



Greater Exeter Strategic Plan

Transport Evidence Base

Devon County Council

Future of Transport Scenario Planning Workshops

B2300398/FoTW/001 | E

October 2016



Greater Exeter Strategic Plan Transport Evidence Base

Project No: B2300398
 Document Title: Future of Transport Scenario Planning Workshops
 Document No.: B2300398/FoTW/001
 Revision: E
 Date: October 2016
 Client Name: Devon County Council
 Client No: 25813
 Project Manager: Samantha Taylor
 Author: Dan Trump
 File Name: P:\Data\DCC\Transportation\Projects\B2300398 Greater Exeter Transport Reporting\2. Project Work\2. Workshop Report\Report\B2300398-FoTW-001 Future of Transport Scenario Planning Workshops Rev D.doc

Jacobs U.K. Limited

Renslade House Bonhay Road
 Exeter
 EX4 3AY
 United Kingdom
 T +44 (0)1392 219 340
 F +44 (0)1392 214 438
 www.jacobs.com

© Copyright 2016 Jacobs U.K. Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Limitation: This report has been prepared on behalf of, and for the exclusive use of Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Document history and status

Revision	Date	Description	By	Review	Approved
001 A	10/06/2016	For Client Review	D Trump	E Hext	E Hext
001 B	24/06/2016	Incorporating Client Comments	D Trump	E Hext	E Hext
001 C	05/08/2016	For Client Review	D Trump	S Taylor	S Taylor
001 D	30/08/2016	Final	D Trump	S Taylor	S Taylor
001 E	07/10/2016	Final	D Trump	S Taylor	S Taylor

Contents

1.	Introduction.....	1
1.1	Project Background	1
2.	Scenario Planning	3
2.1	Setting the Scene	3
3.	Workshop Process	4
3.1	Overview	4
4.	Workshop One – ‘Embracing Uncertainty’	5
4.1	Overview.....	5
4.2	Drivers of Change.....	5
4.3	Building a Picture of Uncertainty	6
4.4	Critical Uncertainties.....	7
5.	Critical Axes Confirmation	8
5.1	Critical Axes.....	8
5.2	Moving forward to Workshop Two	8
6.	Development Distribution Patterns	9
6.1	Patterns	9
7.	Workshop Two – ‘Testing Development Patterns’	10
7.1	Overview.....	10
7.2	Plausible Future Scenarios	10
7.3	Testing of Distribution Patterns against Future Scenarios	12
7.4	Results of Testing Development Patterns	13
8.	Limitations	15
8.2	Drivers of Change and Critical Uncertainties	15
8.3	Scenario Narrative Detail.....	15
8.4	Outside of Greater Exeter	15
8.5	Testing Development Patterns Methodology	15
8.6	Time Limitations	16
8.7	Surmountable Limitations	16
9.	Summary	17

Appendix A. Greater Exeter Area

Appendix B. Traffic Growth in the UK and Devon

Appendix C. Economic Decoupling

Appendix D. Triple Access System

Appendix E. Drivers of Change

Appendix F. Sorting of drivers

Appendix G. Four Critical Uncertainty Matrices

Appendix H. Critical Axes

1. Introduction

1.1 Project Background

- 1.1.1 Devon County Council (DCC) has commissioned Jacobs UK Ltd to report the process and findings of two Future of Transport workshops undertaken with UWE Bristol. The workshops considered the key drivers that will affect how, and how much, we travel in future.
- 1.1.2 This work is part of the transportation evidence base work for the joint Strategic Plan being undertaken collaboratively by Local Authorities in the Exeter Housing Market Area. This area covers the Local Planning Authority areas of Exeter, East Devon, Mid Devon and Teignbridge. This area is referred to in this report as the 'Greater Exeter Area' (Appendix A).
- 1.1.3 Funding to progress this and assist in accelerating the development of the strategic planning was secured following a successful collaborative application to the Department for Communities and Local Government's (DCLGs) Neighbourhood Planning & Local Planning Service Redesign and Capacity Building, Pilot Programme for Local Authorities fund.
- 1.1.4 The joint Strategic Plan work will cover a period to 2040 in the context of evidence to 2045. For the purpose of this study, initial assessments of future development requirements identified a potential need for significant residential and employment development land in the Greater Exeter Area. This growth could come forward in a variety of ways; however an integrated approach to consider housing requirements, economic development needs, environmental planning and the transport network is required to facilitate this growth.
- 1.1.5 To inform this study, a series of high level development distribution patterns were identified based on the development requirements set out above. The development distribution patterns were not developed directly as part of the Strategic Plan, however were set out for discussion purposes to consider the full breadth of how development may be distributed across the area. The consideration of future transport in the context of these notional development patterns will be helpful to inform decisions about development strategy for the Strategic Plan.
- 1.1.6 One of the principal determinants of future development strategy is the operation of the transport network. The future is uncertain and predicting what the transport network will be like in 2045 is a difficult task. The established view that economic growth can only be achieved through continued road traffic growth is now being questioned and the impact of digital connectivity on the area's accessibility is uncertain. Conventional approaches can tend to conceal or play down uncertainties. Instead of seeing uncertainties as threats, DCC and other key stakeholders will seek to consider these in future policy making as opposed to taking a reactive stance.

1.1.7 The structure of this report is as follows:

- Section 2 sets Scenario Planning in Devon's context;
- Section 3 gives an overview of the Workshop process;
- Section 4 summarises Workshop One '*Embracing Uncertainty*';
- Section 5 describes how the critical axes were decided;
- Section 6 summarises Workshop Two '*Testing Development Patterns*';
- Section 7 describes the outcome following both workshops;
- Section 8 highlights some limitations with the process which could be improved upon; and
- Section 10 summarises the report findings.

1.1.8 The approach of scenario planning as considered in this report will help to consider the resilience of the future development scenarios and the transport network in the context of future uncertainties.

2. Scenario Planning

2.1 Setting the Scene

- 2.1.1 Attempting to predict what will happen in Devon in five years' time is difficult. Trying to predict what will happen in Devon by 2045 is fraught with uncertainty. To understand future transport conditions traditional modelling and forecasting approaches alone are unlikely to be suitable.
- 2.1.2 Traditionally, historic data and influences have been used to predict future change and for several decades, vehicle traffic has followed a fairly predictable growth path. However in recent years, both nationally and locally in the Exeter area, the growth in vehicle traffic has slowed, and in some places is declining (Appendix B). The apparent historic coupling between economic activity and road traffic activity has also weakened, particularly coinciding with the rapid rise in internet access and usage (Appendix C). *The phenomenon of 'peak car' has arisen in a number of countries including the UK¹* and there is a lack of expert consensus regarding whether future road traffic levels will decline; grow or plateau (and how this will vary across different locations).
- 2.1.3 There has long been a recognised link between land use and transport. However, this two-way relationship has evolved into a three-way relationship with the inclusion of the telecommunications system. This is referred to in this report as the Triple Access System² (TAS) (Appendix D). Economic activity and social activity are dependent on the connectivity offered by the TAS – we gain access to people, goods, services and opportunities through different combinations of physical mobility, proximity and digital connectivity. There is uncertainty over how these combinations will change over time, allied to changing preferences and changing opportunities.
- 2.1.4 These changes make transport policy decisions more difficult to make and highlights the need to consider different future scenarios that reflect the uncertainty faced. In an attempt to develop a plan that actively considers future uncertainty DCC has undertaken two Future of Transport scenario planning workshops with key stakeholders to appraise future development distribution patterns in Devon in 2045. The purpose of this report is to summarise the workshops, explain briefly how they operated and report what results came from them.

¹ "Peak Car – Themes and Issues" Goodwin, P. & Van Dender, K. (2013). *Transport Reviews*.

² Lyons, G. and Davidson, C. (2016). *Guidance for transport planning and policymaking in the face of an uncertain future. Transportation Research Part A: Policy and Practice*, 88, 104-116. <http://dx.doi.org/10.1016/j.tra.2016.03.012>

3. Workshop Process

3.1 Overview

- 3.1.1 The scenario planning process was split into two workshops. The first aimed to identify key drivers of change and critical uncertainties facing Devon out to 2045 in relation to transport and society. The second: (i) sketched out a series of plausible yet divergent future scenarios based upon how the critical uncertainties could play out; and (ii) tested the compatibility of each of the four development patterns being considered for the Greater Exeter area against the different future scenarios.
- 3.1.2 The two workshops were facilitated by Professor Glenn Lyons from the Centre for Transport & Society (CTS), University of the West of England (UWE) Bristol. Additional academic experts from UWE Bristol also participated. Professor Lyons has previously led scenario planning work for the New Zealand Ministry of Transport's Future Demand project³. The value of scenario planning is in the engagement of key stakeholders in the process of examining future uncertainty and developing scenarios. The two workshops were attended by stakeholders from:
- Devon County Council
 - East Devon District Council
 - Exeter City Council
 - Mid Devon District Council
 - Teignbridge District Council
 - Highways England
 - Stagecoach Southwest
 - Jacobs UK Ltd
 - Exeter City Futures (Community Interest Company)
 - UWE Bristol
- 3.1.3 A description of the workshops' methods, preparation work and summary of results and limitations are set out in the following sections. It is important to note that during both workshops the Chatham House Rule applied. Participants were expected not only to respect and challenge each other's views but be receptive to changing their own.

³ Lyons, G., Davidson, C., Forster, T., Sage, I., McSaveney, J., MacDonald, E., Morgan, A. and Kole, A. (2014). *Future Demand: How could or should our transport system evolve in order to support mobility in the future? Final Report*. New Zealand Ministry of Transport, Wellington, New Zealand. <http://www.transport.govt.nz/ourwork/keystrategiesandplans/strategic-policy-programme/future-demand/>

4. Workshop One – ‘Embracing Uncertainty’

4.1 Overview

4.1.1 The focal question of the first workshop, ‘Embracing Uncertainty’, was ‘*How might travel demand in the Exeter area change in the future?*’ The workshop’s objectives were to:

- Consider the evolving context for the Greater Exeter local plans;
- Establish important and uncertain drivers of change affecting the future of travel demand in the Greater Exeter Area;
- Define a context for subsequently ‘testing’ development distribution patterns; and
- Share stakeholder and expert insights.

4.1.2 By 2045 the transport network, environment and social constructs in the area are likely to change significantly. Change was identified to occur in one of three ways:

- Sudden and dramatic e.g. a natural disaster;
- Gradual e.g. the ageing process; or
- Transformative, e.g. the invention of the internet and its diffusion into everyday life.

4.1.3 With the Joint Local Plan looking forward over a 30 year period, even gradual changes could become cumulatively significant. The link between economic activity and road traffic activity may or may not further weaken, and the influence of digital connectivity is uncertain.

4.2 Drivers of Change

4.2.1 In mixed groups containing representatives from local authorities and the transport industry, the participants were tasked to identify any drivers of change (factors) which were believed likely to have an impact on future Devon society and its demand for travel. These drivers of change were classified under the following STEEP categories:

Societal;

Technological;

Environmental;

Economic; and

Political

4.2.2 The STEEP framework helps to define the external macro environment factors that can determine change. The process of workshop engagement, using this framework, also helps challenge and extend individuals’ own views and perspectives (which are shaped by their experience, attitudes and beliefs). A list of the STEEP drivers of change identified in this first workshop is included as Appendix E.

4.3 Building a Picture of Uncertainty

- 4.3.1 Following the identification of key drivers of change, the next group session required participants to place each driver in one of the quadrants in the diagram below (Figure 4-1).

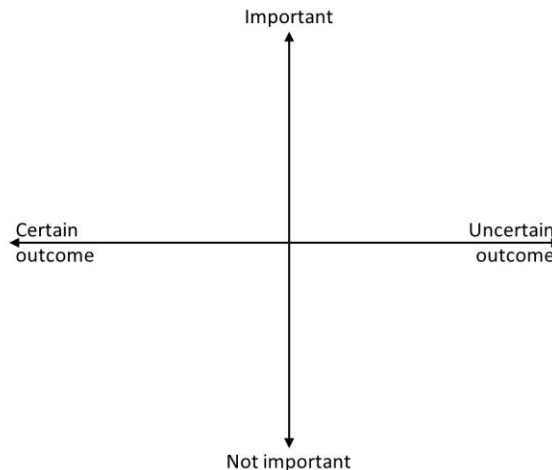


Figure 4-1 Importance / Certainty Quadrant Model

- 4.3.2 The participants were split into three groups including both Local Authority and transport industry representatives. The drivers were randomly split between these groups, who then discussed their predicted degree of certainty and importance and placed them in the appropriate quadrants.
- 4.3.3 The relative importance of the drivers appeared to be clearer to participants than the degree of certainty regarding how they would play out over time, leading to more debate which emphasises the difficulty of looking so far forward.
- 4.3.4 The assignments of drivers from all three groups were then discussed and a combined overall assignment of certainty against importance was produced. This is presented in tabular form as Appendix F.
- 4.3.5 There was significant debate in the room although most conclusions were not contentious. The general consensus of the group was that the majority of drivers had been placed in the correct location with only minor amendments needed. Two were decided to be in the wrong quadrant; 'population change' and 'retail patterns' were relocated from the certain / important quadrant to the uncertain / important quadrant. This was a promising outcome as it demonstrated that the representatives from a mix of organisations came to a broadly common position on important and uncertain drivers of change.
- 4.3.6 For the purposes of this project, the critical quadrant is the top right. This quadrant sets out the drivers which are predicted to be *important* in shaping future society and demand on the transport system but which have an *uncertain* outcome.

4.4 Critical Uncertainties

- 4.4.1 Following further changes to group composition, but retaining the mixture of representatives in the groups, each group was tasked with identifying at least one candidate pair of Critical Uncertainties. Critical uncertainties are factors that will significantly shape the future in ways that are as yet unknown. This was based upon considering the now identified category of important and uncertain drivers alongside the following two questions:

What will society *want* to do in the future?

What will society *be able to* do in the future?’

- 4.4.2 Following this group discussion, four pairs of Critical Uncertainties were proposed. These pairs included factors that are specific to the local agenda in the Greater Exeter Area; factors which DCC and other stakeholders had no control over; and factors that held a standing in national debate of major transportation issues facing society. The four pairs of Critical Uncertainties proposed by the groups were:

- Affordability of travel vs makeup of town centres;
- Cost of travel vs distributions of markets;
- Fuel price vs public sector investment in public transport; and
- Strength of local economies vs mobility as a service.

- 4.4.3 Two common themes were apparent: the affordability of transport; and vibrancy of local market town economies. This suggests that thinking was most strongly oriented towards the traditional two dimensional transport and land-use link and less so towards the impact of digital connectivity and ICT. Appendix G shows the four pairs of Critical Uncertainties.

- 4.4.4 It was agreed at the end of Workshop One that DCC would consider the four pairs and how best these might be refined to a set of critical axes for Workshop Two. This concluded Workshop One.

5. Critical Axes Confirmation

5.1 Critical Axes

- 5.1.1 Following the first workshop officers from DCC were tasked with confirming the critical axes. As outlined above, the affordability of transport and strength of local markets were key themes from the first workshop.
- 5.1.2 However, there was a strong feeling that the emergence of digital connectivity and its impact in future was not only a significant driver of transport demand, but perhaps the one for which the impact was most uncertain. As a result, it was decided by officers from DCC, and subsequently agreed by the stakeholder group, that ICT development needed to be included as a critical uncertainty.
- 5.1.3 The two common themes of cost and strength of local markets were still considered important and therefore ICT was included as a third Critical Uncertainty to take forward to Workshop Two.

The inclusion of ICT development as an uncertainty also better reflects the emerging three dimensional Triple Access System (TAS) approach to transport demand.

5.2 Moving forward to Workshop Two

- 5.2.1 A single pair of critical uncertainties (depicted as a pair of axes) is typically used in scenario planning exercises. Each critical uncertainty is taken to play out in one of two directions (e.g. high/low, strong/weak) and when taken together as a pair, this means four different possible combinations could unfold. Proceeding with the three critical uncertainties leads to a total of eight future scenarios (2x2x2). Although plausible to test against a 3 dimensional axis, this would be much more complicated than a traditional 2 dimensional (x,y) axis. Therefore, the approach was to consider two pairs of Critical with the third critical uncertainty used to distinguish the difference in *context* between each pair.
- 5.2.2 Given that the future development distribution pathways were spatial, it was felt that the spatial uncertainty (strength of local markets) was the most sensible treat as the third contextual critical uncertainty. This uncertainty was referred to as the 'spatial distribution of activity centres' defined as ***the location of service, leisure and retail facilities***.
- 5.2.3 As such, the two critical uncertainties of 'Affordability of Travel' and 'ICT development' (Appendix H) were considered in two contexts:
- Spatial distribution of activity centres: Exeter focused (monocentric); and
 - Spatial distribution of activity centres: dispersed (polycentric).

6. Development Distribution Patterns

6.1 Patterns

6.1.1 In the next Local Plan Period there is expected to be a need to accommodate approximately 30,000 additional dwellings in the Greater Exeter area. These dwellings are in addition to those set out within the existing Local Plans. To consider how the scale of this development could be distributed across the Greater Exeter Area, four potential spatial distribution patterns have been developed.

6.1.2 It is important to note that at this stage of the planning process, these distributions are indicative only and any capacity studies or land availability assessments to establish how much growth each location could potentially accommodate have not been undertaken.

Distribution Pattern A - Focus of growth in and around Exeter

6.1.3 Pattern A concerns a focus of growth within Exeter City's administrative boundary. Given land constraints in the existing urban area this is likely to require intensification of land use and higher density/storey developments. Significant development will also be achieved largely through expansion of already proposed / under construction developments in close proximity to Exeter in the current Local Plan period e.g. Cranbrook, Redhayes and South West Exeter. The remainder of development is lightly spread across other market towns in the Greater Exeter Area.

Distribution Pattern B - Focus of growth with a new community to the east / southeast of Exeter

6.1.4 Pattern B concerns a proposed substantial new community to east of Exeter. There would still be growth in the Exeter area and the remainder of required housing will be distributed in a similar pattern being adopted in current and emerging Local Plans across the market towns with focused growth in Exmouth, Newton Abbot and Tiverton.

Distribution Pattern C - Focus of growth to the north of Exeter/Mid Devon

6.1.5 Pattern C concerns a proposed substantial new community in Mid Devon, most likely in the vicinity of Cullompton and/or Tiverton. There will be modest growth in and around Exeter and continued focus at Exmouth and Newton Abbot and other market towns.

Distribution Pattern D - Dispersal of development amongst market towns

6.1.6 Pattern D concerns a proposed distribution of all development proportionately across the Greater Exeter Area. This will include modest growth within the Exeter City boundary accompanied by extensions to current development at East Devon's western boundary. Newton Abbot and Exmouth will see larger proportions of growth in comparison to Patterns A, B and C. Mid Devon would see larger growth than in Patterns A and B. The remainder of the required housing will be distributed amongst the remaining market towns following a similar pattern as adopted in current and emerging Local Plans.

6.1.7 All four Patterns cover a spectrum of development options in the Greater Exeter Area and are not all focused on one area.

7. Workshop Two – ‘Testing Development Patterns’

7.1 Overview

7.1.1 The title of Workshop Two was ‘Testing Development Patterns’. Using the Critical Axes identified in Appendix H, the goal of this Workshop was to:

- Characterise a set of plausible future scenarios for Greater Exeter transport and society in 2045;
- Test four possible development distribution patterns against future critical uncertainties using the aforementioned eight potential future scenarios for the Greater Exeter Area; and
- Develop a complementary process to assist the strategic planning decision making process.

7.1.2 When working towards the workshop objectives above, participants were required to maintain two key questions when considering what future scenarios may develop: How will people in the future have adapted; and what influences would there be on where people wish or need to be and how they travel?

7.2 Plausible Future Scenarios

7.2.1 Participants were divided into two groups. Both groups were tasked with creating a scenario pen portrait for each of the four quadrants of the Critical Axes pair, affordability of travel and ICT development (Appendix H) for Devon in 2045. Both groups were initially tasked to create a plausible future scenario for a monocentric distribution of activity centres; followed by a further set of four scenarios for a polycentric distribution. The two groups then then worked as a whole, introducing their own scenarios and debating the merits and weaknesses of them before agreeing on four monocentric and four polycentric plausible future scenarios.

7.2.2 The four monocentric (Exeter focused) scenarios for Devon are:

- All Empty Roads Lead to Exeter;
- Wherever I want;
- Exeter Central; and
- I like Driving in my car.

7.2.3 The four polycentric (dispersed) scenarios for Devon are:

- On my Doorstep
- Whenever, wherever;
- Town Renaissance; and
- The Wild Wild West.

7.2.4 The eight plausible future scenarios, along with a brief description and where they sit in the Critical Axes are shown below in Figures 7-1 and 7-2. Notwithstanding the limited time available to develop the scenarios, **the set of scenarios is, importantly, a product of the collective thinking and expert opinion of key stakeholders.**

Figure 7-1 Monocentric Spatial Distribution of Activity Centres Plausible Future Scenarios

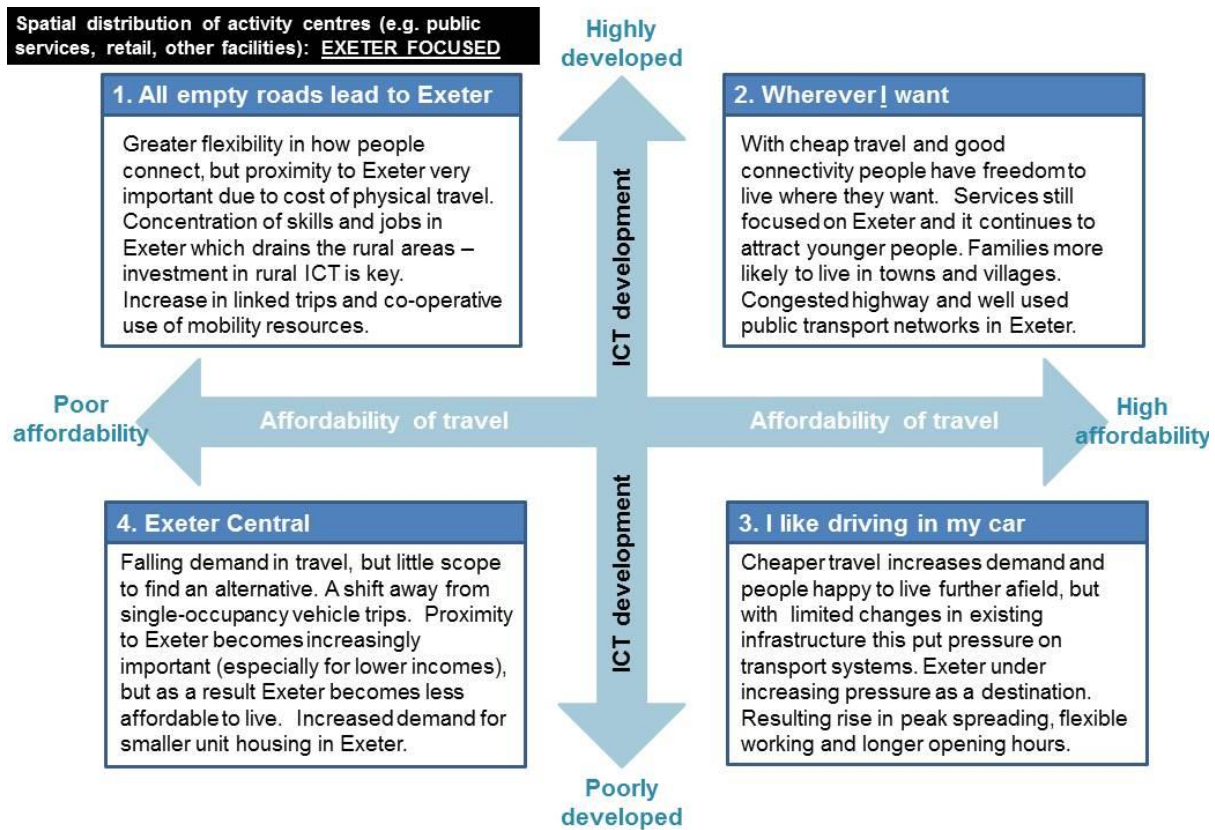
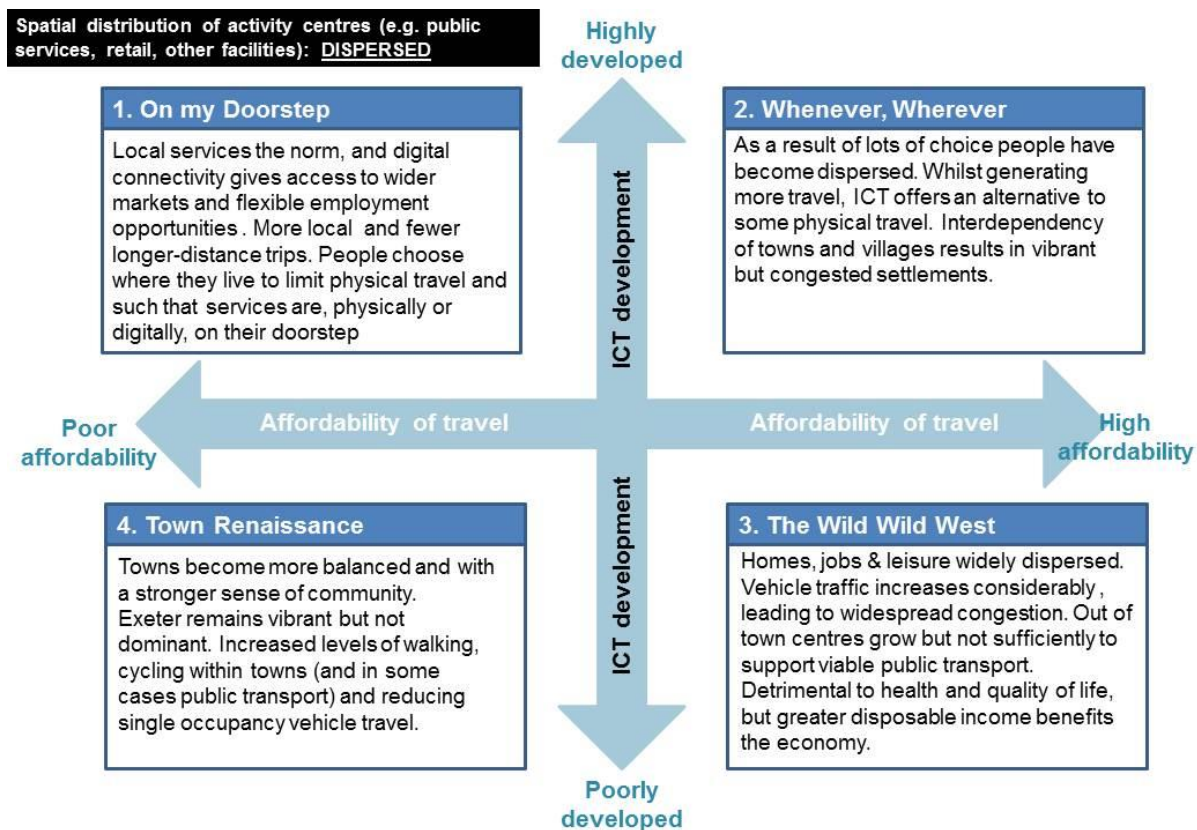


Figure 7-2 Polycentric Spatial Distribution of Activity Centres Plausible future Scenarios



7.3 Testing of Distribution Patterns against Future Scenarios

- 7.3.1 The final stage of the workshop was for participants to assess how compatible each development pattern might be in each of the plausible future scenarios for the Greater Exeter Area developed by the workshop participants. Specifically, would, or could with mitigation, the transport impacts be acceptable. This assessment employed a simple 'traffic light' scheme with:
- (i) a green tick indicating compatibility between the development pattern and the scenario,
 - (ii) an amber question mark indicating that although there would be some concerns, the development pattern could be compatible with the scenario; and
 - (iii) a red cross indicating that the development pattern would not be compatible with the scenario.
- 7.3.2 Due to time constraints the workshop participants were split into two groups. One group appraised the scenario set for monocentric distribution of activity centres and the other appraised the set for polycentric distribution.
- 7.3.3 The groups explored the implications of the different development distribution patterns in the context of the critical digital connectivity and affordability of travel uncertainties, and what the magnitude and local sensitivity of the impacts could be. This gave the opportunity for potential, high level mitigation measures to be put forward, evaluated, and in some cases censured.
- 7.3.4 To remove any inconsistency arising from the scoring of two different groups, the lead officers from DCC undertook a further scoring exercise immediately after Workshop Two of all four development patterns against all eight scenarios. This drew upon the initial assessment within Workshop Two and by scoring all at once aimed to provide a consistent scoring approach for all scenarios. The amended traffic light assessment was then circulated for comment around the participants for confirmation. The final traffic light assessment is displayed in Table 7-1.
- 7.3.5 Although many other plausible future scenarios exist, it is clear from the results that certain distribution patterns appear to be more resilient than others to future changes in the affordability of travel, development of ICT and the distribution of activity centres.

7.4 Results of Testing Development Patterns

Spatial Distribution of Activity Centre Scenarios	Distribution Pattern A – Exeter Intensified	Distribution Pattern B – New Community Exeter	Distribution Pattern C – New Community North of Exeter	Distribution Pattern D – Dispersal of Development
Exeter focused 1 All Empty Roads Lead to Exeter	✓	✓	✓	?
Exeter focused 2 Wherever I Want	✓	?	?	?
Exeter focused 3 I like Driving in my Car	?	?	✗	✗
Exeter focused 4 Exeter Central	✓	✓	?	✗
Dispersed 1 On my Doorstep	✓	✓	✓	✓
Dispersed 2 Whenever, Wherever	✓	?	?	✓
Dispersed 3 The Wild Wild West	?	?	?	?
Dispersed 4 Town Renaissance	✓	✓	✓	✓

Table 7-1 Results of testing of four distribution patterns against two spatial distribution of activity centre scenarios

- 7.4.1 Distribution Pattern A is compatible with most of the scenarios. The two scenarios where there is some doubt are those where travel becomes much more affordable with limited or no improvement in digital connectivity. These could however be made to work with significant funding and improvement on Exeter's key junction and corridors.
- 7.4.2 Distribution Pattern B is considered compatible with half of the scenarios, but it would be less compatible in scenarios where travel becomes much more affordable. This would most likely manifest in considerable demand to and from Exeter, which could be challenging to accommodate.
- 7.4.3 Distribution Pattern C was scored very similar to B, albeit that in the scenario with travel becoming more affordable and limited ICT improvements it would be extremely challenging to accommodate.
- 7.4.4 Pathway D was the least resilient option against the future scenarios, although it did score well when considered against polycentric distribution of activity centres. This is as a result of development and activity centres being located near to each other. Conversely, Pattern D was deemed to fail for the 'I Like Driving in my Car' and 'Exeter Central' future scenarios.

- 7.4.5 The purpose of this exercise was to try to establish how resilient the different development distributions would be to future uncertainties. The scoring table above highlights how Distribution Pattern A would be the most resilient and that Distribution Pattern D could, particularly with a focus of activity centres in Exeter, be extremely difficult to accommodate. Patterns B and C were similarly scored, albeit with C less compatible in a scenario of poor ICT and highly affordable travel.
- 7.4.6 The exercise is not considered a substitute for other approaches to Local Plan development but as a complementary tool to help ensure robustness of the eventual plan. The workshops engaged a set of key stakeholders in the participatory process of exposing, embracing and examining future uncertainty and in turn undertaking some 'stress testing' of ways in which the Greater Exeter Area might best accommodate new development. T

8. Limitations

- 8.1.1 The scenario planning undertaken through the Futures workshops provides a useful tool as part of the development of longer term strategic development plans. Nevertheless, it is accepted that there are limitations to the work that those drawing conclusions from this report should give consideration.
- 8.1.2 This section will set out what are perceived to be the limitations of the process that was followed across the two Future of Transport workshops and what the impact of these limitations may have been on the discussions which took place and the outcomes of the study.

8.2 Drivers of Change and Critical Uncertainties

- 8.2.1 The group of stakeholders in Workshop One came up with a list of what they considered to be drivers of change (Appendix E) and in turn critical uncertainties (Appendix F). Although the drivers list is wide ranging and significant workshop discussion took place to identify the critical uncertainties, these are the product of a relatively small group of participants and is not an exhaustive list. A greater number of participants with increased breadth of experience (and potentially with more time available) may have yielded a longer list. However, the potential to do this was limited by the confidential nature of the development distribution patterns being tested (and the time available).
- 8.2.2 A number of the Critical Uncertainties are more variable than others e.g. ICT. The speed at which ICT advances, and the number of technologies that are on the market makes it difficult to perceive exactly what this could make possible, making it more challenging to appraise.

8.3 Scenario Narrative Detail

- 8.3.1 It was noted when coming to a consensus on a set of plausible future scenarios in the Greater Exeter Area (Figure 7-1 and Figure 7-2) that the scenarios are at extreme ends of the scale in terms of their contrast. There are however different degrees to which the critical uncertainties (and other drivers) play out (extreme to more moderate) which would result in different scenario narratives which could be appraised differently. Nevertheless, the purpose of a scenario planning exercise is not to suggest a specific future, but instead to develop scenarios that highlight ways in which the future could unfold.

8.4 Outside of Greater Exeter

- 8.4.1 From the outset it was stated that there was a need to accommodate additional housing in the Greater Exeter Area. There was no consideration of the impact that other District Councils e.g. West Devon would have on this value. This may have impacted the outcome of the Critical Axes testing in Workshop Two, although this impact would probably be negligible. It is acknowledged development in some areas may have already been committed. If the impact from other District Councils was deemed to be high, their attendance at workshops would be a requirement.

8.5 Testing Development Patterns Methodology

- 8.5.1 The makeup of individuals involved in group discussion inevitably shapes the dynamic and outcomes of the discussion. This is unavoidable; notwithstanding efforts within the workshops maintain a mix of perspectives and to vary composition of groups.
- 8.5.2 A traffic light system was used to assess the development distribution patterns against the uncertainty matrices. This gave an easy appraisal method for all groups to follow. The scoring system came under scrutiny in Workshop Two when it was questioned whether having a scoring system of only three outcomes was sufficient. There was discussion regarding whether a wider scoring system would be more appropriate, although when appraising these uncertainties at the high level it was noted that this could add further subjectivity to the process.

- 8.5.3 There were times when testing the different development distribution patterns that the consensus of groups was that 'we just don't know'. Coming to an appraisal conclusion such as this demonstrates the challenges of exposing and exploring future uncertainties.

8.6 Time Limitations

- 8.6.1 In Workshop Two the groups did not have time to test all four distribution patterns. The four distribution patterns were split equally between two groups. Although this may have created some inconsistency between scoring from each group, the further DCC scoring of all 32 scenarios immediately after the workshop should have removed this issue.

8.7 Surmountable Limitations

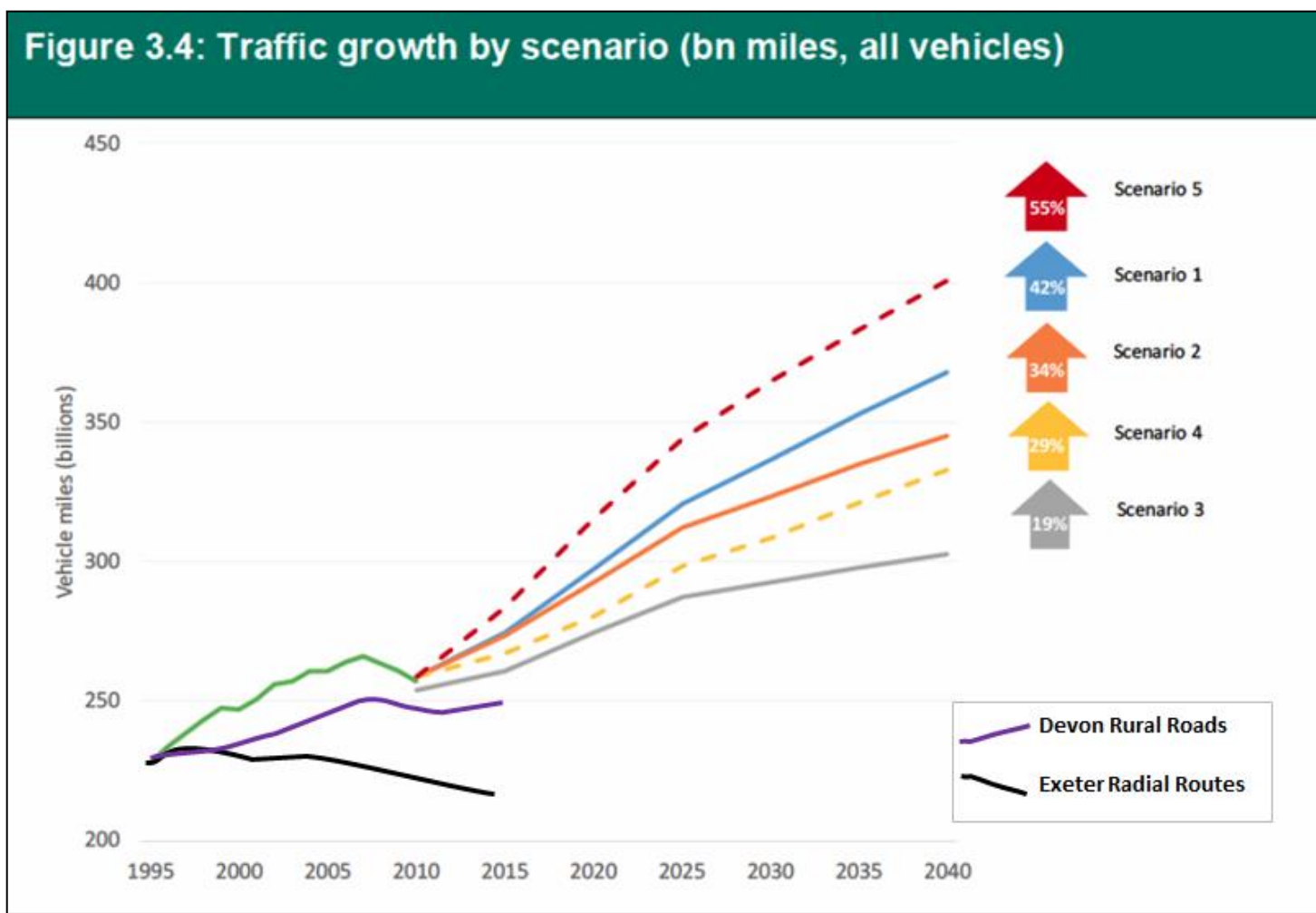
- 8.7.1 The limitations outlined above were raised by the participants during the two workshops as potential restrictions to the scenario planning process. They are valid in their statements however, as outlined above, these issues can be accounted for and do not detract unduly from the purpose of the exercise. Predicting uncertainty thirty years into the future is a difficult and complex task and periodic reappraisal of critical uncertainties and future scenarios would be useful so that predictions are evaluated, critiqued and updated in line with observed data.

9. Summary

- 9.1.1 Attempting to predict what will happen in Devon in five years' time is difficult. Trying to predict what will happen in Devon in 2045 is extremely challenging with huge uncertainty. These uncertainties cannot be ignored. They can significantly influence Devon's transport system and economy. Looking forward 30 years, even gradual changes could be considerable and the planning of the transport system should not ignore or conceal such uncertainties.
- 9.1.2 Tried and tested appraisal techniques can lead policymakers to ignore or play down uncertainties. The scenario planning process set out in this report seeks to ensure uncertainty is considered in developing strategic transport planning policy. It acknowledges that economic growth has decoupled from growth in vehicle traffic and gives reference to the growing role of digital connectivity as a third factor that influences movement, leading to a Triple Access System (TAS).
- 9.1.3 The scenario planning process for Devon in 30 years' time has identified an extensive list of STEEP drivers of change which may impact Devon's transport system. This list has been narrowed to a set of Critical Uncertainties, those that will have a large impact but which are highly uncertain. Three critical uncertainties covering affordability of travel, spatial distribution of activity centres and ICT development were chosen to assess future development patterns against.
- 9.1.4 Four monocentric and four polycentric plausible future scenarios for Devon were formulated around the Critical Axes of affordability of travel and ICT development. This allowed the testing of the four development distribution patterns against these eight plausible future scenarios.
- 9.1.5 The results of the process suggest that certain patterns of development are more resilient to future uncertainty than others. Specifically, a distribution pattern where development is focused in and around Exeter would be most resilient to future uncertainties. Conversely, a dispersed pattern would be least resilient. Distribution patterns B (east of Exeter) and C (Mid Devon) scored similarly, albeit with pattern C less resilient in a future where ICT has not improved and travel is much more affordable.
- 9.1.6 There was a positive attitude to both Workshops by all stakeholders, and a range of topics were debated, not just transport. This demonstrates the potential of the scenario planning process being applicable to other areas of strategic policy planning. It is important to note that there are limitations to the process, though these are not insurmountable and that scenario planning for an uncertain future only makes up part of the strategic planning process.
- 9.1.7 The purpose of the workshops was not to answer what uncertainties in transport should make Devon's transport system evolve, but offer insight, guidance and promote debate that can be incorporated into future transport decisions. The Workshops highlighted the challenges Devon faces and what opportunities can be taken from them to shape a 'Thriving Devon'.

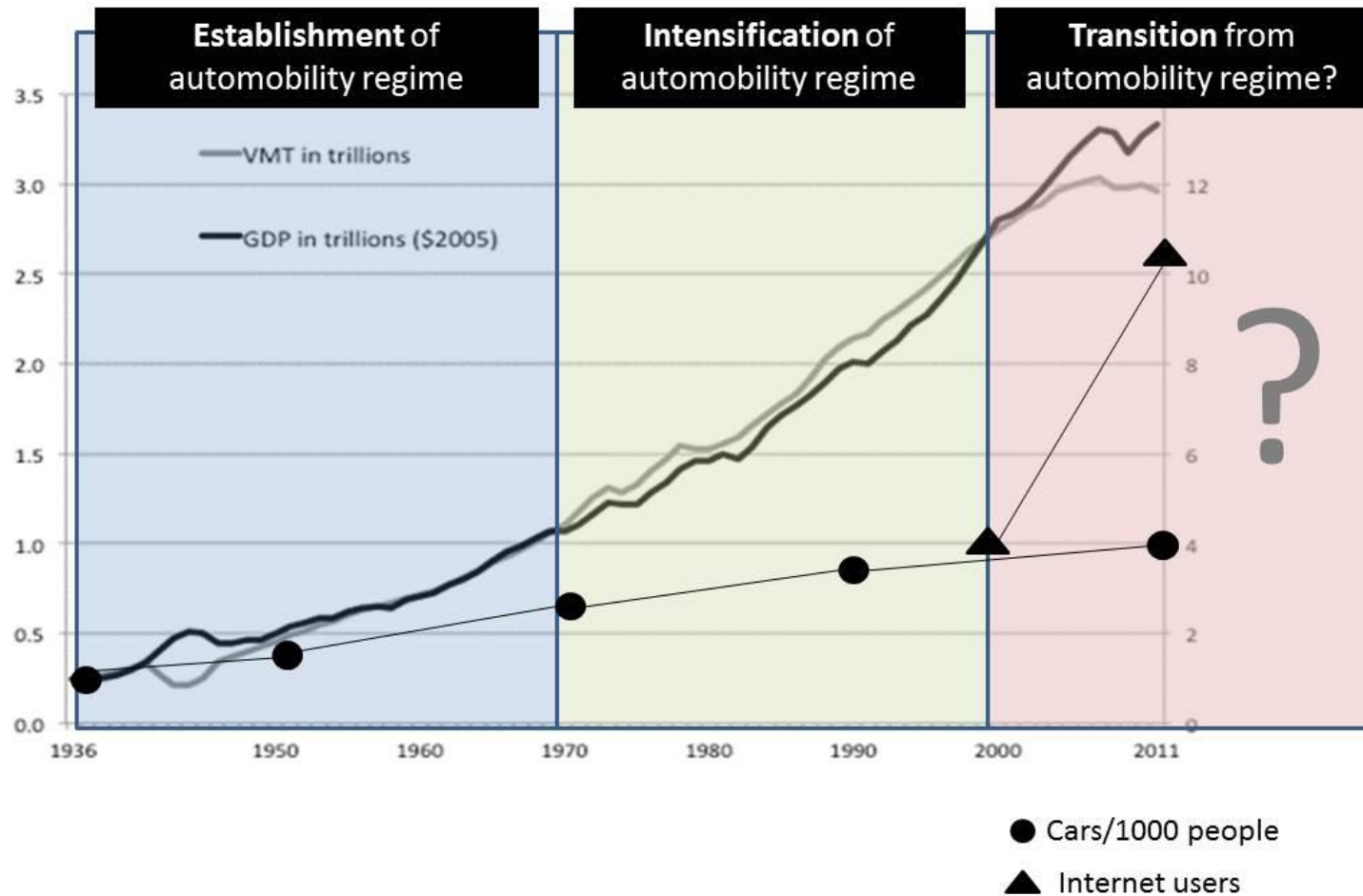
This is a detailed map of Devon and Torbay, showing major towns, roads, and geographical features. The map includes a scale bar (0-20 Kilometres) and a north arrow. Key locations include Exeter, Plymouth, and Torquay. Major roads like the A30, A31, and A36 are highlighted. The map also shows the coastline, including Babbacombe Bay and Lyme Bay.

Appendix B. Traffic Growth in the UK and Devon⁴



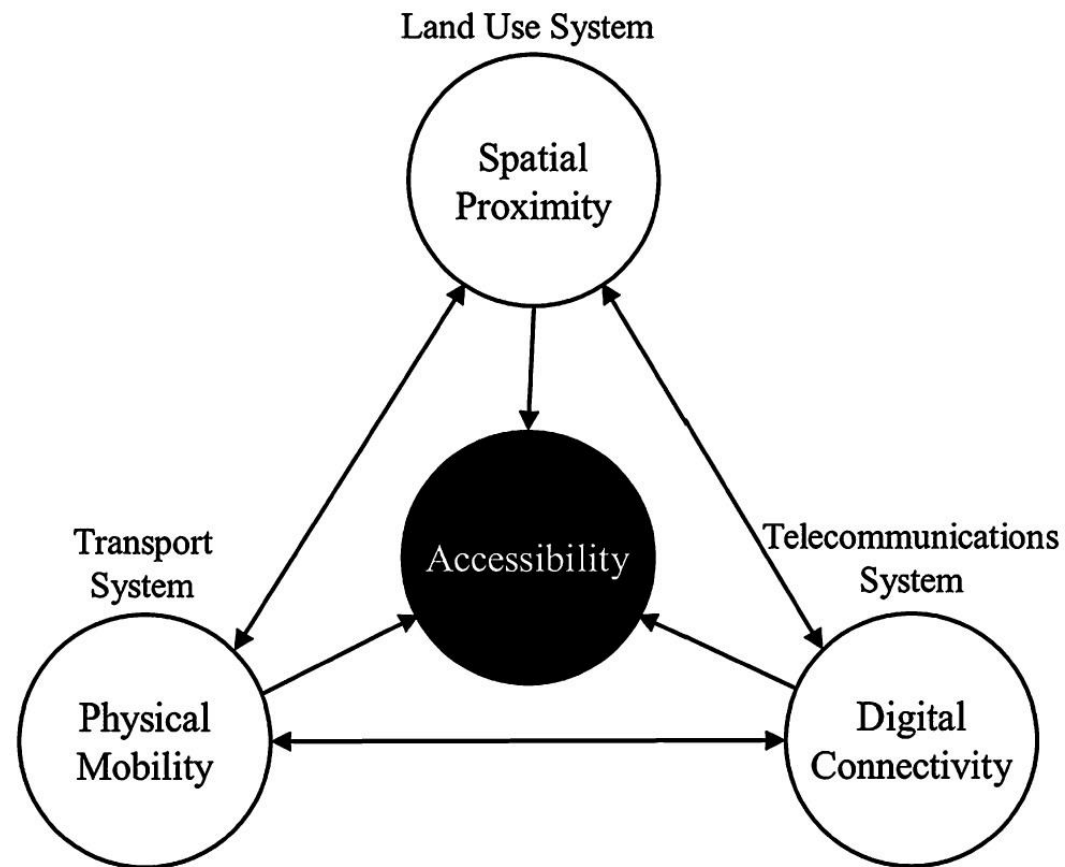
⁴ "Road Traffic Forecasts 2015". Department for Transport (2015) and Devon County Council (2016).

Appendix C. Economic Decoupling⁵



⁵ Figure prepared as a workshop aid by Professor Glenn Lyons and based on US data – underlying graph of VMT and GDP taken from http://www.fhwa.dot.gov/policy/otps/pubs/vmt_gdp/vmt_gdp.pdf (page 7)

Appendix D. Triple Access System⁶



⁶ "Guidance for Transport Planning and Policymaking in the Face of an Uncertain Future." Lyons & Davidson (2016).

Appendix E. Drivers of Change⁷

Drivers identified				
Societal	Technological	Environmental	Economic	Political
Increased health awareness Less appetite for 'drive' time Ageing society Growing digital awareness Approaches to children's education Older people's accessibility forms Enduring desire/need to travel Urbanisation Resistance to change Human sociability Sedentary lifestyles and working Origin/ethnicity of future regional population Degree of choice Changing long distance travel	Deliverability of driverless technology Mobility as a service New forms of transport and mobility (incl.. Uber, Liftshare) Remote working (home/hub) 3-D printing Improved digital connectivity Vehicle technology making driving easier Capacity of existing infrastructure (incl. transport) Advances in travel information services	Air quality concerns Choices of where to live Cataclysmic event Environmental effects of technological advance Need for resilience against extreme weather and climate change Environmental break point reached Increased importance of environmental protection	Number of jobs requiring travel Increasingly ICT-dependent economy Price of fuel UK Plc boosted by new transport technology Spatial configuration of markets Impact of more automation on work Affordability of travel Strengthened local economies Primacy of economy driving change Individual's return on investment from travelling Retail patterns Car clubs Affordability of technology Increased inequality of income Balance of transport costs versus other costs	Reducing GHG emissions Global co-operation to tackling GHGs Doubts over endurance of economic growth as goal Political cycles Weakening influence of government over change Primary political focus on reducing debt Political drive for continued economic growth in particular sectors

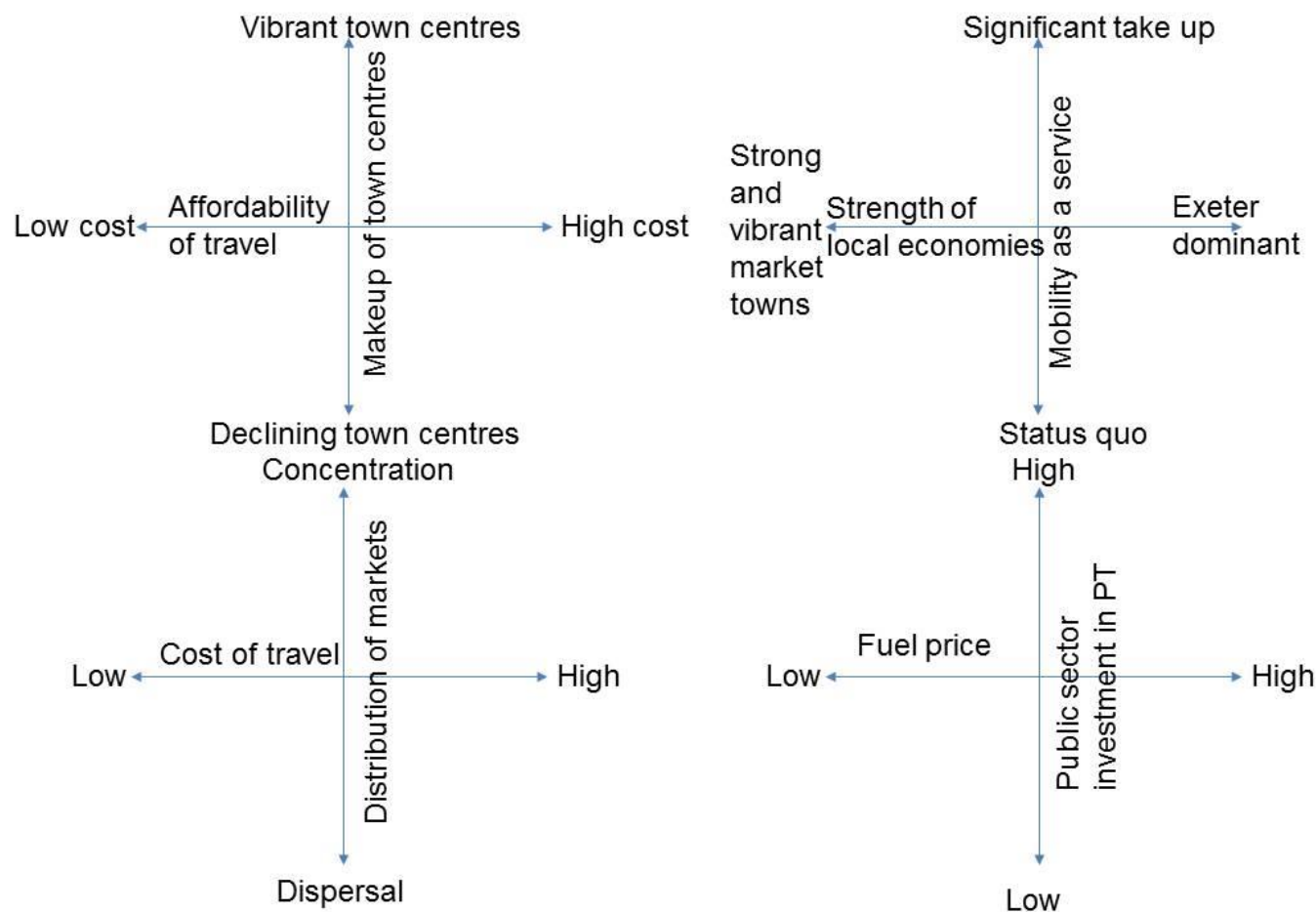
⁷ Those in red were deemed the agreed most important Drivers of Change and taken forward to build a picture of uncertainty (Paragraph 4.2.2)

Appendix F. Sorting of drivers⁸

Important / Certain	• Growing digital awareness • Human sociability • Less appetite for 'drive' time • Resistance to change • Need for resilience against extreme weather and climate change • Improved digital connectivity • Uncertainty of political cycles highly certain • Increased importance of environmental protection	• Deliverability of driverless technology • Capacity of existing infrastructure • Air quality concerns • Number of jobs requiring travel • Primacy of economy driving change • Older people's accessibility forms • Increasingly ICT-dependent economy • Population change
Not important / Certain	• Advances in travel information services • Environmental effects of technological advance • Sedentary lifestyles and working	• 3-D printing • Vehicle technology making driving easier • New forms of transport and mobility
Important / Uncertain	• Mobility as a service • Environmental break point reached • Affordability of technology • Political priorities • Affordability of travel • Urbanisation in Devon • Primary political focus on reducing debt • Balance of transport costs versus other costs • Degree of choice • Remote working • Spatial configuration of markets (including makeup of town centres)	• Strengthened local economies • Deliverability of driverless technology • Price of fuel • Choices of where to live • Impact of more automation on work • Cataclysmic event • Technological advances to allow safer, cheaper mass travel • Affordability of technology • Retail patterns
Not important / Uncertain	• Doubt over endurance of economic growth as goal • Global co-operation to tackling GHGs • Reducing GHG emissions	• New forms of transport and mobility • Approaches to children's education • Origin/ethnicity of future regional population
<i>Middle of axis</i>	• <i>Increased health awareness</i> • Increased inequality of income	• <i>Weakening influence of government over change</i> • <i>UK PLC boosted by new transport technology</i>
<i>Drivers unaccounted for</i>	• <i>Aging society</i> • <i>Changing long distance travel</i>	• <i>Car clubs</i> • <i>Individual's return on investment from travelling</i>
Red text - Group members not all agree appropriate quadrant		Orange text – driver in two quadrants

⁸ Those highlighted in yellow were the Drivers of Change which are predicted to shape the future of society but have an uncertain outcome (Critical Uncertainties). The two highlighted in red, following discussion were deemed in the incorrect quadrant and were relocated to the top right (Paragraphs 4.3.5 & 4.3.6). Their original location has been displayed to show how stakeholder discussion progressed the Critical Uncertainty confirmation.

Appendix G. Four Critical Uncertainty Matrices



Appendix H. Critical Axes

