • Road user charging • Car clubs with convenient costs and easy / IT supported access • Parking price + supply in city centre not more attractive than park+ride • Decrease in car ownership <ul style="list-style-type: none"> ○ especially in multiple car households 	<ul style="list-style-type: none"> • Car free city centre • Speed limits (and enforcement) • Traffic calming enforcement • Car club availability • Reduced council tax bills for non car owning households • Parking (price, availability) measures • Rationing – car quota?
Urban freight	<ul style="list-style-type: none"> • Local delivery services • Last leg cycle delivery 	<ul style="list-style-type: none"> • Compulsory freight consolidation centre • Home delivery network
Society	<ul style="list-style-type: none"> • Perception shift • Lifestyle reorientation • Info-tech • Culture shift <ul style="list-style-type: none"> ○ Collectivisation 	<ul style="list-style-type: none"> • I & T technologies leading to reduced need to travel • Political will step change • Education catchments – freedom of choice v local provision?

Table 6: Group b pathways (Leeds)

	Macro-storyline 1A	Macro-storyline 1B	Macro-storyline 1C
2015	<ul style="list-style-type: none"> High value measures, e.g. <ul style="list-style-type: none"> cycle training information (maps, planners) 20 mph zones Targeted junctions / white junctions Employer provision <ul style="list-style-type: none"> (£/car; cycle parking) 	All measures as in A for 2015-2020, and: <ul style="list-style-type: none"> High quality walk / cycle routes Car clubs (pump prime) Public transport quality contracts (pump prime) Smart ticketing 	All measures as in B for 2015-2020
2020			
2025	All measures as in B for 2015-2020 (not already in A), i.e.: <ul style="list-style-type: none"> High quality walk / cycle routes Car clubs (pump prime) Public transport quality contracts (pump prime) Smart ticketing 	<ul style="list-style-type: none"> Road charge to subsidise Levy on employers Levy large out-of-town shopping centres 	<ul style="list-style-type: none"> Reallocation of road space (<i>Copenhagenise</i>, i.e. create the road space allocation currently existing in Copenhagen)
2030			

Table 7: Group a pathways (Norwich)

	Macro-storyline 1A	Macro-storyline 1B	Macro-storyline 1C
2015	Common measures: <ul style="list-style-type: none"> Lobby for speed limiters ↑Parking Charge Development Control (DC) and Transport Policy (TP) links improved and funding secured Stakeholder engagement Greater Norwich Transport Authority Ring-fenced parking levy Low cost support for Smart Cards 	Common measures: <ul style="list-style-type: none"> Lobby for speed limiters ↑Parking Charge DC and TP links improved and funding secured Stakeholder engagement Greater Norwich Transport Authority Personal Travel Planning (PTP) Infrastructure 	Common measures: <ul style="list-style-type: none"> Lobby for speed limiters ↑Parking Charge DC and TP links improved and funding secured Stakeholder engagement Greater Norwich Transport Authority Infrastructure Subsidise car club
2020	<ul style="list-style-type: none"> Personal Travel Planning (PTP) Infrastructure Smart cards 	<ul style="list-style-type: none"> Ring-fenced parking levy 	<ul style="list-style-type: none"> Constraints for car use – prevent rat-running
2025	<ul style="list-style-type: none"> Sustainable car club 	<ul style="list-style-type: none"> Smart cards 	

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