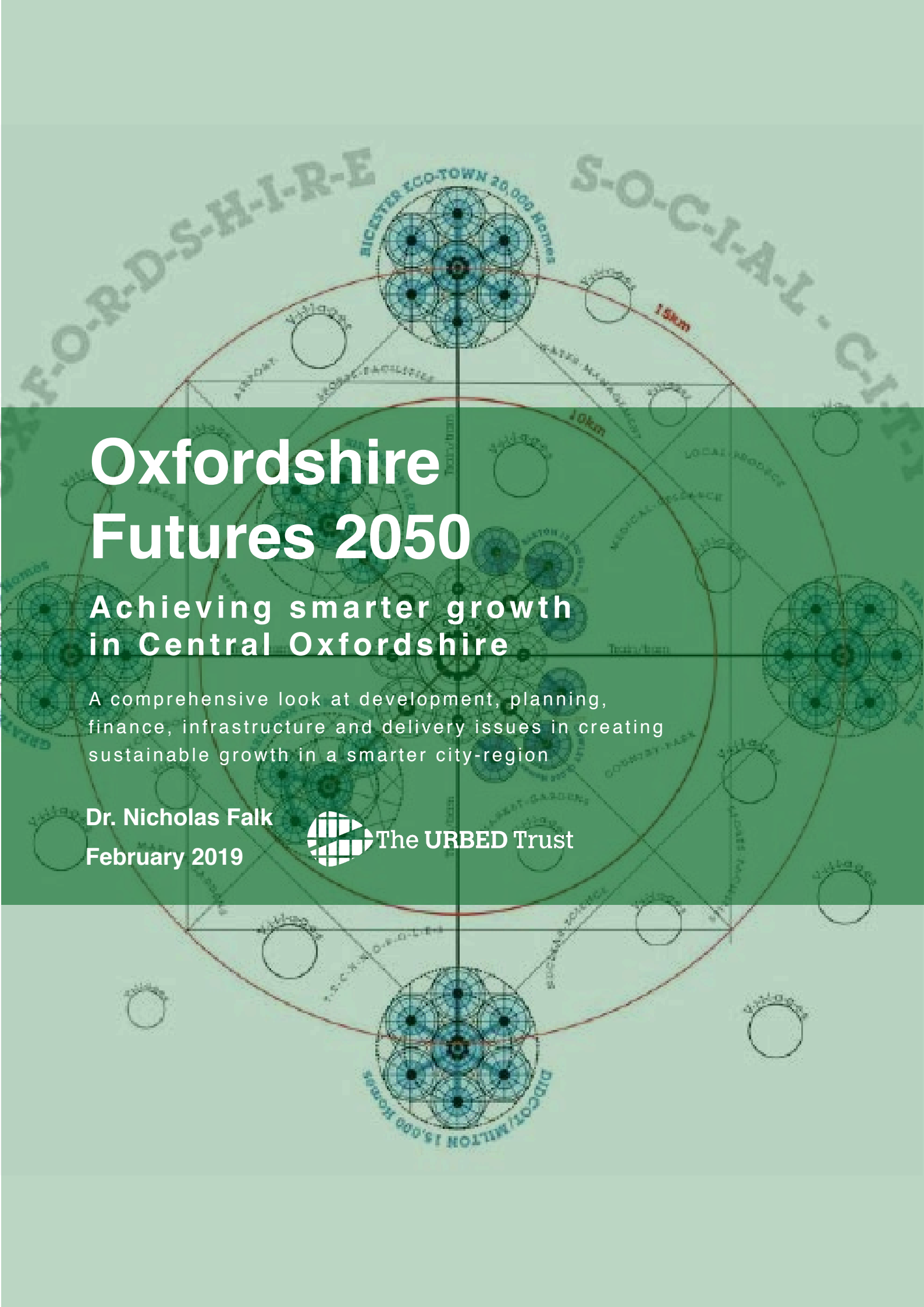

Oxfordshire Futures 2050

Achieving smarter growth in Central Oxfordshire

A comprehensive look at development, planning, finance, infrastructure and delivery issues in creating sustainable growth in a smarter city-region

Dr. Nicholas Falk

February 2019

The URBED Trust

Oxfordshire Futures 2050 - Achieving smarter growth in Central Oxfordshire

We are pleased to offer this report as an initial contribution to the preparation of the Oxfordshire 2050 Plan. The report is the product of collaboration between the Oxfordshire Futures Group of the Oxford Civic Society (OCS) and URBED and takes forward the OCS and URBED 2014 report Oxford Futures: achieving smarter growth in Central Oxfordshire. With this history it is perhaps not surprising that OCS and URBED very much welcome the preparation of the Oxfordshire 2050 Plan.

This initial report is intended to help those commissioning the necessary Oxfordshire 2050 Plan studies to focus efforts where they will have most impact and to attract the necessary investment. The report argues that further growth such as in Central Oxfordshire over the period 2020 - 2050 should be based on urban intensification not dispersal. Compact development can support efficient integrated public transit systems as well as walking and cycling, creating healthier and wealthier places and contributing to reduction of greenhouse gas emissions and thereby potential global warming. In addition, one of the features of our report is to highlight the potential which exists to link future development planning in Central Oxfordshire with enhancement of local rail services. In the context of large-scale population growth this aligns with the need to secure a shift in travel behaviour to non-car modes.

We consider it vital that the JSSP identifies and prioritises development opportunities which are or could be served directly by rail and that these are assessed as part of the current Rail Study. Equally it is important that the Rail Study identifies enhancements (perhaps generated in a wider context) whose investment case would be strengthened by complementary local land use development.

Our comments and our report are made in the spirit of constructive collaboration: we look forward to continuing to contribute to the JSSP and its iterations.
Yours faithfully,

Ian Green
Chair, Oxford Civic Society

January 2019

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Preface

This report takes forward the URBED and Oxford Civic Society's (OCSs) earlier report "*Oxford Futures: Achieving smarter growth in Central Oxfordshire"*, which five years ago proposed setting up an Oxford Futures Commission as a first step in drawing up 'a spatial growth plan and charter for sustainable development'. With this history it is perhaps not surprising that OCS and URBED very much welcome the Oxfordshire Joint Statutory Spatial Plan (JSSP) and look forward to contributing to its preparation and implementation. The report is intended to help those commissioning the necessary JSSP studies to focus efforts where they will have most impact and to attract the necessary investment.

This report is the product of collaboration between the Oxfordshire Futures Group of the Oxford Civic Society (OCS) and URBED. URBED is an award winning master planning and urban design consultancy based in Manchester. URBED's expertise was recognised through the Wolfson Economics Prize, which was awarded in 2014 for work on how to create garden cities that are visionary, economically viable and popular. Oxford was the case study in the prizewinning submission which demonstrated the value of managing growth through the extension of existing urban areas.

This report was originally undertaken at the request of Oxford Civic Society and the Oxfordshire Futures Group. Oxford Civic Society is dedicated to the continuous improvement of Oxford as a wonderful place in which to live, work, study and relax, and one of the world's great historic cities. Appreciating the past, enjoying the present and pursuing a vision for the future are at the heart of OCS activities. The Oxfordshire Futures Group of the OCS recognises that the future of the City of Oxford in inextricably linked with that of its surrounding region from where thousands of people travel daily to work, shop and enjoy the city's many attractions.

We are grateful to those who helped organise seminars, at Keble College, Oxford Brookes, UCL, and Nuffield College, and who have provided some of the analysis, such as **Danny Dorling**, **Pete Redman, Troy Hayes**, **Christian Bocci, Gavin Last, Jon Rowland, and Georgia Butina Watson,** who are credited on the relevant reports, along with members of the Academy of Urbanism. We would also like to acknowledge **Craig McWilliam** of Grosvenor who funded the filming of the event at Kellogg College on Growing Historic Towns. The report has benefited from discussions with leading Councillors and officers in both Oxford City Council and Oxfordshire County Council. **David Rudlin** and **Vicky Payne** at URBED (Urbanism Environment and Design) Ltd have helped with plans and **Peter Thompson**, former Chair of Oxford Civic Society should be especially thanked for providing encouragement and also a brief to advise on sources of finance. We would also like to thank **Daniel Giblin** of the Light Rail Transit Association plus the All Party Parliamentary Light Rail Group, **Reg Harman** of Interfaces, and **Peter Headicar**, **Andrew Pritchard** and **Sue Flack**.

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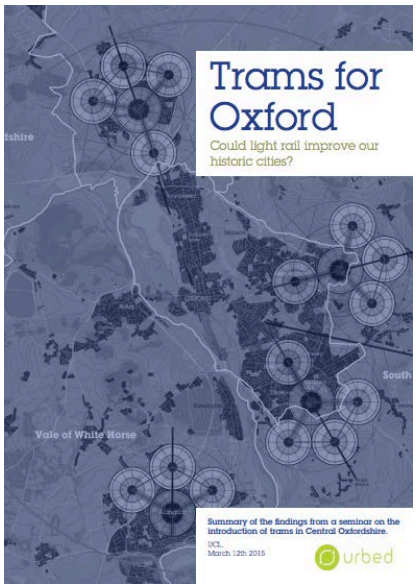

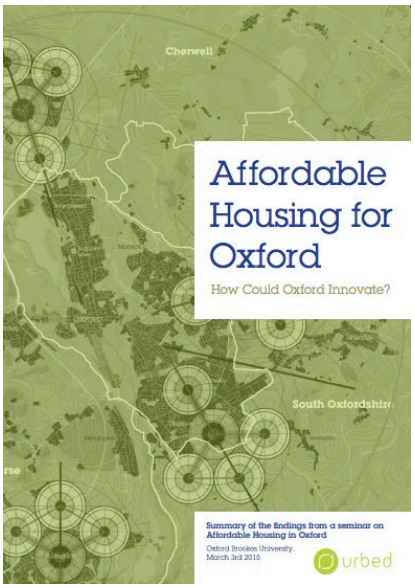

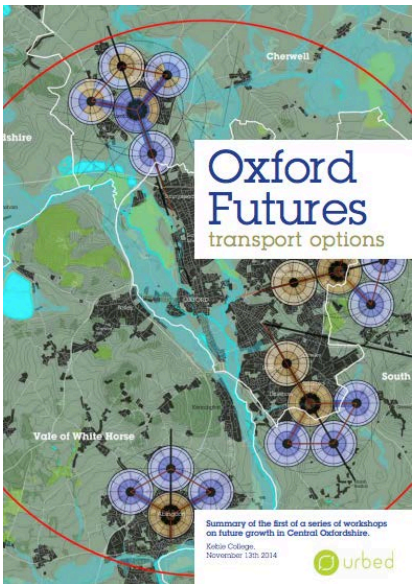

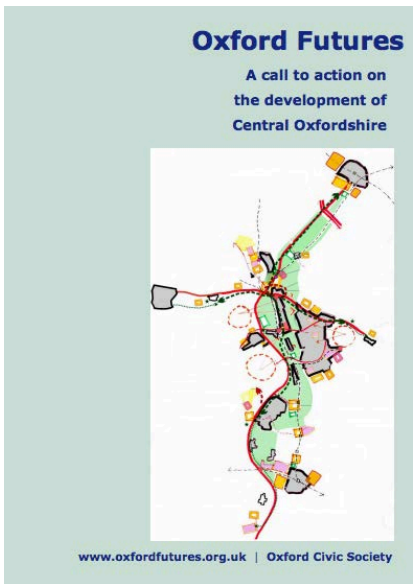

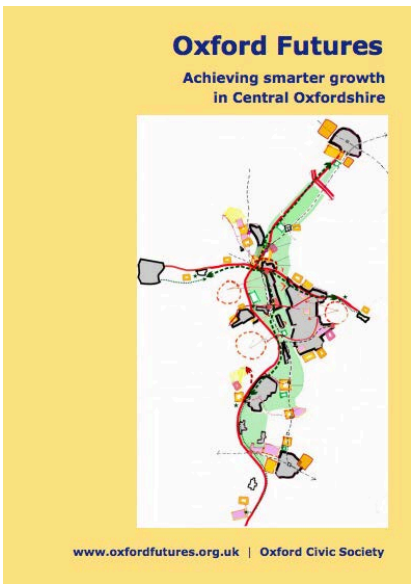

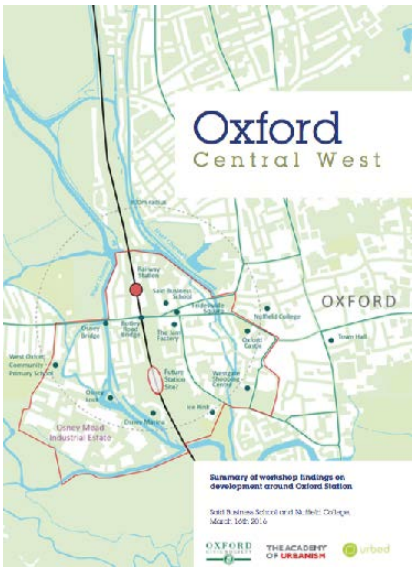

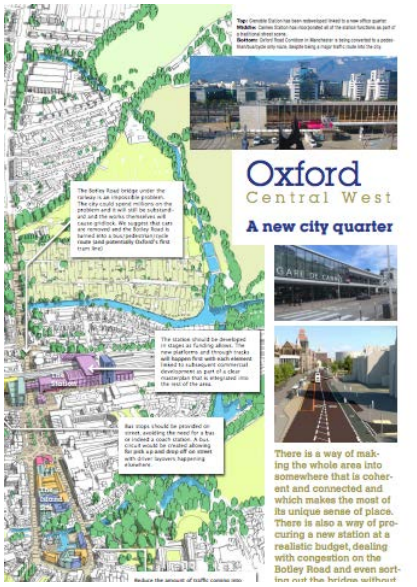

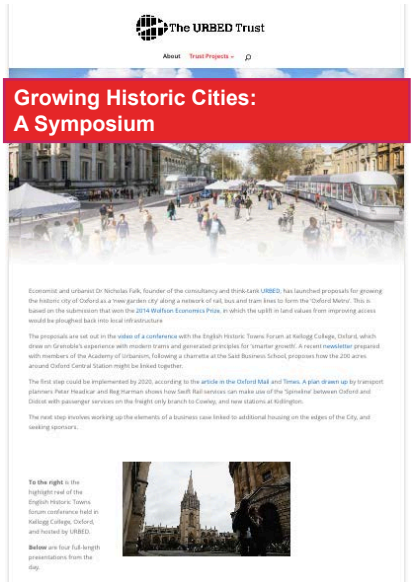

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Executive Summary

This report, commissioned by the Oxford Civic Society and prepared by Nicholas Falk, Director of The URBED Trust, is based on five years of work and considers how Central Oxfordshire should respond to the pressures for new housing. It follows the Oxford Civic Society's 2014 report "Oxford Futures: achieving smarter growth in Central Oxfordshire", which called for "a spatial growth plan and a charter for sustainable development". It is published as a contribution to work on the Oxfordshire 2050 plan and the CaMkOx arc.

The report recommends that development should be concentrated around existing and new stations on the local rail network in Central Oxfordshire and Oxford, including the re-opened Cowley branch and on the 200 acres of under-used land around a rebuilt central Oxford railway station. Applying the SwiftRail concept, frequent and fast local rail services will take traffic from congested roads and form the core of an integrated public transport network for Central Oxfordshire. We are calling this the 'Oxford Metro'. Over time, main bus routes serving the city would be upgraded to 'rapid transit', and the city's first tram line would be built from Botley to the Headington hospitals and university campuses.

Oxford has to change to meet increasing competition if it is to maintain its international position. This report draws on the experience of Oxford's twin city of Grenoble and the comparable cities of Freiburg and Cambridge. We have held nine consultations with experts, including a symposium at the Houses of Parliament. Joining transport and development will improve public health by cutting car mileage. It will also help tackle Oxford's housing crisis by mobilising land and finance. It will put under-valued assets to better use.

The report is in eight sections, summarised here:

1. **Concentrate transport and development.** A coordinated approach is needed in Central Oxfordshire because of high land values which reflect strong housing demand, and the economic potential of its leading universities and businesses along the 'science spine'. The various stakeholders have agreed to collaborate to meet commitments to the government to provide enough land for 100,000 houses by 2031. Congestion pressures in and around the historic city centre make it vital to 'join up' transport and development and avoid too much dispersal.
2. **Use garden city principles to share land value gains.** The Garden City idea, used to develop the New Towns after the Second World War combines the benefits of town and country living. With the right approach and development frameworks the potential gains in land values can be shared. These can fund vital local infrastructure; public transport, country parks which also relieve flooding, the health centres and schools that communities need.

3. **Adopt a Charter for Sustainable Development.** Consultations came up with principles that could help each agreement, including developing in the right place to cut car use, creating balanced and healthier communities to meet social needs, and building distinctive places and minimising environmental impacts. These impacts can be measured and valued and set against any additional costs. Strategic or large scale developments (over 1,000 homes) need development frameworks if the results are to be economic, equitable and environmentally friendly.
4. **Model alternative scenarios before objectives are set.** Agreeing objectives against which options can be assessed is crucial if expensive and time-wasting arguments are to be minimised. There are planning techniques which can help in assessing different scenarios over time, using the power of Geographic Information Systems (GIS).
5. **Avoid urban sprawl in assessing options.** Locating new housing to make best use of scarce land and infrastructure increases 'civic wealth'. Sustainable urban extensions around transport corridors will enable the gain in land values to be shared to help upgrade local infrastructure so that everyone benefits to some extent and no-one loses out over time.
6. **Only connect.** Just as Cambridge did 20 years ago, Oxford will need to decide what pattern of growth fits its needs best. Using established planning methods, ways can be found to avoid building more identikit housing estates, making sure that development looks better and meets future needs more intelligently.
7. **Package funding.** A smarter approach to funding is also needed, through packaging different forms of finance rather than relying on just public or private capital. The report reviews the potential of crowd funding; congestion and parking charges; Community Infrastructure Levy and Section 106 charges; infrastructure bonds; Tax Increment Finance; land value charges; and public private partnerships. All of these can supplement the funds that private developers can access. The formation of a development corporation could overcome land assembly issues.
8. **Resolve key issues soon.** The concluding section summarises key questions to be answered as the process of drawing up a Joint Spatial Plan gets going. It argues that a vision such as "developing a 21st century garden city, connected by a high quality transport system, the Oxford Metro" could generate enough positive support and excitement to overcome the inevitable objections to doing anything. Doing nothing is not an option, and the prizes will be well worth the effort.

The full report includes twenty exhibits or diagrams which bring out the main messages. There is supplementary information in the appendices on elements of an integrated transport system, and also lessons from European cities that have faced comparable challenges.

Dr Nicholas Falk

Introduction

Acknowledging the growing effectiveness of the Oxfordshire Growth Board, the commitments to growth targets and the preparation of a Joint Statutory Spatial Plan to distribute the growth, this report is intended to support those commissioning the necessary JSSP studies to focus efforts where they will have most impact and attract the necessary investment.

The current government not only recognises that the '*UK housing market is broken',* but is also committed to making the most of the 'arc of opportunity' between Oxford, Milton Keynes and Cambridge.[1] But Ministerial statements do not build houses. The unsolved problem is still where and how 'smarter' or more sustainable growth is to be achieved so that current projects can be scaled up. This report therefore draws together a range of earlier studies[2], research reviews and consultations to suggest:

i. Why a different approach is required;

ii. what garden city principles can offer;

iii. what the priorities should be in Central Oxfordshire;

iv. which objectives should be chosen;

v. where new housing should be located;

vi. how strategic planning can be improved;

vii. how joined up development could be funded.

viii. what should the next steps be?

1 Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes- Oxford Arc, NIC 2017

2 Oxford Futures: Transport Options, Keble College, November 2014: Affordable Housing: how could Oxford innovate? Brookes University, March 2015; Trams for Oxford? could light rail improve our cities, UCL April 2015: Oxford Central West: options for the station area, Said Business School, March 2016; Growing Historic Towns, Kellogg College, September 2017 www.oxfordfutures.org

1. The need for a different approach

The Oxford Civic Society (OCS) and URBED published a report in March 2014 under the title Oxford Futures: achieving smarter growth in Central Oxfordshire.[1] **(Exhibit 1)**. At the time the conflicting positions of the different local authorities and other stakeholders was holding back progress[2] and OCS and URBED took the view that a different approach was required. The report noted that a strategic vision was needed, a route map to get there and the leadership to overcome obstacles. The Society's then Chairman Peter Thompson in his foreword said: 'We need a common vision supported by all as the basis for planning policy. We need effective mechanisms for delivery. We need leadership.'

The report recommended that the priority should be to secure agreement on the scale of growth needed over the next 20-30 years and where it should go. There was also broad agreement amongst the extensive consultees who contributed to the report that principles be identified which should underpin growth. The report suggested that these principles could be developed further to form a charter for sustainable growth against which development plans and proposals could be assessed.

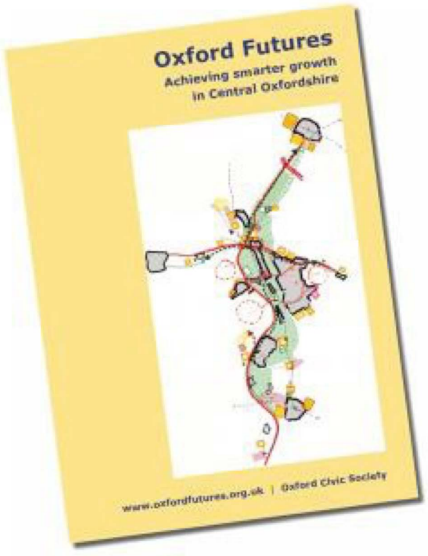


Exhibit 1: The original Oxford Futures report identified areas of opportunity

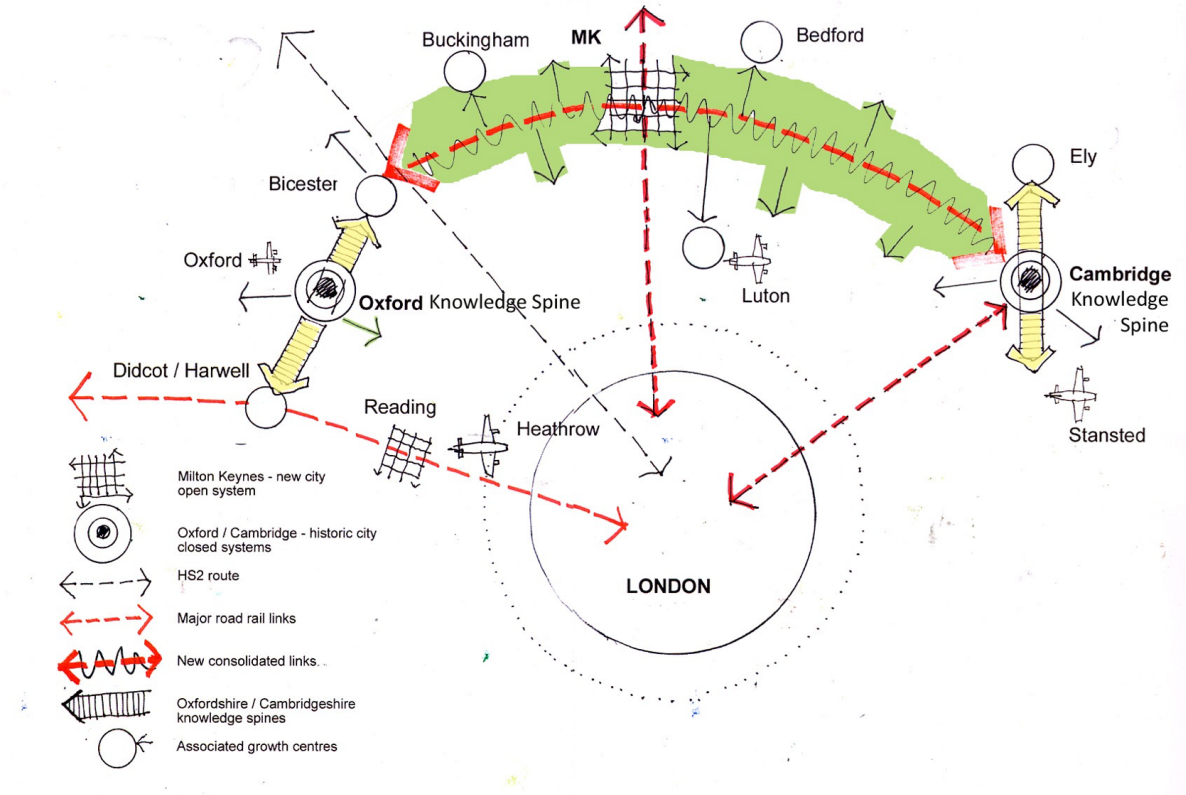
Potential for partnership

In the years since an Oxfordshire Growth Board (OGB) has been established for the county as a whole, made up of the six local authorities and the Oxfordshire Local Enterprise Partnership (OxLEP). The OGB is now working effectively and on February 1st 2018 the OGB recommended that its members accept the 'deal' offered by the government of £215 million over a five-year period (of which £160 million is for infrastructure), in return for providing 'suitable land for 100,000 homes to 2031 in their Local Plans'. A further £34 million was allocated for five infrastructure projects from the Marginal Viability Fund. The OGB suggestion that a strategic spatial plan be prepared to distribute the growth

1 Oxford Futures: achieving smarter growth in Central Oxfordshire, March 2014, www.oxford-futures.org

2 At the time of the OCS/ URBED report house-building in the county was running at only a quarter of the rate which a subsequent independent assessment judged to be appropriate to meeting its needs (Oxfordshire Strategic Housing Market Assessment, GL Hearn Ltd March 2014)

Exhibit 2: The Arc of Opportunity also links to London



was taken up by government, and it is now a requirement that a Joint Statutory Spatial Plan (JSSP) is to be prepared.

However the government's offer is still only a small fraction of what needs to be invested. An Oxfordshire Infrastructure Strategy (OXIS) published by the OGB in 2017 demonstrated that additional capital spending of the order of £8bn was needed to facilitate the planned scale of growth. In addition and since 2014, the scale has multiplied with government recognition that the 'UK housing market is broken', and the government commitment to making the most of the 'arc of opportunity' between Oxford, Milton Keynes and Cambridge, which forms a triangle of innovation with universities and research centres in London.[3] **(Exhibit 2)**

Joining transport and development

The figures quoted above can also be compared with those included in the business case for building a sustainable urban extension in URBED's proposals for Uxcester Garden City which added up to nearly £1.4 billion. A 12km (7 mile) tram would have accounted for half the £410 million transport budget.[4] These costs need to be set against the value created from building 23,000 homes over 15-30 years in the immediate Travel to Work Area (TTWA) of the city which in Oxford's case would have allowed its population to grow by 40% at a total investment of around £2 billion. So though the transport

3 Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes- Oxford Arc, NIC 2017
4 This figure comes from The Business Case for Uxcester Garden City, which was prepared by Pete Redman of Housing Futures Ltd. The full report can be downloaded from www.urbed.coop

costs may look formidable at the start, they are small in relation to the total investment and may be exceeded by the uplift in land values resulting from development if it is not all lost in speculation.[5] Furthermore the transport measures could be phased and linked to work starting on major strategic developments, as this report seeks to show.

With so many competing interests and complexities, development in the UK often ends up where it most profitable for the landowners and least objectionable to local residents in the short term. But strategic planning needs to grapple with how the wider network of towns and places of employment mesh together, and take advantage of transport and other innovations over the longer term for the city region's overall wellbeing. Building far away from where most jobs and services are located is not very smart as it adds to congestion, pollution and travel costs. It will do little to narrow the inequalities behind our housing crisis. Nor would it help safeguard the city and its region's position as a leading world university and research centre. Much has been written on the need for a better approach that would take full account of environmental and social as well as economic impacts, and on the value of the city region as a whole.[6] The JSSP is an opportunity to provide a 'route map' through all the obstacles to making good development happen.

Engaging with diverse communities

With so many different and informed communities in a city that is world famous for its heritage it is not surprising that developments in and around Oxford have often been controversial. Progress in meeting housing and other needs has been unacceptably slow. The old style public meeting and exhibition is a formula for conflict, and can deter many from contributing. Community groups and businesses then complain that they have not been adequately consulted, or are put off by 'consultation fatigue'. Some are cynical that only established interests win out, despite public statements to the contrary. The decision to produce a Joint Strategic Spatial Plan therefore calls for a new approach if the results are to be widely accepted.

The new plan must not be a compilation of all the existing proposals, but must set possible projects within a bigger picture and a longer time frame. Cities in other countries seem to do this better, and Oxford could learn from twin cities such as Grenoble and Leiden.[7] Some of the answers lie in making the constraints clear, with a readily available evidence base, which can include space for discussion such as an Urban Room, as well as a good web site. Surveys can help establish the views of those who do not get heard in public meetings. An agreed Charter will aid communication. So too will Advisory Committees and research projects on key options and possible scenarios.

5 The arguments for tapping land value uplift from converting sterile green fields into a living countryside and homes have been most forcefully put by Paul Cheshire at the Centre for Economic Performance at the LSE

6 See for example Ed. Josh Ryan-Collins et al Rethinking the Economics of Land and Housing, Zed Books 2017

7 Nicholas Falk, Planning for Posterity, Town and Country Planning September 2016, and Location, Location and Location - Funding Investment in Local Infrastructure, Town and Country Planning , May 2017

2. What new garden city principles can offer

The idea of garden cities started to gain support again in the last five years because of widespread dissatisfaction with what volume house-builders were generally producing. To win the 2014 Wolfson Economics Prize URBED's team had to show how quality housing growth could be achieved without subsidy. The idea was examined of an imaginary historic city called Uxcester doubling in size, and the principles were tested out in Oxford, assuming a growth rate up to 2050 of around 2% a year.[1] The analysis of the area within 10 km or under six miles from the centre (the main Travel to Work Area) showed that some 50,000 new homes could be built at Garden City densities close to employment while avoiding the flood plains and Areas of Natural Beauty surrounding the City. **(Exhibit 3).** In other words this central area could provide half the homes needed in the County for the next thirty years if the Green Belt was stretched and realigned just a little.

Town and country reconciled

While the original densities for Letchworth and other garden cities aimed at 12 homes per acre or 30 per hectare, a more realistic current density would be around 50-60 per hectare. This can be achieved through a combination of terraced houses and some apartment blocks. Ebenezer Howard's original diagram for the Social City was deployed, through a cluster of 'snowflakes' on the edge of the built-up area. **(Exhibit 4)** This called for taking a 'bite' out of the Green Belt, estimated at 5%, as the boundaries are tightly drawn and brownfield land is very limited. This was the key to quality development without public subsidy.

It was argued that the results of concentrated development within the Green Belt[2] would be much better than 'nibbling at the edges'.

1 David Rudlin and Nicholas Falk, Uxcester Garden City, 2014, www.urbed.coop

2 At a symposium held at Westminster with the All Party Parliamentary Light Rail Group (APPLRG) in February 2018 (which included discussion of the rail options in Central Oxfordshire) Dame Kate Barker suggested that support is needed for the development of urban extensions so that all kinds of people could live closer to their work, and in more balanced communities. By developing an area of around five miles or ten kilometres from a city centre, better public transit systems, as well as cycling should be more viable. It was acknowledged that this may mean rethinking parts of our green belts. It was also noted that the knowledge-based economies of Oxford and Cambridge are exceptionally valuable to the UK, and so should not be constrained. Hence, we need to find ways of convincing residents of the benefits of planned growth in Green Belts.

Exhibit 3: Where new housing could be built within easy reach of Oxford

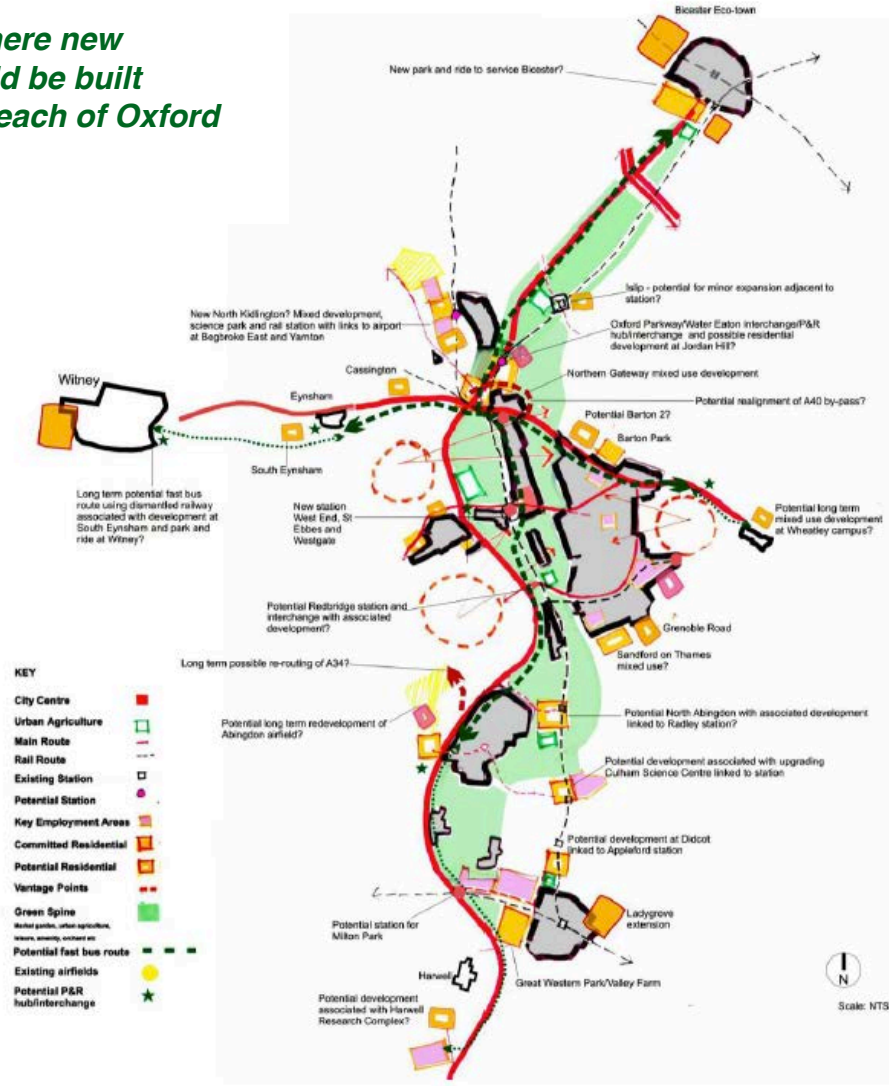
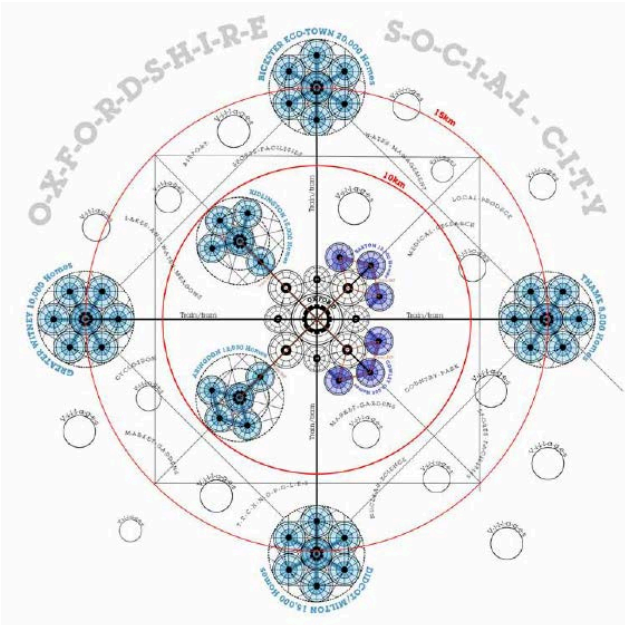
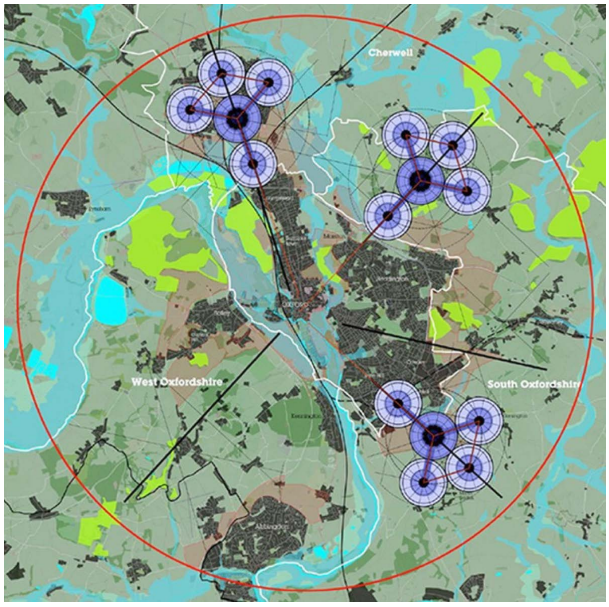


Exhibit 4: Central Oxfordshire could grow like Snowflakes





Planned development would take pressure off the settlements and countryside further afield, perhaps providing protection for the several hundred most beautiful villages in the surrounding countryside. It would cut distances to work, or Vehicle Miles Travelled (VMT) and hence travel times and costs. It would enable a higher quality of development to be achieved and any lost greenbelt might be replaced elsewhere where the greenbelt needs to be reinforced. This controversial idea is taken up in a new book by the former Chief Executive of CPRE (the Campaign to Protect Rural England) who now leads the Green Alliance, and would benefit from modelling into the impacts of alternative scenarios, which is beyond the capacity of this report.[3]

Funding for infrastructure

Howard's greatest idea was to plough the 'unearned increment' from development into infrastructure, thus making new communities self-reliant. The economic analysis from Housing Futures Ltd. that underpinned the Wolfson proposals showed a surplus from sharing in land value uplift of around £1.3 billion to be used for infrastructure, and £410 million for transport alone.[4] **(Exhibit 5)** Of course this requires a longer-term (20-30 year) perspective than most housebuilders take. In Continental Europe the lead is taken by local authorities, and the UK may require an agency with Development Corporation powers to take on the vital land assembly and preparation roles before selling serviced sites to developers of all kinds. The likely uplift from acquiring land at Existing Use Value Plus (some ten times agricultural value) was reckoned to be enough to fund building a tram line from the new neighbourhood near Barton Park into the city centre while still generously compensating the original land owners. (Appendix A sets out the main elements of an eventual integrated transport system for central Oxfordshire).

Community benefits

URBED's original figures were based on the experience of the Nottingham tram.[5] The costs of building the first tram line were later substantiated in a desk study by Mott MacDonald. A study of the impact of the first line of the Nottingham Tram found that once the increase in property values within a kilometre were accounted for, the benefits were more than double the costs.[6] Land value uplift could also fund accessible open space in the form of country parks designed to reduce the risk of flooding, as well as to make the most

3 Shaun Spiers, How to Build New Homes and Save the Countryside, Shorts, 2018
4 Pete Redman from Trade Risks plc provided the financial analysis in the Uxcester Garden City report and for subsequent events e.g. Oxford Futures: Transport options, report of a workshop in Keble College November 2014, www.oxfordfutures.org
5 Trams for Oxford: could light rail improve our historic cities, URBED with UCL, March 2015
6 Stuart Northall, Improving the political case for transport investment, Paper for the Transport Planners Society, 2014

of the surrounding countryside. The Wolfson proposals allowed for half the land to be taken over by a not-for-profit community trust or foundation and opened up as accessible green and blue space. But all this depended on the public sector playing a more proactive role, and joining up development with infrastructure as the original garden cities and new towns had successfully done.

Item	Unit	Quantity	Rate	Total
EDUCATION				
Primary	No.	12	£10M	120M
Secondary	No.	4	£25M	£100M
Other	Various			£35M
			sub total	**£255M**
Open scape/land-scape/recreation	HA	1,000	£250,000	**£251M**
TRANSPORT				
Minor Roads	Km	12	£7.5M	£90M
Major Roads	Km	4	£22.5M	£90M
Tram to city centre	Km	6	£20M	£120M
Tram within N'hood	Km	6	£10M	£60M
Other Public tran	Various			£50M
				£410M
HEALTH				
Primary	No.	5	**8**	£40M
Hospices/nursing homes	Part	2	**10**	£20M
				£60M
Land preparation	HA	2,000	£50,000	**£101M**
Distinctive Quality	Various			**£100M**
Admin / marketing	**Years**	**15**	**£3M**	**£45M**
Contingency				**£100M**
			TOTAL	**£1,372M**

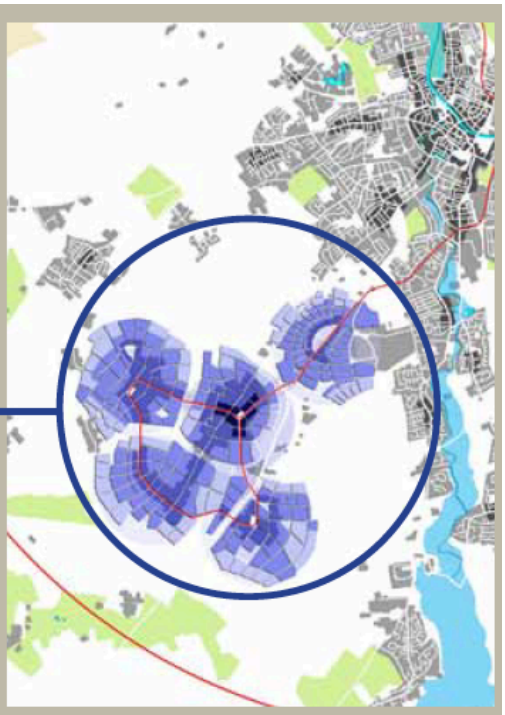


Exhibit 5: Land values can fund improved infrastructure

3. Central Oxfordshire priorities

As the National Infrastructure Commission (NIC) came to recognise, long distance transport links between say Oxford and Milton Keynes are not of much value unless local connections are sorted out first - the problem of the so-called 'last mile'. The *Oxford Futures* report came up with the original vision for developing along the so-called 'Science Spine' running from Bicester down to Didcot and Harwell by making full use of under-used railway lines and land. **(Exhibit 6)** What was later called the **SpineLine** would link up new stations at Kidlington and along a branch line to Cowley that is currently only used by freight trains. **(Exhibit 16, p.34)** Such an improvement should be enough to 'kick start' confidence in plans for the future growth of Central Oxfordshire**.** Realisation of this transport innovation should make it easier to broker agreement on the development of land South of Grenoble Road (close to the Cowley branch line), a much more sustainable location than some other alternatives.

Rapid Transit implies frequent enough services to make it unnecessary to consult a timetable, with reserved tracks to avoid competing with other traffic, and frequent stops. Such a service can compete with the private car, and thus take traffic off the roads. This idea was refined into the concept of Swift Rail, modelled on the German *Schnellbahnen*, which share tracks with the national rail system, but serve metropolitan conurbations. [1] The basic idea of extending to Cowley was endorsed by the National Infrastructure Commission in their report on the Cambridge Milton Keynes arc, and a target set for opening services in 2019.[2]

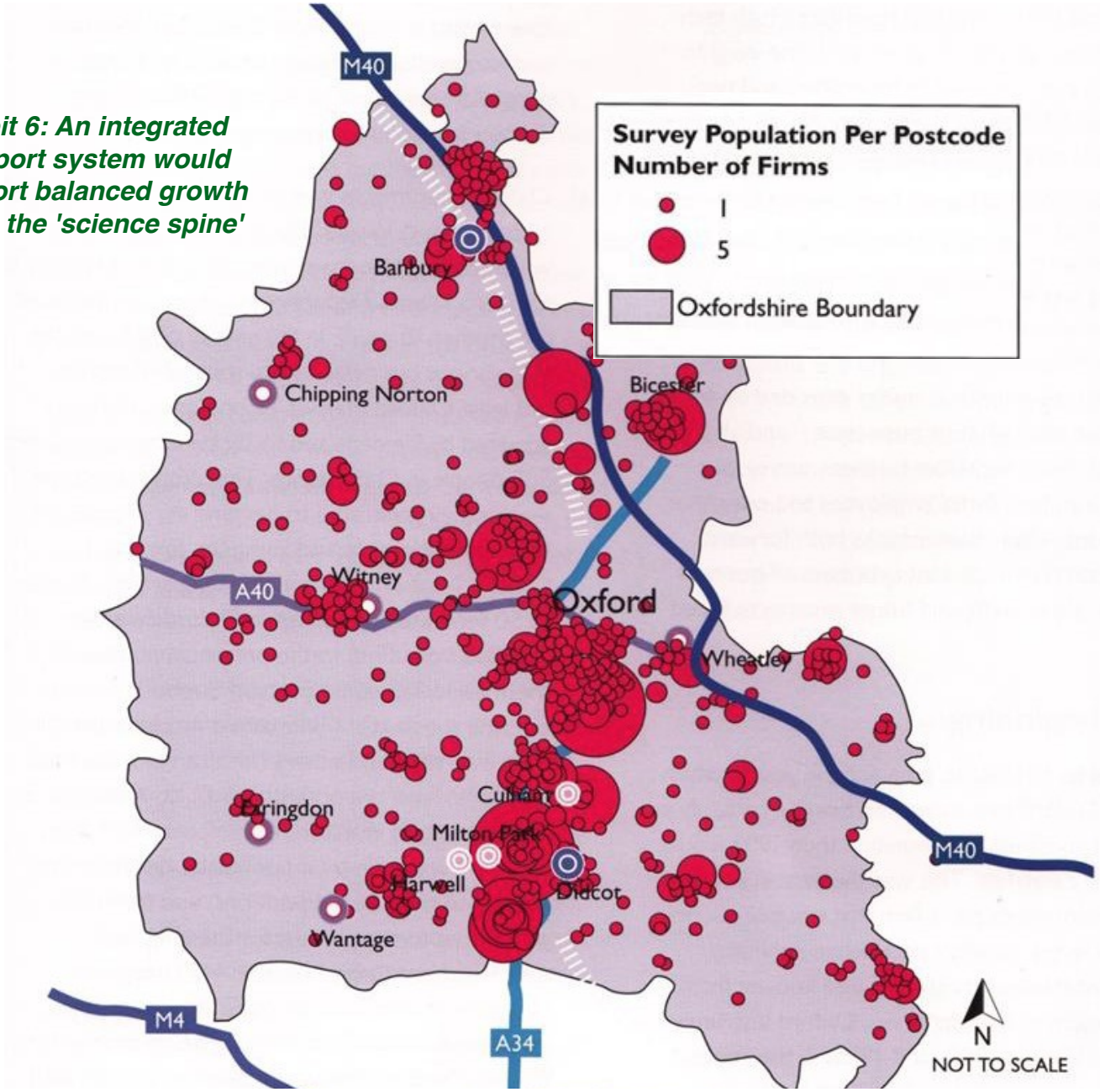
Key principles

But quality development requires more than the promise of investment. Round-table workshops with stakeholders for the Oxford Futures report came up with four principles for guiding future, or 'smarter growth', which could be the start of a charter or agreement between all the stakeholders:

- Develop in the right place and reduce car use
- Create balanced and healthier communities

1 Reg Harman and Nicholas Falk, Swift Rail: funding local rail transit through smarter growth, Public Money and Management, September 2016
2 Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes- Oxford Arc, National Infrastructure Commission, December 2017

Exhibit 6: An integrated transport system would support balanced growth along the 'science spine'



- Build distinctive places
- Minimise environmental impact.

Similar principles have already been applied to the growth of other mid-sized university cities such as Cambridge, Grenoble and Freiburg.[3] Such principles could well win popular support if they were also applied in a charter for shaping the growth of Oxford. The extra value should more than compensate for the greater costs in terms of the benefits from:

- Less stressful travel with shorter commuting times
- More affordable housing (and hence increased incomes)
- Beautiful and appealing places to live and work
- A cleaner and better environment for all

3 See Cambridgeshire Quality Charter for Growth, Cambridge Horizons, 2008, and the Freiburg Charter for Sustainable Urbanism, Academy of Urbanism, 2010

Access for all - Cambridgeshire Quality Charter for Growth

The principles of a Charter for Quality Growth has been used to raise standards in new housing in and around Cambridge. Having implemented new housing along a guided busway, the Greater Cambridge Partnership is now actively investigating light rail and other rapid transit options to reduce congestion in the core of the city.[1] Cambridge has calculated it can raise £7-10 million a year by removing unnecessary parking spaces from the city and applying a Workplace Parking Levy as Nottingham has already done to great effect. [2]

1 See Councillor Lewis Herbert's presentation to the APPLRG/URBED symposium at Westminster February 27 2018
2 Funding and Financing Inclusive Cities, Centre for Cities, 2017

- Greater productivity.

Medium sized cities in the UK generally need better public transport, and so their spatial growth plans need to reflect access to principal transport routes and their capacity, not just land availability set out in HELAAs (Housing and Employment Land Availability Assessments). As most of the economic activity in Oxfordshire is concentrated in a relatively narrow corridor, plans do not need to cover the whole County. Instead sub-regional spatial strategies are required in areas that are under pressure from rapid growth, and the starting point should be to map existing transport capacity against traffic movements. So, for example, **Exhibit 7** shows the commuter traffic flows around Oxford, which are particularly dense on the Eastern arc. Congestion also cramps the expansion of the major knowledge-based employers, which cluster along the overloaded A34 road from the Midlands to Southampton.

Managing strategic development

Excessive house prices and unacceptable levels of congestion and pollution are a direct result of inadequate investment over many decades, and so cannot be put right overnight. In turn investment in both house building and local infrastructure is held back by weaknesses in both local government and financial institutions, which stop English cities taking a long or broad enough perspective. The failings can be clearly seen in comparisons with European cities such as the university cities of Freiburg in Baden-Württemberg in Southern Germany or Leiden and its nearby cities of Rotterdam and Amsterdam. These cities are growing faster and better largely because of the way they plan growth, assemble land, and resource infrastructure, as a new report on land assembly for the Greater London Authority explains.[4]

If English cities seriously want to double housing output while meeting

4 Capital Gains: a better land assembly model for London, URBED for the Greater London Authority, February 2018

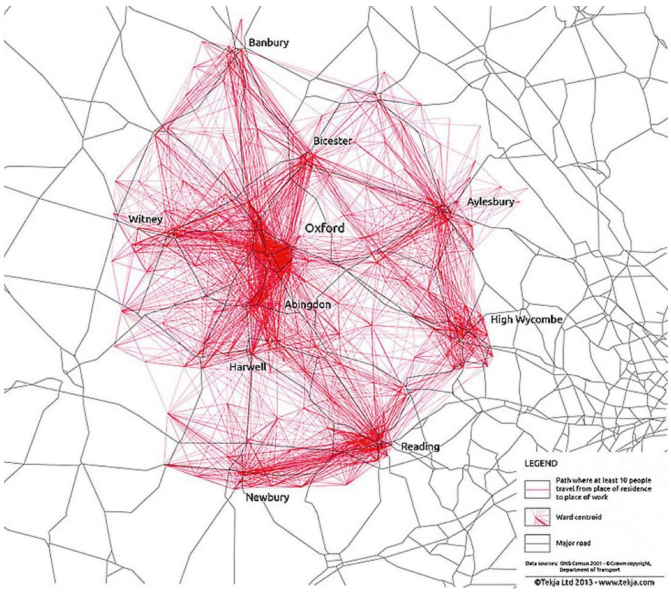


Exhibit 7: Commuter traffic flows around Oxford are dense

environmental and social constraints, and capitalising on economic opportunities, they have to change the way strategic development is managed. Many researchers have criticised the centralisation of public investment in the UK, which is compounded by the tendency of Government departments to act within silos.[5] Cost Benefit Ratios give most weight to travel time savings, but tend to neglect environmental and social impacts. As Ministers of Transport are rarely in position for more than a year, it is virtually impossible to get the 'joined up' decisions that would lead to better or 'smarter' growth. Little wonder that our economic growth rates are lagging behind or that inequalities are widening. The good intentions of the NPPF are not enough.

Option appraisal

With limited funds, the case for **both** better road and rail links between Oxford and Cambridge is hard to make, or for this particular link compared with many others that are competing for investment, for example from Manchester to Sheffield and Leeds. Also it is not lack of intercity links that is making housing unaffordable. What is clear is that measures are needed that will incrementally improve access for all, for example through bus lanes that can later be taken over by tram lines, as in Nottingham, for example, and that improve access in the six miles or 10km radius of the city centre.

Not only is new housing and better local transport urgently required, but so too are greater commercial spin-offs from the considerable public investment in higher education. Private sector job formation in Oxford still lags behind the levels in Cambridge and London, let alone comparable Continental regions such as Baden-Württemberg where the historic university towns of Heidelberg and Freiburg are located. For new housing to sustain local growth and be affordable to those who might otherwise end up working abroad, or who are on low incomes, it is vital that housing is within easy commuting range of jobs

5 See for example Centre for Cities, Competing with the Continent 2017 and Michael Parkinson, City Matters: competitiveness and Cohesion and Urban Governance, 2004

and services.

New jobs will come where employers, not planners, want them. Yet if, as has sometimes been proposed, much of the new housing is in distant villages and towns or isolated airfields, then the extra traffic will understandably be opposed by those who anticipate increased congestion, as well as the loss of familiar views, rural landscapes and an attractive environment. The expenditure will also be resented by those who are stuck in traffic jams. Nor is it likely that extra planning permissions alone will produce more than a fraction of the desired housing, but will simply inflate land values and housebuilders' balance sheets. The many masterplans will remain pipe-dreams. In the aftermath of Brexit, reducing pressures and constraints on existing employers will become even more important.

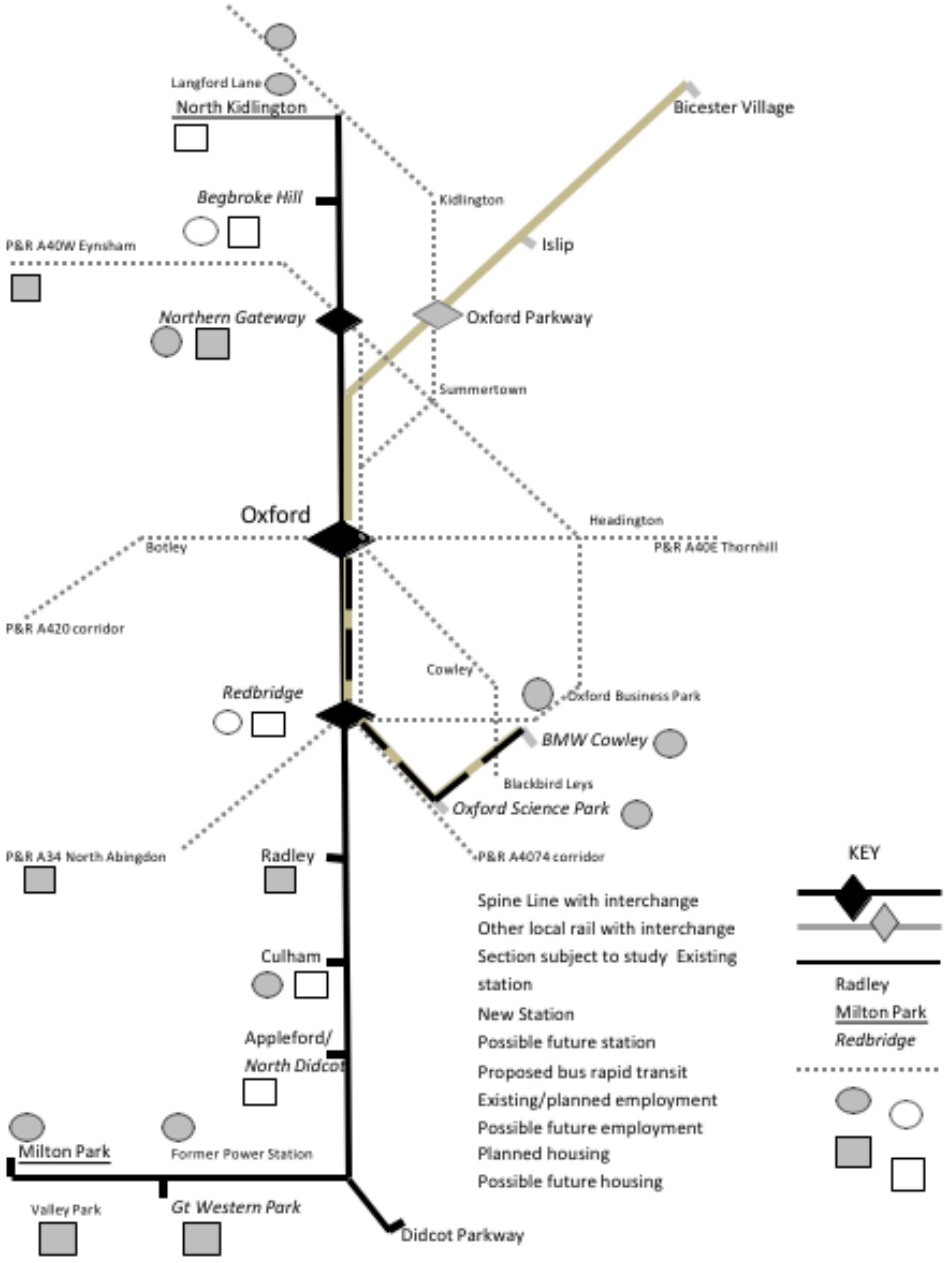


Exhibit 8: The Spineline would form the core of the first phase (Source: Peter Headicar and Reg Harman)

4. Setting objectives

Before considering alternative patterns of growth, planners need to review the objectives for assessing options, as the Treasury and the Infrastructure and Projects Agency rightly recommend.[1] Research into major infrastructure decisions has shown up the weakness of Cost-Benefit Analysis (CBA) and the tempting appeal of producing a single number, and instead called for Multi-Criteria Analysis (MCA).[2] While this can seem daunting to those who think in terms of simple priorities, such as building the most housing, MCA can produce better results that will stand up to criticism provided there is a robust process for agreeing the criteria in advance of making choices.

A good example which influenced Oxford Futures was the process used in Cambridge to reach agreement back in 1998 when the Cambridge Structure Plan was agreed. This led on to developments that are now being acclaimed some 20 years later in the Southern Fringe and on the old university farm in North West Cambridge at Eddington, as well as around the railway stations. **(Exhibit 9)** Now advances in geodesign enable options to be considered in a much broader and longer term spatial context, thanks to advances by researchers at CASA (the Centre for Advanced Spatial Analysis).

Three over-riding principles or criteria can be summarised as: **economic competitiveness**, **environmental balance** and **social equity**.[3] Without going into the theoretical justification, which is the subject of many books and journal articles, and used by major institutions such as the World Bank, it is possible to derive some relatively straightforward criteria that can be measured, and used as yardsticks for evaluating alternative projects or patterns of growth. They can be refined through market research to understand the priorities of different parts of the community. The preferred scenarios can then be judged in financial and other terms to choose those that are most resilient and capable of implementation, and to improve schemes or projects through 'sensitivity analysis' to assess the impact of changing constraints.

1 Improving Infrastructure Performance, Infrastructure and Projects Authority, December 2017
2 Harry Demetriou and Reg Harman, The Design and Delivery of Major Projects, OMEGA Centre UCL for ICE,
3 A full explanation of their basis is set out in Nicholas Falk's doctoral thesis on Planning and Development in London Docklands, London 1983.

Geodesign and the CaMkOx Arc

Over a two day workshop at CASA an invited group (including the author) were able to use the interactive systems to discuss and resolve different scenarios for the Cambridge Oxford corridor. Invaluable work has been done beforehand in drawing together a huge range of different policy options, which could be mapped. A variety of projects in the form of diagrams were available. So all the main proposals submitted to the NIC were added as diagrams in advance of the workshop under ten different themes, ranging from housing and industry to agriculture and monuments.

The Geodesignhub software turned out to be relatively easy to use, as different layers could be easily edited, and added or subtracted at the touch of a button. Teams could see what others were coming up with, allowing quite different scenarios to be compared (www.geodesignhub.com), such as with or without protection of the greenbelts. Teams were assigned different sets of values from early or late adopters of innovative forecast technologies. The impact could then be assessed for different periods, and projects given a timeline. Most miraculously of all, the costs could be added up, and distinguished between public and private investment. Financial plug-ins were available, one of many to assess financial returns and tax income with different interest rates.

A carefully orchestrated negotiation process managed by Professor Carl Steinitz then allowed teams to rate the others in terms of how far they agreed or disagreed. This was followed by periods of negotiation to build consensus. Through successive iterations it was possible to come closer together, and over a two day period the participants not only learned how to work with geodesign, but were also able to gain a much better understanding of how they interacted.

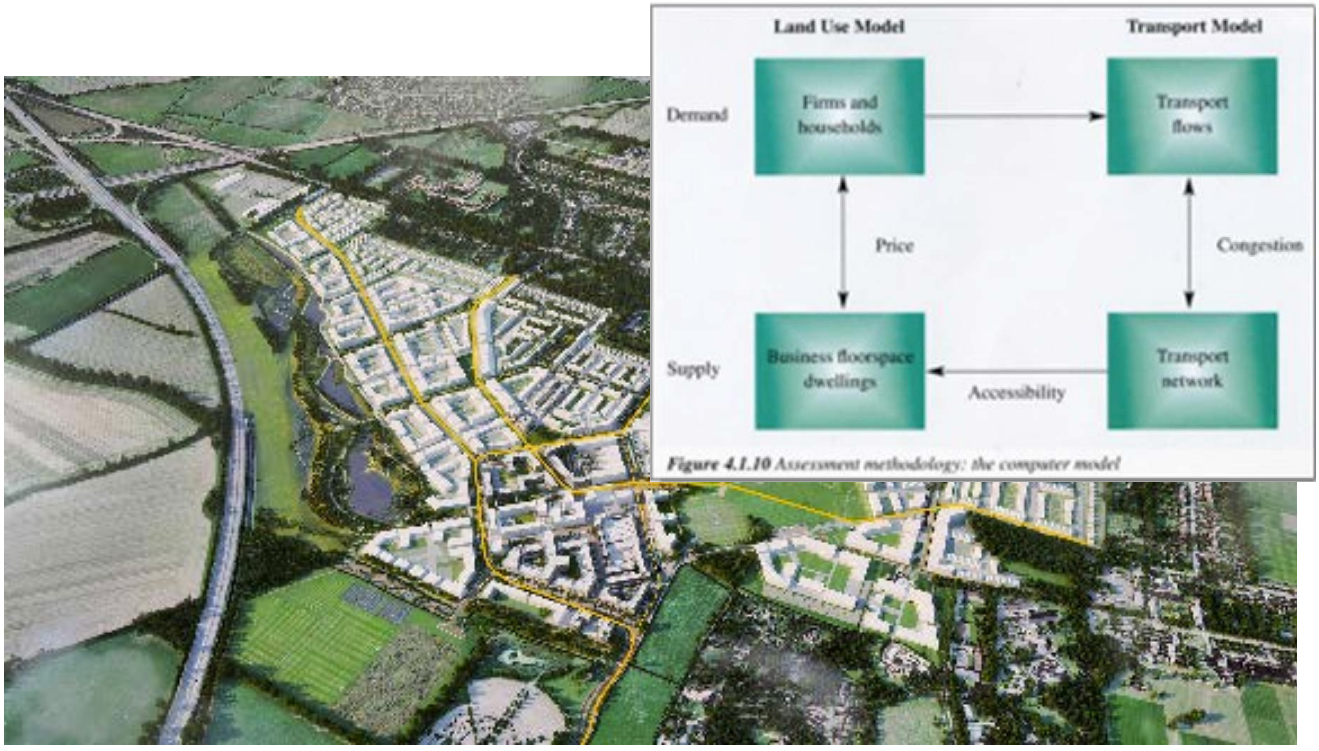


Exhibit 9 Cambridge Futures modelled different scenarios (top), and developments such as Cambridge North West has benefitted (bottom).

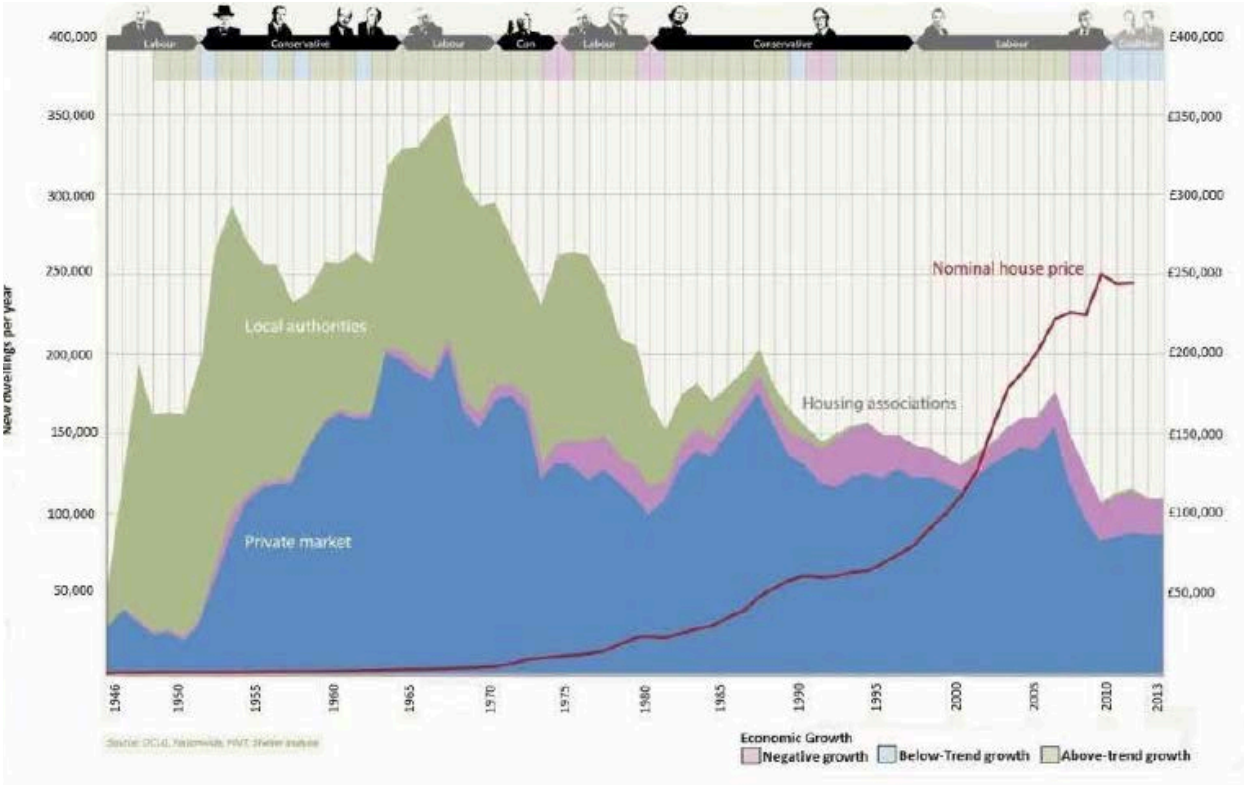


Exhibit 10: House building has plateaued whilst house prices have escalated

Affordable housing

For both the government and many people in Central Oxfordshire a top priority is likely to be **investment in affordable new housing**. House prices and land values are linked to economic growth, as ultimately what people pay for housing is limited by their incomes, and supply has not matched demand **(Exhibit 10).** Prices to income ratios can be used to map inequalities, as Professor Danny Dorling did for the first Oxford Futures workshop on transport options.[4] Failure to consider economic 'signals' have led economists such as Dame Kate Barker and Professor Paul Cheshire to criticise planners who simply extrapolate short-term trends, and use devices such as Green Belts to distort market forces.[5] Strategic plans instead need to reflect real environmental constraints, such as flood plains and ancient woodlands, as well as to take advantage of anticipated changes in travel behaviour and infrastructure. Administrative boundaries should not over-constrain strategic long-term planning. Instead assessments of the potential capital value of housing stocks along different transport corridors could produce a change of heart if some of that value could be used to upgrade local infrastructure, and make truly affordable housing available.

Of course political realities in Oxfordshire make new housing unpopular with many politicians who have rural constituencies, and

4 Oxford Futures: Transport Options, Keble College November 2014, www.oxfordfutures.org

5 Kate Barker, Housing: where's the plan? London Publishing Partnership 2014 Paul Cheshire's blogs for the Centre for Economic Performance at LSE.

who need to be persuaded of the benefits. They dislike what most volume housebuilders produce, and have no great interest in seeing jobs created locally, sometimes arguing they should be sent up North. Alas, investment goes where the conditions are most favourable. Elements of the knowledge or creative economies are more likely to end up in Boston, Berkeley or even Berlin than Bolton for example if they are squeezed out of Oxford. There is evidence that innovative young people are attracted by what major cities can offer, while families may well prefer living in market towns. Certainly the cities that score best on the various international 'smart city' leagues, such as Copenhagen or Singapore, invest heavily in making both housing and public transport highly affordable, and mobilise under-used land accordingly.[6] In a post Brexit world, Oxford will need to match what its competitors are offering.

Congestion

The second priority for most people would probably be the relief of **traffic congestion**. Time spent driving not only reduces productivity but also affects health, for example through stress and pollution. When people walk or cycle (active travel as it is called), or use public transport, the environmental impacts are much less and people are healthier (thus reducing unnecessary medical costs). Though evidence is not as good as some planners would like, there is a mass of research around the world, especially in North America and Australia, which can provide useful guidelines, and improve the way different scenarios are modelled. A useful summary has been published by the Commission for Integrated Transport drawing on research in Oxford.[7]

As many people find it hard to think in terms of carbon emissions or modal shares, an easier concept used in the USA is **Vehicle Miles Travelled** (VMT) A particularly thorough 87-page report by Todd Litman of the Victoria Transport Policy Institute in British Columbia can be readily downloaded.[8] He helpfully pulls together the general findings on travel impacts under eleven different land use factors. Importantly while no one measure reduces car use by more than 40%, Integrated Smart Growth Programs lead to communities that '*own 10-30% fewer vehicles, drive 20-40% less, and use alternative modes 2-10 times more than in automobile dependent locations*.'

Once the impacts have been identified and assessed, it should be possible to go to the next stage which is negotiation. While it is unreasonable to expect existing residents to welcome new development if it simply makes their lives worse, it should be possible to negotiate a 'quality deal'. This is where a commitment to accept new housing is traded off against investment in improving accessibility for all, perhaps by first making funds available to fix all the potholes if only to rebuild trust in planning! The City Deal programme is already starting to do this for metro areas such as Oxford and Cambridge.

Congestion affects a number of the criteria for planning sustainable or smarter

6 The evidence on Smart Cities has been summarised in a presentation to a conference in Hamgzhou China by Nicholas Falk, March 2018, and is available on request., and will be published as Smart Cities: capitalising on the digital revolution, in the Summer.
7 Commission for Integrated Transport www.plan4sustainabletravel.org
8 Todd Litman, Land Use Impacts on Transport, July 2017, www.vtpi.org

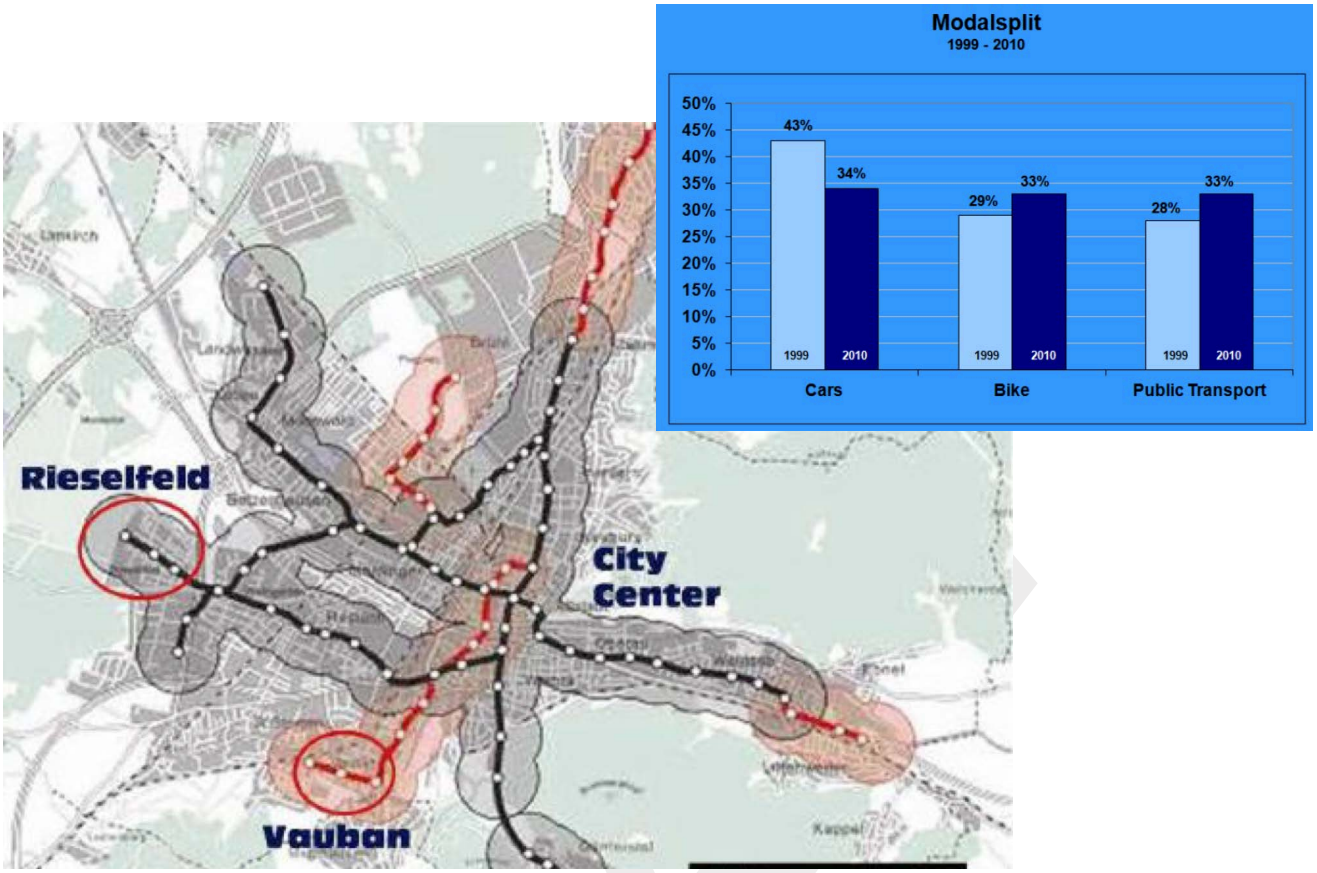
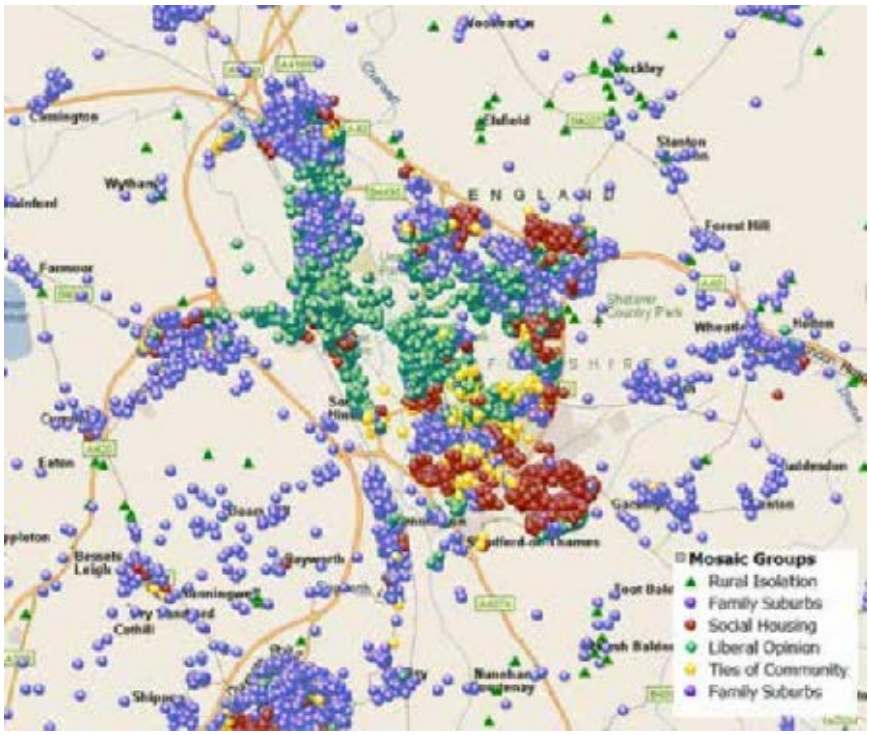


Exhibit 11: Freiburg has cut car usage over 30 years by growing a compact city around tramlines

urban growth. Indeed the cities that are judged in surveys to be 'smartest' and 'happiest' such as Copenhagen in Europe or Singapore in Asia, are ones that have limited car use thanks to priority for cyclists and/or well-developed public transport systems. These are made viable through higher densities at stations or stops along transport corridors – what American planners call Transit-Oriented Development (TOD). The goal is not just cutting the time taken getting to work, but also making journey times much more predictable. Another benefit is car-free centres that encourage walking and cycling, and that are pollution free.

A good example is the ancient German university city of Freiburg, which uses the concept of a '**city of short distances'** as a marketing slogan for the city. When Freiburg's director of development Wulf Daseking visited Oxford to speak at an Oxford Futures symposium in Oxford in 2014 he complained to the press about the dominance of cars in the centre. New housing in Freiburg is largely developed as urban extensions of existing tram lines, built at the start of development so that car use has been progressively reduced. **(Exhibit 11) As a result the centre is traffic-free.** This contrasts with the 'fat' or sprawling cities to be found in much of North America with holes where their centres should be. Incidentally intensification can be achieved without building intrusive towers, as most of the housing in European 'compact cities' is in three to five storey walk-up blocks, similar to the most valued parts of Georgian London, or parts of North Oxford.

Exhibit 12: Spatial distribution of social housing against other groups in Oxford



Greater equitability

The final criterion or objective, especially in a socially-concerned city such as Oxford, must relate to equity or social justice. There are many complex 'Gini' coefficients that can be used, but probably the indicators with widest appeal to common sense relate to years of healthy living, such as **life expectancy**, or **educational levels.** This is not about averages but dispersions or contrasts, so that a city such as Cambridge, which may be judged to have done well in building new housing, with some of the highest completion rates in the country, can still be criticised for the contrasts between different sides of the city. Maps or spatial plans bring out these factors better than statistics, as **Exhibit 12** illustrates. Both transport and new development can be used to correct imbalances (often the results of traditional patterns of industry and consequent social housing developments).

In conclusion the important point is not to argue for any one indicator or measure, and published rankings of cities or countries tend to use many more than three.[9] This report is simply proposing that in producing a new spatial growth plan housing and transport development should be 'joined up' with where jobs are expected to be, and also with where finance for investment can be attracted. Also alternative scenarios should be evaluated over a longer time period, say 20-30 years up to 2050, not the five years required by the National Policy Planning Framework (NPPF).

9 There are many rankings available, such as those produced by the Economist Intelligence Unit or Monocle, but most tend to compare large cities. The Centre for Cities produces a useful ranking of published data and the Academy of Urbanism provides qualitative assessments of great cities, towns, places and streets through its annual awards.

5. Locating new housing

Not only has recent British housing been criticised for falling behind demand, but also for its quality, particularly as far as the public realm is concerned, and often for its unsightly location.[1] Only a minority of people in the UK consider buying a new house, in complete contrast to practice in the Netherlands or Germany. Those that do largely value minimal maintenance, followed by space and locational convenience, with 'off-street parking' being highly valued in all locations.[2]

New housing and some new towns and housing estates may be 'stigmatised', because there is such limited choice, an argument used in the Letwin Review of Build Out Rates[3] to call for greater diversity to increase housing output. Whole market segments with different values, such as 'empty nesters', are largely ignored, and villages are under-occupied most of the time for lack of choice. In part this is because development in the UK in recent decades has been led by the volume house-builders, who form an effective oligopoly in individual areas, but lack the marketing expertise of, say, motor companies, in terms of identifying and responding to market niches. There are relatively few 'master developers' with the capacity and competence to lead strategic developments of more than 500 homes. So what is to be done?

Smarter urbanisation

Strategic spatial planning should assess all the main potential locations - that is ones where the infrastructure can handle growth such as along transport corridors. The criticisms may not apply to most infill developments, which are easier to do and more profitable, but they do apply to the 'strategic' housing developments that are required to meet projected housing needs. Regrettably the tight limits of both local authority and Green Belt boundaries have tended to concentrate new development ever further away from jobs and services, thus adding to trip lengths and car use and compounding problems of traffic congestion. Pressures to develop remote disused government-owned airfields result in proposals that make little

1 See assessments by CABE design reviews
2 See report Beyond Location, location, location: priorities of new home buyers, Savills and the NGBC Foundation, 2018
3 Letwin Review, build out rates, 2018

Sprawl

The development of a former airfield such as Chalgrove to the south-east of Oxford, which has been promoted by Homes England, should have been assessed against other options, such as the land South of Grenoble Road mentioned previously in connection with re-opening of the Cowley branch line. As war-time airfields were usually built where no one wanted to live, they are unlikely to provide good housing sites simply because the government owns them. Planning needs to consider all the main options, not just those that seem convenient at the time, given the long time-scales and huge investments required.

economic sense, for example requiring the relocation of established firms, while requiring huge subsidies in an attempt to 'buy off' local opposition, or make marginal schemes viable.

A 'smarter urbanisation' alternative to urban sprawl, put forward by the URBED team to win the 2014 Wolfson Economics Prize, was to develop sites on transport corridors within 10km of the centre of a major city such as York or Oxford. Proposals for Uxcester Garden City were based on Oxford and tested out at a workshop in North Oxford. The competition criteria were to come up with proposals for new garden cities that were 'visionary, popular and viable' without public subsidy. To do that it was essential to follow Ebenezer Howard's influential dictum of tapping the 'unearned increment' - that is reinvesting the uplift in land value from development in local infrastructure, which would be greatest closest to the city core.

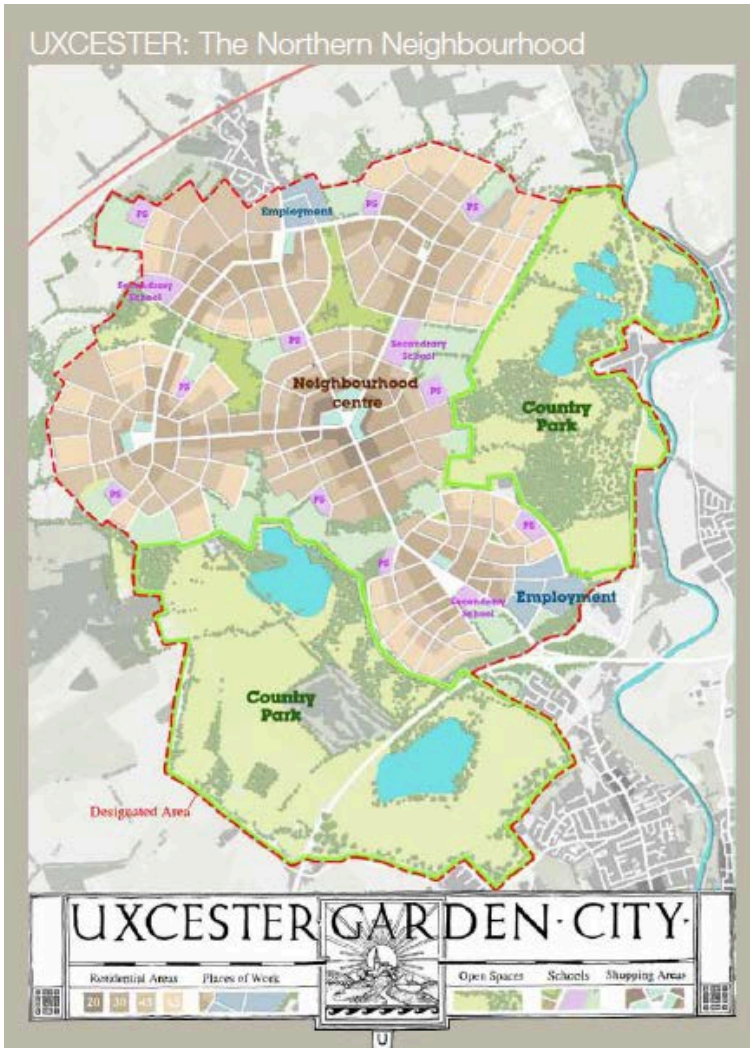


Exhibit 13: Garden City extensions need to be close to jobs and extensions

Four dimensional planning

The proposal at the time was rubbished by a government minister because it required local authorities to be more proactive and cooperative where sites crossed or were close to administrative boundaries. Policies have since changed, and Cambridge, for example, is already far advanced in reconsidering its plans for growth in ways that take account of potential new transport infrastructure, such as a new metro. While there has not yet been the budget to do the modelling that is required, a review of what is known about different 'patterns' of growth, and the merits of alternative models or scenarios set out in the next section.

Too often land use planning is seen as a two-dimensional exercise of colouring maps according to the level of objections and sites that are put forward by developers. However experience shows that all proposals generate objections from some group or other. 'Smarter Urbanisation' needs to be more far-sighted in considering the third and fourth dimensions of space or density, and time, and what creates places where people want to live and work. At any one time, a city's structure may seem quite fixed, as it takes generations to build new roads or railway lines, let alone cross obstacles like rivers or hills. Yet looking back, growth can be seen to have followed a pattern.

Thus Oxford after many years of comparative stagnation had a sudden surge of growth to the North in the mid-19th century, when college dons were first allowed to marry, and then to Headington and the East in the 20th century, when Morris's car factory was built at Cowley. **(Exhibit 14)** Most recently the city is growing to the West, with the shift in shopping to the expanded Westgate Centre, opening up fresh prospects for sites that were previously ignored. In 30 years' time the city's shape could be very different, with, for example, major employment growth around the main station rather than on the periphery, and with new housing located along transit corridors.

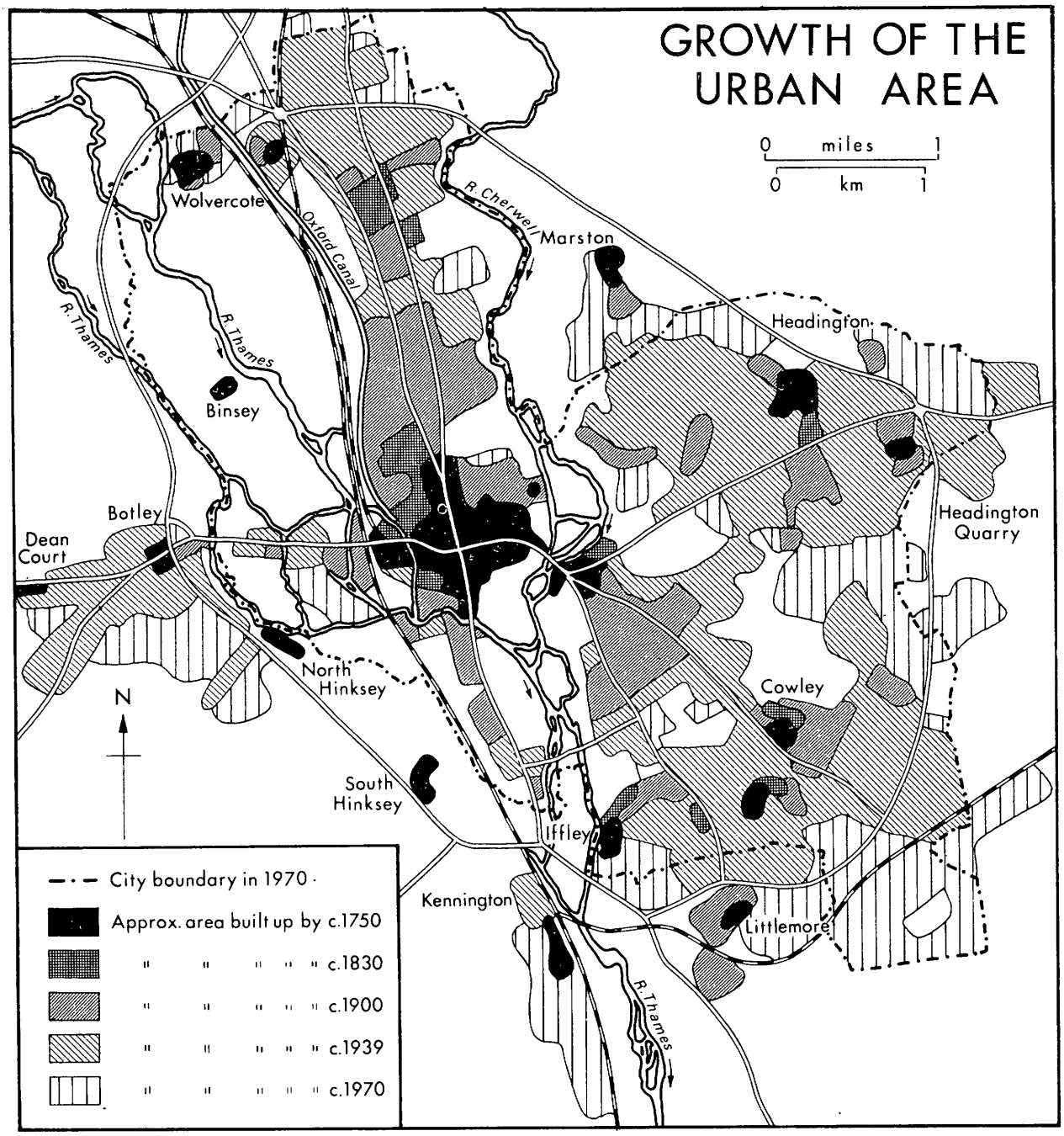


Exhibit 14: Oxford expanded incrementally over centuries

6. Improving strategic housing

In planning how to respond to present pressures and future demands it makes sense to look forward at least to 2050 when all kinds of technological and behavioural changes are likely to have occurred, including the reduced use of private cars and greater sharing of space. After all we have only enjoyed the Internet for thirty years, and Smart Phones have revolutionised many people's lives in a decade.

While this may seem impossible, in fact the future is already here, somewhere, (see for example Nicholas Falk's blog *Postcardfromthefuture).*[1] Cities, like people, can learn from each other. Enough is known about innovation and development economics to identify both the locations where economic growth is most likely, and also to assess the options in terms of resilience or 'future proofing'. Before suggesting what a resilient structure or pattern of growth might look like, we should consider the main options, based on cities of the past and the principles of good urban design.

Urban patterns

There are two main types of urban pattern: the relationship between different towns within a Functional Urban Area or Travel to Work Area (TTWA), and the shape or connections within the new development. Each of these will affect travel choices and modal splits - that is the use made of different forms of transport. At one extreme is a highly dense and concentrated city, such as the centre of London or Shanghai, that makes it possible for most people to use public transport, walk or cycle. This is sometimes referred to as the Continental Compact City, which might be compared with a '*Danish pastry'* with a cherry in the middle. Unfortunately major cities tend to sprawl, and their suburbs become congested with through traffic, however many new roads are built, a process exacerbated by green belts, when people move home beyond them.

At the other extreme is the American or Australian city, where the suburbs extend as far as the car will take you, and where public transport is intrinsically unviable. As a result the centres of such cities

1 See for example Postcard from Vienna, and the latest, which is Postcard from Shanghai and Hangzhou

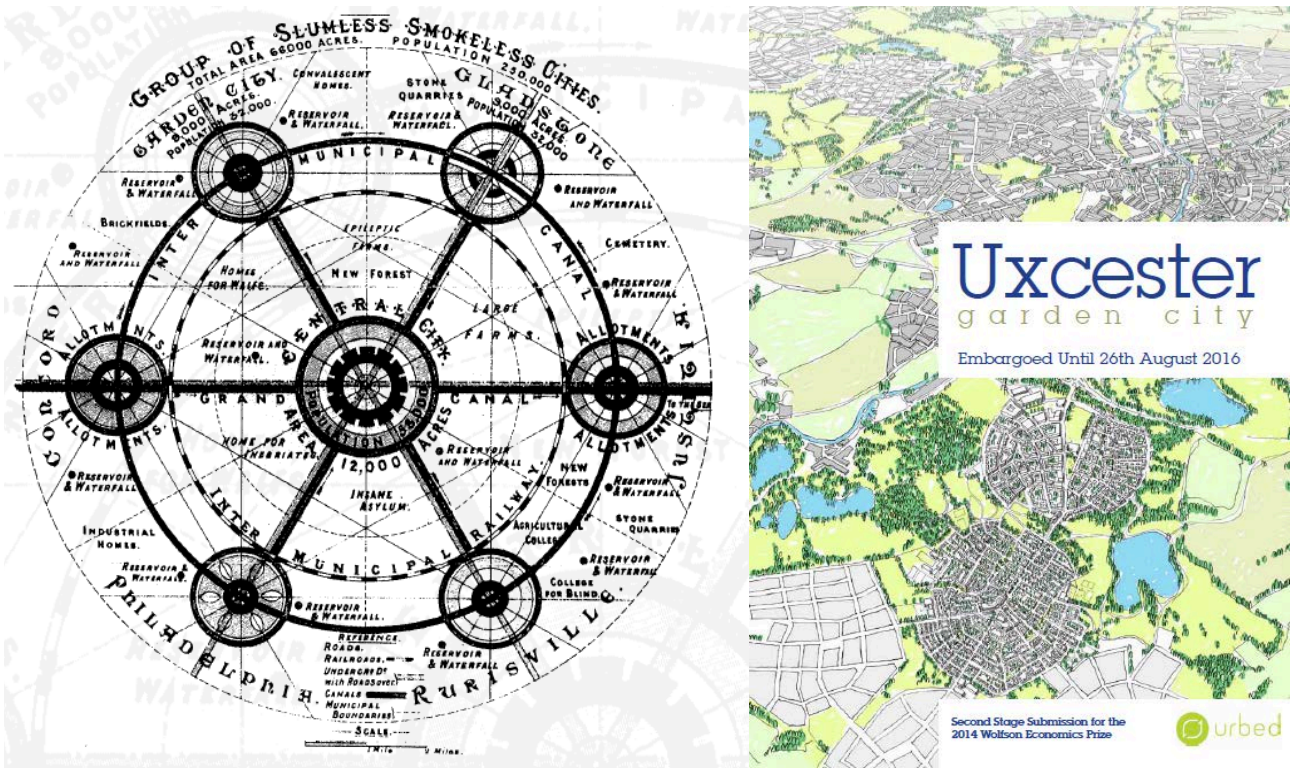


Exhibit 15: Howard's Social City diagram can provide inspiration

tend to be car dominated and walking or cycling is unpleasant and often unsafe. This can lead eventually to the 'American doughnut' of cities such as Detroit, with holes in the middle where their commercial centres or Downtowns once were. To extend the analogy, the typical English town has similarities with a trifle or 'Eton mess', reflecting the way it grew up over time.

What might be called the 'natural form' of development, that is without land use planning, is for housing and economic activity to extend along the side of the main roads. This led to the introduction of Green Belts after the Second World War as well as a ring of planned New Towns round the main cities such as London. This pattern, sometime referred to as 'satellites', corresponded to Ebenezer Howard's famous diagram of the *Social City* in Cities of Tomorrow, published in 1899. **(Exhibit 15)** What tends to be forgotten is that as well as the six smaller new settlements of 32,000 inhabitants (perhaps 8-10,000 homes) Howard's plan envisaged a Central City of around twice the size, all inter-connected by Municipal Tramways, and separated by land used for growing food.

Connected Cities

As noted, Howard's diagram inspired URBED's proposals for '*Snowflake cities'* in which the new settlements grow organically. The model works well in historic cities such as Oxford and York,

Capital Assessment Techniques (CAT)

A different approach needs to be pioneered along the CamMKOx corridor to test out better alternatives to simplistic Cost-Benefit Analysis, as the NIC CamMKOx report calls for. Instead of thinking in terms of financial streams, discounted to Present Values, strategic spatial plans should consider cities as stocks of economic, social and environmental or natural capital. Capital can be augmented by appropriate investment, including both new housing, transport and other infrastructure. Cities, unlike human beings or businesses, tend to endure, and so need to use more appropriate time frames!

A robust modelling approach would make full use of the huge potential now to overlay different forms of analysis through Geographic Information Systems (GIS). This technique could take account of impacts on property values and tax yields, which are touched on elsewhere as well as identifying sites that have been over-looked, where land is poorly or under-used. While it would not be right to produce a single figure, mapping can help show where action is needed to improve the 'balance' of the city region, and provide the arguments that politicians currently lack.

which are typically junctions, with roads and railway lines branching out in different directions. URBED identified over 30 other cities that had similar potential, many with similar historic cores or railway connections. Capital assessment techniques should favour what have been called *Connected Cities*, in which frequent stations along a suburban railway line enable most of the new residents to make use of improved public transport services.[2] In reality, as a study of new English housing estates has highlighted, most new housing schemes are being developed in locations where it is impossible to use public transport. The RTPI has found that half the new housing between 2015 and 2017 was more than two kilometres from a railway station.[3]

The idea of joining up metropolitan areas through good suburban rail services has been developed into what we have called Swift Rail, inspired by German, Austrian and Swiss cities that use the concept of Scnellbahnen. Proposals have been drawn up for both Central Oxfordshire and also Cheltenham/Gloucester/Stroud. [4] As Network Rail seems primarily concerned with long distance freight and passengers, suburban services are poor, outside a few major cities such as London and Leeds. Such a plan is still two-dimensional, and to make it more dynamic it is necessary to consider how cities actually grow both in density and over time, the third and fourth dimensions.

2 Brian Love, www.connectedcities.co.uk
3 Location of Development, RTPI, 2018
4 Nicholas Falk and Reg Harman, Swift Rail: funding local rail transit through smarter growth, Public Money and Management, September 2016

What Sir Peter Hall called the *Polycentric City,* has many appeals, but geography, politics and economics, tend to get in the way! In practice investment tends to get concentrated in a game where winner takes all. Planners have very limited powers. In practice spatial planning is in fact more like a game of dominoes than a jigsaw puzzle, as there is no right answer. Everything depends on what you start with, and one move leads to another. The land market is far from perfect, and is typically slow to respond to demand. Over time towns and cities can become rivals, imitating what each other offers, but growth tends to favour the largest and most favoured in any competition.

Transport investments shape growth over time, whether it be river crossing or high-speed railway lines. Indeed housing may well follow transport, as people with money move further away to buy more space. But there do seem to be real economies of scale, or agglomeration economies, as the Santa Fe Institute has convincingly shown.[5] This is because innovation and hence the growth of the 'real' economy, are affected by our ability to connect with others, which is helped by proximity as well as good transport connections. Studies of why German cities seem to be much richer and more successful than our own suggest that the reasons lie in part in their greater control over resources, as power is much less centralised under their federal system.[6] Major cities end up being much bigger, which of course supports much better local infrastructure, which in turn attracts more private investment. So if cities like Oxford and Cambridge are to continue to compete on the world stage, they have to grow in a planned way, not stagnate or disperse, and to work in conjunction with their surrounding market towns, not in competition. Transport is a necessary but not a sufficient condition for growth.

Urban form

Within any city there are two countervailing tendencies. One is for the densities to be greatest in the locations that enjoy the greatest accessibility. Land values alone then generate ever taller developments, as can be seen most noticeably in the Chinese megacities, where densities can rise to 1000 to the hectare and 30 or 40 storey residential tower blocks are the norm near the centres. These grey slabs seem to stand like tombstones on either side of motorways in rapidly growing cities like Hangzhou or Shanghai. The other tendency is for the 'economic engines', such as large plants, hospitals and even universities to locate on the edge where land is cheaper and where there is plenty of space for future growth. In time these may become magnets for new residential development, but development there tends to be largely car-based and angled towards those with the highest incomes. The results are often equally wasteful, unsightly and unfair.

In Spiro Kostof's magnificent study *The City Shaped*, he comments that '*Skylines are urban signatures. They are the shorthand of urban identity and*

5 Geoffrey West, Scale: the universal laws of life and death in organising cities and companies, Orion Publishing Group, 2018
6 Hugo Bessis, Competing with Europe, Centre for Cities, 2016

Exhibit 16: Alain Bertaud's Urban spatial structures and mobility patterns (left). URBED's framework allows for incremental growth (right)

the chance for urban flourish.' [7] That is why we expect a great city to present its grandest buildings at its gateways, for instance around its central station or High Street. This can be seen not only in large cities such as Rotterdam or Vienna that score best as examples of Smarter Urbanisation, but also in medium sized cities such as Amersfoort in the Netherlands or Montpellier in France which have made the most of their stations.[8] Such spaces for pleasure appeal to the young, and help to make their cities more creative and competitive. Kostof's final wise words were *'If we conclude that cities are the most complicated artefact we have created, if we believe further they are cumulative, generational artefacts that harbour our values as a community and provide the setting where we can learn to live together, then it is our collective responsibility to guide their design.'*

Within new settlements many more forms are feasible, as urban

7 Spiro Kostoff The City Shaped: urban patterns and meaning through history, Thames and Hudson 1991

8 See case studies in Peter Hall with Nicholas Falk, Good Cities Better Lives: how Europe discovered the lost art of urbanism, Routledge 2013

design theorists such as Christopher Alexander ably described in A Pattern Language[9]. In the past cities grew around grids because that was a convenient way of parcelling up land for development and installing infrastructure. Today we have many more possibilities. Kostof distinguishes between the *Cosmic City*, with its clear social hierarchy, the *Practical City*, a construct of interrelated parts, and the *Organic City*, which is an indivisible living organism. Unsurprisingly engineers and investors favour the practical, whereas urbanists tend to go for the organic model. The basic plan for Uxcester Garden City was a blend, as it enabled most people to have easy access to the countryside and good views, while also supporting a good public transit system along the roads that serve as spines - more like a fishbone than a grid. Growth in the 21st century is essentially organic rather than mechanical. Importantly such a masterplan provides sites for large numbers of different builders, and could adapt to change over time. The 'snowflake' image in **Exhibit 16** offers a powerful paradigm for how a city should grow in relations to its surrounding countryside. [10]

Smarter urbanisation

In the Wolfson essay URBED tackled the problems of speculation and land owners 'holding out' by showing how land could be developed incrementally over decades. Spare land identified for development or for open space would be transferred to some kind of trust or foundation, as happened in Letchworth Garden City. It is significant that both Germany and the Netherlands have come up with practical solutions to this problem (which are described in case studies in the Capital Gains report for the GLA).[11] As Kostof says '*Cities are amalgams of buildings and people… in which are 'condensed continuities of time and place.'*

Joint plans also need to set out the delivery mechanisms. With the right vision, leadership, and investment tools occupants are likely to be attracted over time and investors handsomely rewarded. Investment in country parks, lakes or woodlands can be recovered from higher house prices over time, and any apparent losses to the greenbelt amply compensated for. As American urbanist Bruce Katz concludes in a new book that draws lessons from the three 'turnaround' success stories of Copenhagen, Indianapolis and Pittsburgh, the key in every case is 'unlocking the value in over-looked assets', such as around railway stations or waterways.[12] A plan or framework for 'Smarter Urbanisation' needs to consider not just five years land supply, as local authorities are currently required to do, but growth for several generations ahead in the relevant functional urban area (or Travel to Work Area). Hence, as Patrick Geddes memorably said, '*a city is more than a place in space, it is a drama in time'.*

9 Christopher Alexander et al, A Patterr Language: Towns, Buildings, Consturction, 1977
10 Nicholas Falk, Garden Cities for the 21st Century, International Journal of Urban Design 2017
11 Nicholas Falk with Dentons, Gerald Eve and Housing Futures, Capital Gains: a better land assembly model for London, GLA May 2018
12 Bruce Katz and Jeremy Nowack, The New Localism, Brookings Institution 2018

7. Funding joined-up development

The current flurry of interest in land value capture has reopened the possibility of changing the way we assess and fund infrastructure projects. A recent report from the Infrastructure and Project Authority calls for a *'platform for driving further improvement: ensuring projects are initiated and integrated to deliver maximum whole life performance, including against key economic, social and environmental objectives.'* [1] The Outline Agreement for the Oxfordshire Housing and Growth Deal asks Oxfordshire to '*consider introducing a Strategic Infrastructure Tariff (SIT) which could help to capture additional value created by the development process… In order to introduce a SIT, Oxfordshire would need to put in place the appropriate governance structures and mechanisms'.*

Ideas for projects or mechanisms are of no practical value without the resources to implement them. While these are not all needed at once, investors will want some assurance that plans are for real, not just architectural dreams. So it is necessary to consider all the possible sources that could be deployed, starting with those that are 'on the table' and finishing with those that could be brought into play if enough support is secured. Rather than adding up all the costs, which would present an impossible bill, we need to think more organically, and creatively.

Inspiration can be drawn from examples such as the London Docklands, where development was catalysed by introducing the Docklands Light Rail long before schemes such as Canary Wharf were ever conceived, as well as from comparable city regions in mainland Europe. Because public resources are in short supply, cities such as Oxford need to think of ways of mobilising and 'packaging' private funds. While full economic studies will be needed, here are some preliminary ideas for 'smarter finance', starting with the easiest to implement.

1 Transforming Infrastructure Performance, Infrastructure and Projects Authority, December 2017

Crowd funding

A good way to develop a 'shared vision' is to organise study tours to places that can provide lessons. The process of '*looking and learning'* seems to have played a vital role in raising standards in new developments in Cambridge through principles set out in the Quality Charter, which was agreed with local authorities and major developers.[2] The important feature is that people from different backgrounds and organisations need to have seen and discussed examples before they commit themselves. Such a process might be initiated by the Oxford Civic Society in the next stage of the Oxfordshire Futures process. It could also be linked to experimental initiatives, such as the development of Cohousing and Eco or "Passivhaus houses" in some of the housing developments already underway, if only to prove there is a market for something different and to confound the sceptics. This would also enable people from the wider community to continue to play a positive role.

Congestion and Parking Charges

Oxfordshire County Council has already been exploring the potential for a Workplace Parking Levy, drawing on experience in Nottingham. A contribution on a regular basis from major businesses not only can help fund new local infrastructure, in this case Nottingham Express Transit but also serves to reduce parking provision and secure a modal shift. A congestion Charge, while more complex, is what any Smart City should introduce, as it enables access to be priced in ways that secure better use of limited resources, namely road capacity.

The best example is probably Singapore, where sensors are linked up with mobile phones for payment. But even with Controlled Parking Zones there are many possible ways of restricting car access to areas where pedestrians and cyclists should be given precedence. The bonus of reduced noise and air pollution should appeal to shop-keepers who might otherwise be opposed. This would be an important step towards regulating bus access to the central area, and introducing a more efficient and people-friendly system, and is within the powers of the County and City Council if they wanted to use them. The income has to be used for transport measures, and could provide an excellent way of funding some of the studies and pilot projects that will be needed to implement the Spatial Growth Plan, such as new Park and Ride sites, and refinements of the Controlled Parking Zone systems that would enable 'smart' charges to be levied.

A good starting point would be to make it as easy and safe as possible to walk and cycle. This would require fixing potholes (which

2 Cambridgeshire Quality Charter for Growth, URBED for Cambridge Horizons, 2008

will also benefit drivers and passengers in buses) as well as creating new and improved cycle routes and walkways. It should also involve making it easier to use phone apps, including making it easier to access information on travel times by alternative modes, a basic factor in any city that calls itself 'smart'. A priority would be to ensure good mobile phone signal in all of Oxford's streets, as well as to implementing 5G Broadband, so that connections are easier without having to move. Well publicised early action projects such as these would help to overcome public scepticism about planning and the seeming impossibility of making improvements incrementally.

Community Infrastructure Levy (CIL) and S106

The method which is heavily relied on in Britain, involves negotiations with developers for what is called **planning gain**. A development framework, supported by planning policies, can require contributions through either Section 106 planning conditions or from the Community Infrastructure Levy (CIL). Studies in both Milton Keynes and Cambridgeshire, the fastest growing places, found that new infrastructure can cost as much as building the houses, and over half the cost is for transport.[3] Developers will prefer to pay over funds when housing is sold, not when planning permission is secured, which explains the limited success of CIL, which requires 'up-front' payment and only raises some 10-25% of the cost of related infrastructure.[4]

A more acceptable approach would be to impose a charge when developments are completed, and to borrow against the expected revenue. Section 106 has become the main way of funding limited amounts of 'affordable' and social housing, through some form of cross-subsidy. If a 'step change' is to be secured something better is needed, for example by local authorities directly funding the provision of social housing. This might include the types of equity sharing used in the Netherlands to enable those with limited incomes to enjoy some of the advantages of owner occupation.[5] This is made easier because land is assembled for house building using low cost finance from the municipal investment bank BNG.[6]

3 Nicholas Falk, The Steps to Quality Growth, Cambridgeshire Horizons, 2010
4 Report of the CIL working party
5 See case study of Vathorst in Peter Hall with Nicholas Falk, Good Cities Better Lives: how Europe discovered the lost art of urbanism, 2013, Routledge
6 Capital Gains, A better model of land assembly for London, URBED for the Greater London Authority May 2018

Infrastructure bonds

So long as government finance is handed out on a project-by-project basis, a mechanism is needed to generate substantial amounts of 'patient capital', that is loans that have to be repaid but over a long time. Bonds appeal to investors where they are underwritten by an inflation-proofed asset such as land, and where they are secured, in part at least, though government guarantees. An excellent example is provided by Cambridge University, who were inspired by their study tours to housing schemes in Freiburg and VINEX schemes in the Netherlands to take on the development of Cambridge North West rather than sell the land to private developers. They raised £350 million with little difficulty for a bond that is repayable over 40 years with an interest rate of 3.75%. Most of the investors were pension funds, who need this kind of investment in their portfolios.

An Oxfordshire Growth bond could similarly be used to secure commitments from major land owners for mixed use schemes of a higher quality than the market would supply, thus overcoming some of the inevitable objections. Such a bond could also serve as a demonstration to national government that there is real local commitment to growth, which would encourage the higher levels of public investment that have already been promised to Cambridge through their City Deal. The bond could also be used to secure support from wealthier older residents who might otherwise object to developments, and could in part be used to fund much needed 'senior citizen' housing closer to shops and services, thus enabling under-occupied houses with gardens to be re-occupied by growing families.

An Oxfordshire Growth bond should raise enough to fund a new light rail line connecting the Park and Ride sites on either side of Oxford at Botley and Thornhill mentioned previously If it were linked to development alongside. **Exhibit 17** illustrates a possible route that has been devised and costed for us by Mott MacDonald. Interestingly the costs, which are based on experience elsewhere, range from £60 million at a minimum to £240 million. This shows the importance of commissioning proper feasibility studies before decisions are made, and of understanding the factors that lead to higher costs

Tax Increment Finance (TIF)

Much has been written about the merits of funding local infrastructure by borrowing against the expected yield from higher property taxes.[7] Cities such as Portland Oregon have built extensions to the Light Rail

7 See for example reports from KPMG and PWC for the Greater London Authority, and also Owen Cornellam Ed. Land Value Taxation in Britain: experience and opportunities Lincoln Institute of Land Policy 2014

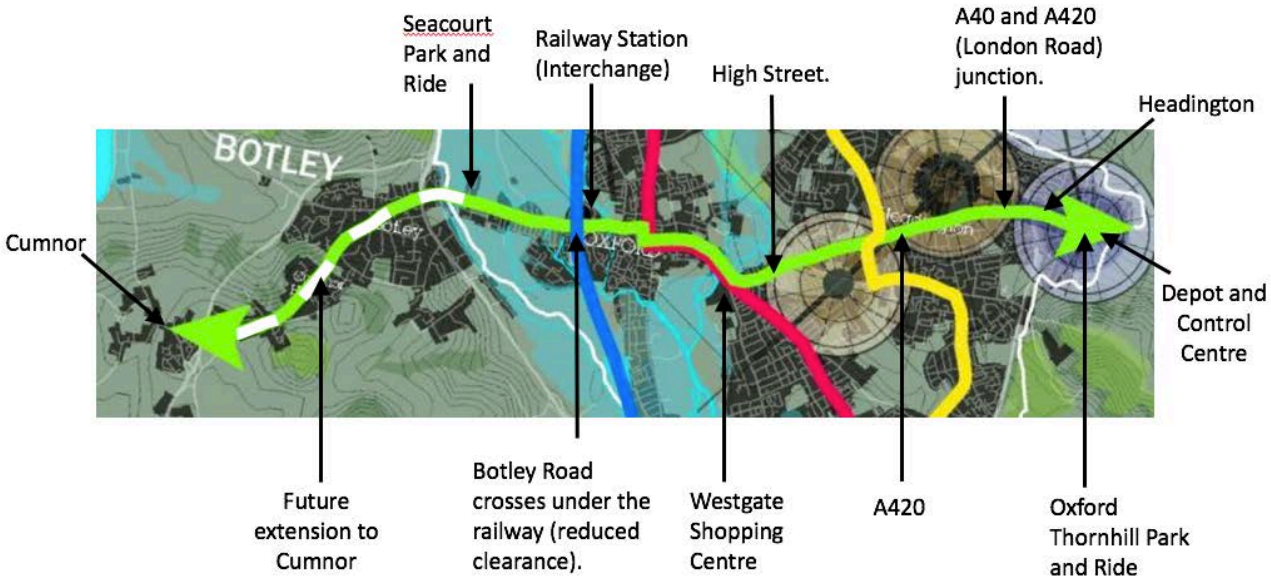


Exhibit 17: Mott Macdonald have assessed the range of costs for a possible route

systems on the back of the higher densities made possible through new rapid transit lines. However North American cities have much greater freedom in setting tax rates, which makes it easier for them to issue bonds once they have secured local approval. Bonds are evaluated in terms of both the project and the borrower, which makes them a better form of public finance than the British public finance system, where there is little scope for raising taxes if the project fails to perform as predicted. Though some of the funding for building Crossrail One, the Elizabeth Line, came from a supplementary levy on the Business Rate, Transport for London have been investigating various forms of land value capture in planning Crossrail Two, which would run from the South West to the North East of London.

The method used in US cities such as Pittsburgh in Pennsylvania and now in Canberra in Australia as well as in Danish cities such as Copenhagen, involves some form of **land value charge** or tax on those who would benefit, and there are several options. This could form part of a much needed rethink of our regressive property taxation system, which penalises small businesses while wealthier households get untaxed benefits from increasing house values.[8] One option is to adjust the property taxes to distinguish between the value of the land and the value of the property on it. It is the land value that increases as a result of new transport investment as a number of studies have shown.[9] Such an approach was shown to be quite feasible in a pilot study in Botley undertaken for Oxfordshire County Council, with many

8 Thinks tanks on all sides of the political spectrum have called for this from the Policy Institute to IPPR
9 Fiona Ferbrache in op cit

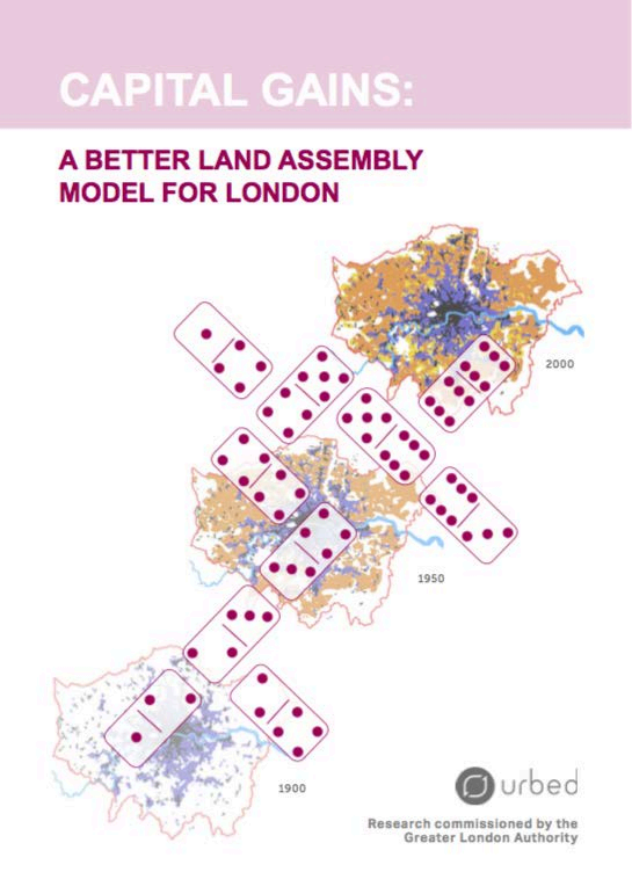


Exhibit 18: Land assembly can secure Capital Gains

benefits.[10]

But even without such a change, by using Compulsory Purchase Orders and development briefs more adventurously, and through some changes to the Land Compensation Act, it would be possible to secure much greater public benefits from any area where major infrastructure improvements are being made, such as around Oxford Station. This forms the basis of recommendations in a report for the Greater London Authority with advice from lawyers Denton's and surveyors Gerald Eve, drawing on case studies of international models of land assembly.[11] (**Exhibit 18)**

The transfer of the Business Rate back to local authorities would also help if there was greater discretion over rates, but the whole system is so flawed that a full review is needed of both the domestic and business rating system to make it fairer and less regressive. Currently small shops end up paying as much in rates as they do for their leases while wealthy residents can pay less in some parts of the UK than poor ones do. While any rerating creates huge protests from those who may lose out, there may be less resistance if the measures are used to fund investment that will benefit existing as well as new property owners. The proposal for an Oxford Metro,

10 The Oxfordshire Land Value Tax Study, 2005
11 Nicholas Falk with Dentons, Gerald Eve and Housing Futures ltd, Capital Gains: a better land assembly model for London, URBED and the GLA, February 2018

linked to rate reassessments, could well win popular as well as private support.

Land value charges

To help fund local infrastructure and overcome one of the main barriers to building the housing Britain needs, the idea of 'capturing' or sharing in land value uplift has been resurrected. While it may not cover the full cost, as exponents such as Ebenezer Howard hoped, it could secure much better use of land as well as providing a much needed means of supplementing current taxes. The idea was successfully tested out in a study undertaken for Oxfordshire County Council and the Vale of White Horse district council in Botley, which showed that it was perfectly easy to implement a system that distinguished between the value of the building and the land on which it stood. This could be turned into a mechanism for funding infrastructure improvements in areas undergoing rapid growth, and could form part of a wider all-party review of local funding options, following up the various reports published in 2018.[12]

Land Value Tax (LVT) would have to be applied on a wider scale than any one development, and would probably be fairest at a county rather than a district level. A start could be made, as was proposed in the URBED Wolfson Essay, by sharing the uplift in land values in locations where there is not supposed to be any 'hope' of securing planning permission, such as in the greenbelt. Thus a condition of a proportion (maximum say 5%) being removed from the greenbelt as part of the local plan could be its transfer to a foundation or trust with obligations to secure better use, such as improved bio-diversity, the replanting of woodlands, and new lakes and water management features.

As the uplift in values from agricultural to housing land is a hundred times in parts of Oxfordshire, there will be enough to compensate the landowners fairly as well as to secure good new homes in what might be called a 'quality deal.' Like most things, progress depends on negotiating agreements that can serve as precedents, and this would be helped if the government accepts the proposals for changes in the Compulsory Purchase and land valuation systems set out in the GLA's Capital Gains report, and which was devised in the light of best practice in other countries.[13]

An even more effective way recommended by the World Bank Group in an important study, is **land assembly** to acquire land alongside stations and then sell off the development rights.[14] This is what

12 Nicholas Falk, A British Approach to Land Value Capture, RSA 2017
13 Nicholas Falk and others, Capital Gains: a better model for land assembly in London, GLA 2018
14 H Suzuki, J Murakami, Y-H Hong and B Tamayose: Financing Transit-Oriented Development with Land Values: Adapting Land Value Capture in Developing Countries. World Bank Group, 2015. https://openknowledge.worldbank.org/handle/10986/21286

Exhibit 10: The potential for land value uplift can be huge
(Source: Housing Futures Ltd.)

Potential for land value uplift sharing varies across the country	**Stoke-on-Trent**	**Peterborough**	**Reading**	**Sutton**
Average open market value £	160,000	230,000	300,000	410,000
Density dpha	30	40	60	120
Affordable housing (AH) %	10%	20%	25%	30%
Per hectare				
Market sales value £pha	4,200,000	7,300,000	13,400,000	34,500,000
Less				
Land acquisition and preparation £pha	500,000	700,000	1,700,000	4,200,000
All in development cost £pha	3,700,000	5,700,000	10,000,000	25,400,000
Balance for uplift sharing £pha	**-**	**900,000**	**1,700,000**	**4,900,000**

funded the Hong Kong and Singapore Mass Transit systems through what are called Floor Area Ratios (FAR). But it is not necessary to build tower blocks to benefit, as cities applying Smart Growth principles such as Portland Oregon have shown. Starting with a Metropolitan Area Express (MAX) which extends into the suburbs, this progressive West Coast city has densified areas such as around the main railway station and along a new 'streetcar' line through the former Pearl industrial areas. Transit-Oriented Development (TOD) is used to recoup investment through Tax Increment Finance (TIF) whereby the City borrows against the prospective uplift in property taxes from the new stations and services. [15] Similar ideas are being considered to fund Crossrail 2 in London. The Elizabeth Line was part funded from a supplement on the Business Rate and also forms a precedent.

Public private partnership

As no one source will be enough, some form of financial package or partnership is required in the UK. Housing developments and transport options need to be considered together in Central Oxfordshire, as the land values are relatively high similar to London.[16] **(Exhibit 19)**

The current average house price in Oxfordshire, according to Right Move, is £430,000, one of the highest in the UK, so the potential uplift is huge. Figures from Housing Futures show the differences in potential uplift from land values in different types of place, and Oxford generally is more like Reading and Sutton than Peterborough

15 This forms one of the case studies in Capital Gains: a better model for land assembly in London, URBED for the Greater London Authority, 2018
16 This table was published in Location Location and Location: Funding investment in local infrastructure, Town and Country Planning, May 2017

or Stoke. Different transport modes then need to be assessed systematically, as for example is now happening for Tramlink in London.
The immediate priority once there is agreement on how to proceed should be to assess options for developing land on either side of the railway near Oxford Station at higher densities and for different uses before the opportunities are wasted. This is the greatest single opportunity, without major planning or ownership constraints. As projects are already being approved that could stand in the way of a comprehensive plan, there is a strong case for considering how much value could be contributed from more intensive commercial development on both sides of the line. This was recommended in a high-level symposium organised with the support of the Academy of Urbanism, along with other options for growing Central Oxfordshire.[17] Though there are operating issues discussed in the Aedas and other reports on relocating the station, a coordinated redevelopment would generate additional private investment as well as making construction much easier. This in turn is likely to attract government support, as happened in Cambridge.

Private support will be crucial. One mechanism that would engage the land owners and attract private long-term or institutional investment is a bond that could fund land assembly and advance infrastructure, secured against expected income from land disposals to developers. A good example is for high density mixed uses at Eddington where £350 million was raised by Cambridge University, more than enough to redevelop Oxford Station as a new business and residential quarter. Achieving the necessary coordination of work on a number of different land holdings alongside major new infrastructure requires an organisation set up for the task. Though most of the 200 acres on either side of the railway line at Osney Mead and Oxpens is owned by the University and the City Council, there are major access issues to be resolved before the full value can be realised.

Once it is accepted that a comprehensive development is required around Oxford Station, then it should be clear that an organisation is needed with the necessary powers, capacity and focus. This could be on the lines of the London Docklands Development Corporation or the joint ventures used in fast growing French cities such as Grenoble and Montpellier or the public private partnerships used in cities such as Portland Oregon. Such an agency would assemble all the land and raise the funds needed to install the local infrastructure. It would borrow against the value of the adjoining land at much lower costs than any private developers. It would provide the essential driving force for a project of this scale and complexity.

17 Oxford Central West: report of a workshop, www.urbed.coop

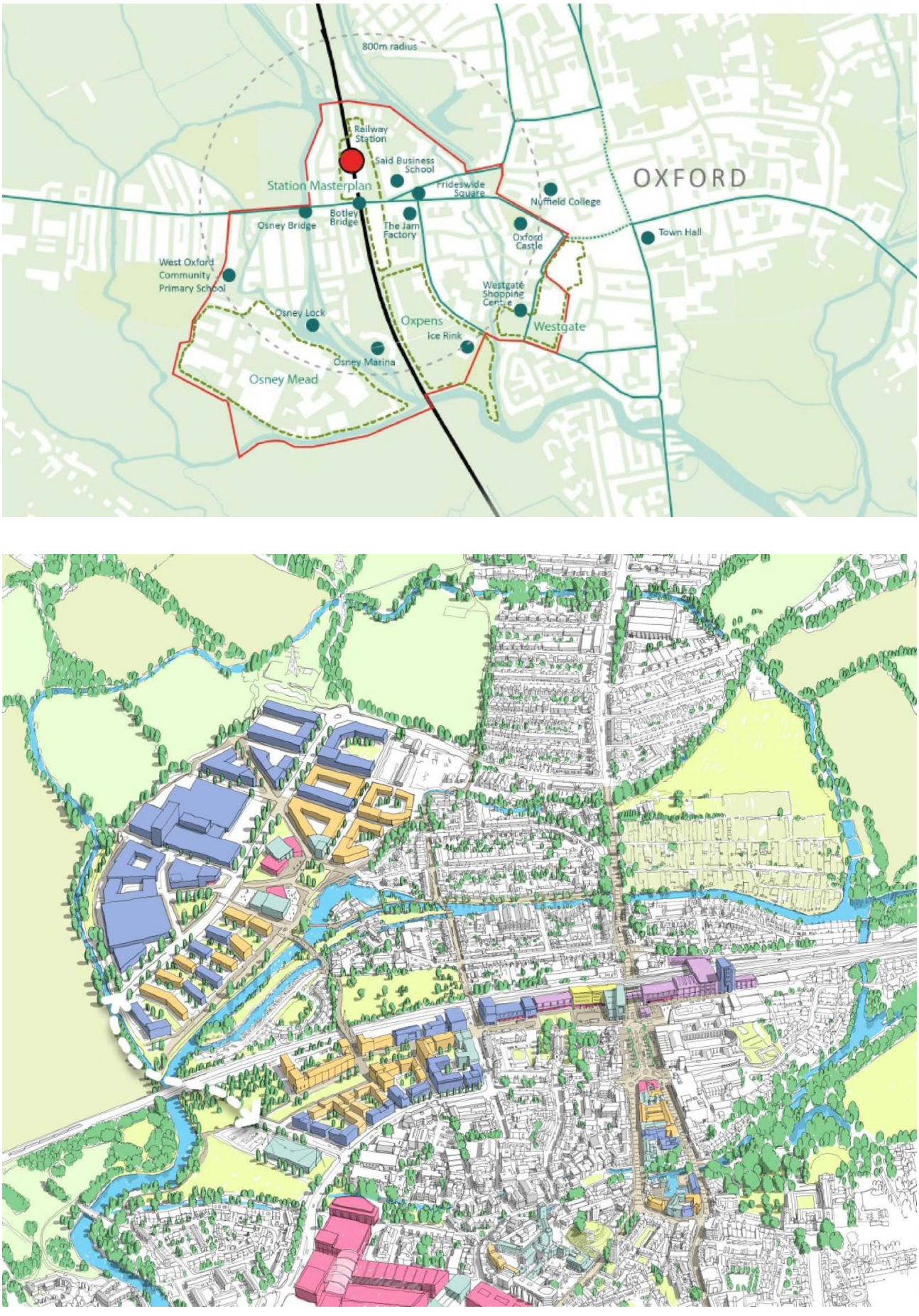


Exhibit 20: Oxford station could become a transport hub and business quarter

8. Conclusions and next steps

This report will have served its purpose if it enables the local authorities and others concerned with growth in Oxfordshire to proceed in a more holistic and effective way down what is inevitably a complex and unfamiliar route. But, as said in the original Oxford Futures report quoting the Chinese philosopher Lau Tzu, *'If we do not change direction we will end up where we are headed.'* He also memorably first said '*The journey of a thousand miles starts with a single step.'* It will therefore be vital to discuss and amplify the whole of this report, rather than getting entangled with the merits or failings of any one proposal or idea, and to agree some pilot projects.

The original report proposed an Oxford Futures Commission because it was unlikely that the authorities concerned could ever agree. It is interesting that Cambridge has already gone as far as setting up their Land Commission to map the availability of public and private land. Hopefully work on the new spatial strategy for Oxfordshire will include consideration of the possible modelling and decision-making approaches such as Geodesign.[1] A useful source of information is www.urbantransformations.ox.ac.uk.

However the area is not a blank canvas and it would be a waste to disregard work that has already been undertaken by both the local authorities and the wider communities. Consultations for the first report came up with the following principles which could well help to guide the Joint Spatial Plan:

- Develop in the right place and reduce car use
- Create balanced and healthier communities
- Build distinctive places
- Minimise environmental impact.

1 Nicholas Falk, Location, Location and Location: Funding investment in local infrastructure, Town and Country Planning, May 2017

A checklist of key issues

- Which criteria or objectives should be used to devise and assess strategic options for growth?
- What kind of delivery mechanism is needed to unite the different interests and stakeholders?
- What would be the impacts in terms of costs and value of different transport options?
- How much could be saved in terms of the cost of infrastructure through innovation, and through locating development closer to where jobs are concentrated?
- How should the projected uplift in land values (and risks) be shared to satisfy the different stakeholders, and through what devices?
- How should investment in development and infrastructure be phased and joined-up to secure the delivery of desired outcomes?
- How can the best value be secured from the coordinated development on land on either side of the railway at Oxford Station to kick start smarter growth?

Although the OCS and URBED very much welcome the JSSP and look forward to contributing to its preparation and implementation, there is concern that if a JSSP long term spatial strategy is built up from the development proposals in the current array of Oxfordshire Local Plans (LPs) (thereby 'validating' their deliverability and plus probably an 'extrapolation' of them over the subsequent decade) the JSSP would not be serving the purpose of providing an overall vision and strategy for the pattern and scale of development in Oxfordshire to 2050.

The Local Plan proposals have not been framed in the context of an explicit county-wide land use and infrastructure strategy but rather assume a 'business as usual' extension of the approach followed for the last decades. If this relationship between the Local Plans and the JSSP continues and is not reversed over several JSSP iterations and associated Local Plan revisions, innovation would be thwarted i.e. initiatives like the Swift Rail / Spine Line / Oxford Metro (as described in the report) which requires a re-orientation, not continuation, of development trends.

As well as getting the long-term future of Central Oxfordshire into better shape, some early actions will also be needed, which is why we come back to the huge unrealised potential of the area called Oxford Central West. This is some three times larger than the Kings Cross railway land, for example with the majority owned by Oxford City Council and the University. Whatever the hopes, there

is simply not enough development value in the station itself to fund the improvements to the railway lines let alone the kind of station that has been envisaged. But instead of looking at this as a transport project, competing with all the others up and down the country, the station should be seen as the centrepiece in creating a new business and research quarter for Oxford to vie with the international cities with which it now competes.

The principles for achieving quality, and the economic, environmental and social benefits set out at the start of this report could be tested out and applied to this one amazing opportunity, where early results could be achieved because of the predominant land ownership and accessibility. But already commitments are being made that could make it harder if not impossible to realise the kind of transport hub that is needed and that is currently possible. London Docklands was similarly neglected and problematic before the London Docklands Development Corporation was established. Neither Milton Keynes nor any of the post-war New Towns could have been built without setting up a body with the powers and resources to take a long-term and wider perspective than either a local authority or private developer can be expected to take.

Now as the National Infrastructure Commission has recommended is the time to experiment in Central Oxfordshire with a different approach that applies best practice from other countries. There is considerable interest within the National Infrastructure Commission and Treasury on how to tap the values created by development, and with Strategic Infrastructure Tariffs. The Department of Housing, Communities and Local Government says it wants to learn from German experience in pooling land[2]. Health and environmental experts want to reduce pollution and car dependence. Local authorities are looking for new ways of assembling land, and developing the needed housing. Long-term investors are interested in new financial vehicles, such as bonds, and have the funds ready to invest.

Before land values escalate still further, decisions are needed on a delivery mechanism that would inspire confidence in both government and the private sector. A vision of Oxford as a ***21st century garden city, connected by a high-quality transit system, the Oxford Metro,*** should be exciting enough to enable the diverse communities in one of our greatest historic cities to move forward together. It should also help sustain an important national economic asset and use the land available to respond to the huge international challenges the city and universities now face.

2 Fixing our Broken Housing Market, CLG 2017

This report has sought to show how progress can be made towards implementing a spatial development strategy that joins up new housing development with much needed transport infrastructure improvements. If Oxford and the rest of the CaMkOx arc are to play their role in contributing to the nation's future economic growth, a simple first step is to set up the mechanisms and appoint the board needed to navigate their way round all the obstacles, perhaps using some of the initiatives described in the report. The prizes would be really worth the effort.

Exhibit 20: Freiburg and Grenoble use development around the transport network to cut car use

Appendix A:
An integrated transport system for Oxford

Transport crucially shapes the way cities grow but tends to be a necessary not a sufficient condition for growth as the delays in developing Ebbsfleet on High Speed One next to the M25 in South East London illustrate. After winning the Wolfson Prize, URBED started to examine the transport options in more depth with assistance from transport planners Peter Headicar and Reg Harman and inputs from Andrew Pritchard.[1] The visitor to Oxford is struck by how the historic centre is overloaded with traffic, compared with university cities in Continental Europe or the USA. The bus system, while extensive, is quite confusing.[2] There is also acute congestion on the ring road, and the A34 which runs from the Midlands through to Southampton, has been called the 'longest car park in Europe'. The location of jobs creates unpredictable journey times round an arc to the East of the City with a number of roundabouts where long queues build up as cars await their turn at the lights. It is hard to see how autonomous cars would improve the situation.

Transport needs to be seen as an integrated system, a seamless web, as almost everyone needs to make a change somewhere, even it is only to walk from the parking lot to your place of work. There are therefore no intrinsic overriding merits in any one form, individual versus collective for example, but rather the system needs to support the urban form, and vice versa. In ranking alternatives it will be prudent to think in terms of cost-effectiveness, starting with what is easiest and cheapest and will make most difference. It is significant that Cambridge is now considering plans for growth that take account of a range of possible locations and transport modes, which shows that strategic spatial planning can be done, given the will and budget![3]

URBED's contribution to the County's emerging transport strategy suggested an integrated and multi-modal transport system called the Oxford Metro.[4] The term Metro refers to an integrated high quality multi-modal public transport system that can be accessed with a single card, like London's Oyster or the planned South Wales Metro, but can also refer to the area it serves. This could be implemented incrementally, as in the case study of Grenoble, or like the Docklands Light Rail system which was another of the models. Recognising the level of scepticism at the time, when the County Council said it lacked even funds to fix potholes, three main components were proposed that could be undertaken sequentially and phased with new housing developments so they formed conditions on growth.

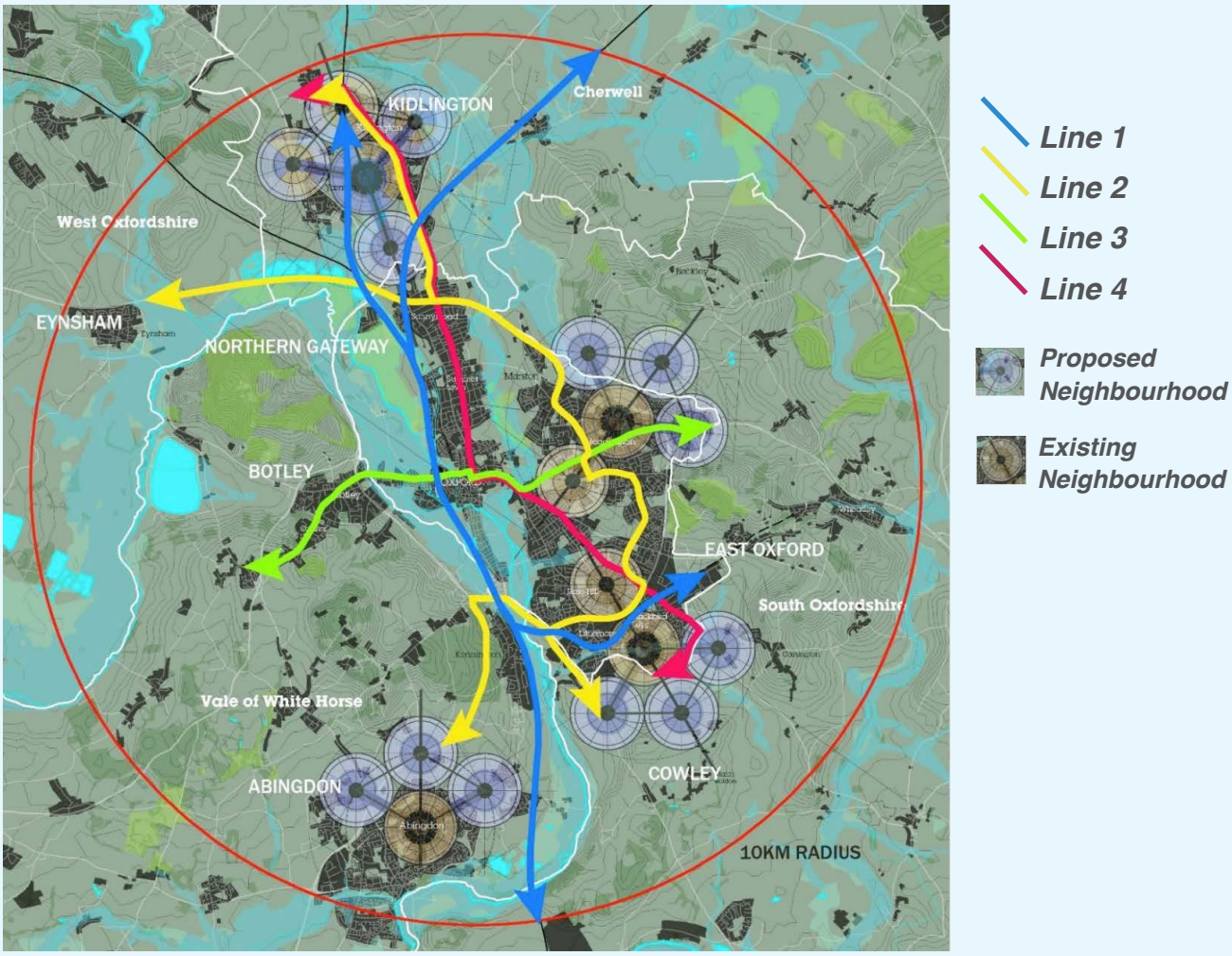
1 Andrew Pritchard is the Co-convenor of the OCS Transport Group

2 Wulf Daseking, former director of development in Freiburg, was appalled by traffic in the centre of Oxford

3 Steer Davies Gleave, Cambridge Rapid Mass Transit Options Appraisal, for the Combined Authority and Greater Cambridge Partnership, January 2018

4 Reg Harman and Nicholas Falk, Swift Rail and Historic Cities: Tramways and Urban Transit, January 2016

An integrated transport system would support balanced growth



URBED agreed on the need to create a new district with a series of linked quarters or neighbourhoods that would offer a fitting gateway to Oxford and complement, not compete with, the city centre:

a. Cyclists and pedestrians should have priority.

b. This probably requires some form of rapid transit.

c. To achieve quality requires development that is relevant and adaptable over time.

d. With a ‘big idea’ to hold it all together.

7.1. The SpineLine (the Blue line)

The first proposal is to run frequent suburban rail services in what the French would call a Metropole along existing and under-used railway lines. Local transport planner Peter Headicar had already proposed a system of enhanced local rail services, premium bus routes and purpose-built interchanges linked to current and proposed development areas.[5] Reg Harman and Nicholas Falk proposed the concept of 'Swift Rail' to achieve a modal shift in metropolitan areas through frequent services that do not require one to know the timetable and that would connect up under-served locations.[6]

The Spine Line has two elements, both of which run across the city, serving employment and development areas and adding to Park and Ride opportunities. The first element is an enhancement of the existing stopping service between Oxford and Didcot which operates as a self-contained diesel route following electrification of the remainder of the line between Didcot and London Paddington. This service would be extended to start back from a new station near Oxford Airport in North Kidlington with an additional intermediate station to serve the proposed development area east of Begbroke. To the south the service would be extended west from Didcot over the short distance to the business park at Milton Park via a disused line which formerly served Didcot Power Station.

The second element is an extension of the service from Bicester via Oxford Parkway to Oxford which was opened in 2016 as part of Chiltern Railways service from London Marylebone. This would continue south of the city over the former Cowley branch line with new stations at Oxford Science Park and BMW Oxford/Oxford Business Park. The former would also serve the long proposed urban extension South of Grenoble Road.

The Spine Line enhancements would add to the number of trains passing through Oxford Station where there are already congestion issues to be resolved (Plans exist for adding extra platforms as part of the station's redevelopment.) Different operating concepts could be adopted for the local services, including possibly tram-trains which worked in Karlsruhe and Kassel but which proved very expensive in Sheffield. These options could be evaluated as part of the retendering of the Great Western and Chiltern Railways franchises, and the new services would get the support of the Rail Regulator.

7.2.Bus/Rapid Transit (the Yellow and Red Lines)

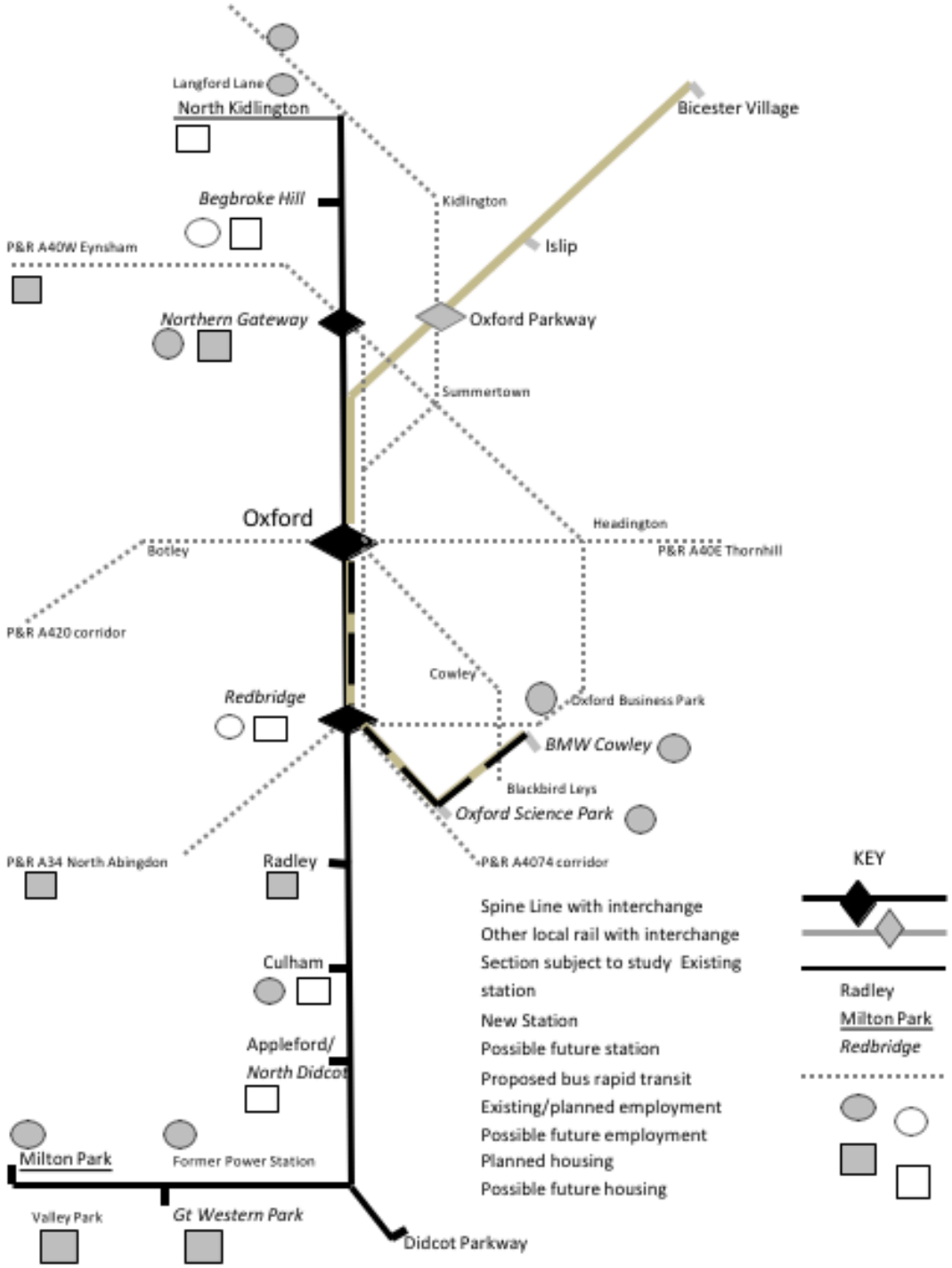
The second proposal, which the County favoured in its Transport Strategy[7], is to extend and progressively upgrade major bus routes into and through Oxford City to achieve 'rapid transit' levels of speed, reliability and passenger experience, principally through on-road prioritisation. One route – referred to here as the Yellow Line - connects the A40 corridor in the West and the A44 corridor in the North with the A4074 and A34 corridors to the South via an orbital route through the Eastern Arc of the city. The termini would serve new Park and Ride sites further from the city, thus reducing traffic volumes in the vicinity of existing sites near the Ring Road.

Elements of this proposal along the A40 between Eynsham and Wolvercote are currently being progressed

5 P Headicar A Strategy for Integrated Transport in Central Oxfordshire Paper to Transport sub-group of Oxfordshire LEP April 2013

6 Reg Harman and Nicholas Falk, Swift Rail and Growing Cities, Tramways and Urban Transit, January 2016

7 Oxfordshire County Council Local Transport Plan 4 2015



The Spineline would form the core of the first phase (Source: Peter Headicar and Reg Harman)

following funding approval from Central Government and bus priority measures in the east of the city are being introduced as part of the Access to Headington scheme. The second route – referred to here as the Red line – would operate through the city centre linking Oxford Airport and Kidlington in the north with Cowley and Blackbird Leys in the south.
Both these routes might modified or added to in order to serve major new suburban developments of the kind proposed elsewhere in this report, at which point the possibility of conversion to tram operation could be considered. This raises performance in terms of speed and capacity and is likely to prove more attractive to people who otherwise have the option of car use.

7.3.Street tram (The Green Line)

The third proposal, which would form the first line of a tramway system, grew out of an expert seminar at UCL back in 2015.[8] (This proposal replaces an east-west bus rapid transit route in the County Council's Oxford Transport Strategy). Trams have advantages when historic centres are pedestrianised and buses are seen as intrusive and unhealthy in town centres. The results of UCL's research on Tramtrains as well as experience in the UK such as in Nottingham confirmed the feasibility of introducing street trams if the City began to extend beyond its present administrative boundaries. Indeed this could be a condition for taking land out of the greenbelt and may enable buses to be used as feeders rather than blocking the historic centre, as they currently do. A preliminary study for us by Mott MacDonald suggested that a short East West line which served the main traffic generators such as the John Radcliffe Hospital complex and Brookes University could be viable before extensions were built, which would justify further analysis.

The line would start at the Seacourt Park and Ride site off the A34 Oxford ring road, where a depot could be provided on land that is not capable of development as housing. It would then run parallel with the Botley Road and open up the under-developed land at Osney Mead largely owned by the University thereby attracting private investment to enable a major commercial and research centre to be developed by the station, possibly justifying moving it a few hundred yards south towards to London. The line might readily cross the river and railway line through a new bridge that would not only generate development value by the station, but also save the expense of rebuilding the Botley Road Bridge.
A possible precedent could be the way Broadgate and Liverpool and Broad Street Stations were developed together, which greatly expanded the City of London.

Another relevant model is the way London Docklands has been extensively redeveloped around the Docklands Light Railway (DLR), which originally simply reused the viaduct that carried the old London to Blackwell Railway. But this requires either a public development agency that can take a balanced and longer-term perspective, or contracts that make development beyond a certain size conditional on the provision of upgraded public transport. However as this part of the Metro system would follow, not lead development, it does not affect the basic decisions that need to be taken now, but will affect future land allocations. The crucial point is that transport investment and large housing developments need to be considered together.

Most of the predictable objections to trams could be overcome, as for example, they

8 Trams for Oxford? Could light rail improve our historic cities, UCL and URBED, March 2015, www. Oxfordfutures.org

would not need overhead catenaries in the High Street, but would run on batteries there (as in Nice). If the first line were combined with measures to take buses out of the centre, starting with tourist coaches which currently clutter St Giles, it would have huge benefits for people's mental and physical health. Steel wheels on steel rails do not chew up the road surfaces as the power steering on buses do, and do not generate the health-eroding particulates associated with rubber-tyred vehicles in streets with lots of people in them. Such measures would enable Oxford to provide a comparable experience for visitors to say Heidelberg, which is connected to the high tech city of Karlsruhe as part of their extensive tram train system.

Before leaving transport a comment is needed on the potential impacts of new forms of transport, such as Autonomous Vehicles (AV) as well as the options of working and studying from home, and thus not having to travel at peak times. Unfortunately the UK seems have become besotted with the idea of driverless cars and trucks without recognising the very real constraints of suburban road layouts and the roundabouts that go with them. There is simply not the space in historic cities like Oxford to reverse long-standing policies aimed at reducing individual car use Furthermore the running is likely to be made by the German and Chinese car makers, and will be targeted at those who buy luxury vehicles and cruise for long distances down motorways. For the majority of urban travellers, shared modes such as buses or taxis will be much more attractive and affordable, encouraged by Apps that make it easier to hail a lift.

So research in British cities should go instead into ride sharing apps, and car clubs that support integrated transport systems. Innovative forms of suburban transport, can include adequate parking

Appendix B:
Tramways and light rail: where can lessons best be learned

This Appendix summarises findings that were presented at a symposium organised with the All Party Parliamentary Light Rail Group on February 27th, 2018. As the UK lags behind countries like France, which has built ten times the length of tramways over the past couple of decades, it is important to learn from cities that face similar challenges, but that plan and design light rail differently and that seem to have cracked the problems of planning infrastructure and development together. Historic cities such as Oxford can also learn from experience in Nottingham and Cambridge. As far back as 2008 study tours to cities such as Freiburg, Hanover and Stockholm found that how 'eco town' principles could best be applied through Sustainable Urban Extensions rather than new towns. These were linked to tramway systems rather than private cars.[1]

Nottingham

The APPLRG symposium drew on the experience of Nottingham and Cambridge. **Sue Flack** as Director of Planning and Transport at Nottingham City Council had been involved in planning the Nottingham Express Transit. She highlighted how the image of the city had been transformed through the trams creating a European feel in the centre. Indeed commercial properties are now being promoted as being 'near the tram'. The first line has become three, and consideration is now being given to extending further, perhaps as far as Derby (twelve miles away).

The Workplace Parking Levy was crucial in funding a third of the costs (something that both Oxford and Cambridge are considering). But even more important is having a unitary council behind the plan, and also getting the support of employers. '*You have to stick with your vision, and then deliver so that people believe in the vision'.* The Council was helped by the transport authorities being collaborative and locally based (though the bus company, an original partner, then lost the franchise, which has caused problems).

Cambridge

Lewis Herbert**,** Leader of Cambridge City Council, also leads on strategic planning in a city that he said is '*quite small but full of experts'*…. '*Local government is hideously complicated in the UK'*. The aim now is to link jobs and housing through better connectivity. 33,500 houses are planned with government investment promised of £500 million over 15 years to secure the economic benefits. The aim is to cut vehicles by 15% by 2031 (from about half to a third of movements through the *Cambridge Rapid Mass Transit* system). This requires cities to have much more control over their environment, and how their streets are used.

One important element will be a high-

1 PRP URBED and Design for Homes, Beyond Ecotowns: applying the lessons, PRP 2008 www.urbed.coop

Oxford's twin city, Grenoble, provides a good model

quality transit system in the centre, but linked to the surrounding satellites in a number of segments. The City has commissioned Options Appraisals and are looking into a *Cambridge Autonomous Metro,* which would run in tunnels under the historic centre, with 16 km of segregated routes, and might use wheels with tyres. Proposals from Connecting Cambridge would require £1.5 billion, so there is great interest in Land Value Capture, as well as with easier measures such as the Workplace Parking Levy, which is so far only used in Nottingham. The Council has just won a grant of £3 million to experiment with autonomous vehicles.

Grenoble, France

Probably the best model for Oxford is its twin city of Grenoble, which was the subject of a joint conference in Grenoble in November 2017 on promoting health and wellbeing, and was also involved in a symposium in Oxford on Growing Historic Towns, which was filmed. Grenoble was the first city in France to reintroduce trams after the Second World War, and has continually extended its system[2]. The basic principle used in planning French local transport systems is to connect up large traffic generators such as the main station, the hospitals and universities.

Trams are not assessed for their impact on traffic alone (as in the UK). Instead French planners see trams as central to upgrading the historic heart of their cities as trams enable street space to be given over to cafes or simply sauntering to look at the shops as they are quieter and less intrusive than buses, and can carry many more people. They are also used to connect up disadvantaged housing areas, or places where new housing is to be built,

2 Reg Harman and Nicholas falk, Developing Historic Cities: the case for an Oxford Metro, Tramways and Urban Transit, May 2015

as in Montpellier, for example, France's fastest growing city. There are cities far smaller than Oxford that are building tram lines, such as Tours.
Though between a quarter and a half the cost of introducing a street tram may go in rebuilding the streets and underground utilities, the benefits come from increased footfall, and hence property values for the businesses along the route, as the Nottingham example demonstrates. Larger employers in France contribute towards the costs through the *Versement Transport*, a charge on their local payroll, which makes the task of 'selling' investment in public transport much easier compared with relying on grants from national government. This amounts to 2.7% on those employing more than ten people in Paris, which helps explain their ambitious plans for suburban metro extensions in *Le Grand Paris.* Continental cities are generally much less dependent on central government for their finances, and benefit much more from the success of their local economies.

Freiburg

The medium-sized historic German university city of Freiburg provided some lessons for Oxford, when it extended its tram lines as the spines of the exemplary urban extensions at Vauban and Rieselfeld.[3] The uplift in land values from land the City acquired was ploughed back into building better neighbourhoods. The much acclaimed extensions at Rieselfeld and Vauban, along with other policies, helped the city of Freiburg reduce car use from a half to a third of all trips, as well as to provide more affordable housing close to where the jobs and services are.

Copenhagen

More recently Copenhagen funded its first Metro line from the uplift in land values from redeveloping a former army barracks at Orestad. It is now building a second line, drawing on land value uplift from redeveloping an old dock area. Copenhagen is the cycling capital of Europe with over 40% of trips by bike, made possible because cars no longer dominate the central streets. Copenhagen along with some other Danish cities has a split rate system for domestic property, and rates are levied on land with planning permission, which may well result in far less land lying dormant.[4]

Conclusions

Responding to the presentations and discussion, we were fortunate to have Dame Kate Barker, the noted economist. Kate is the latest member to join the Board of the NIC. Speaking unofficially she commented:

'We cannot fund all less well-off places at once, which means politicians have to choose a place, and whichever they choose will be faced with massive criticisms. But because we cannot do everything at once, that's not to say we shouldn't do anything.'

She went on to say that one of the biggest challenges is improving the prospects for the less fortunate places, and for the people who do the basic work to keep our city running, who need to live close to their jobs. There is understandable resistance to paying higher taxes to fund infrastructure, and so we do need to look at land values.

She favoured the development of urban extensions so that all kinds of people, not just scientists, could live closer to their work, and in more balanced communities. By developing an area of around five miles

3 See Freiburg the city that did it all in Peter Hall with Nicholas Falk, Good Cities Better Lives: how Europe discovered the lost art of urbanism, Routledge, 2013

4 Owen Cornellan ed. Land Value Taxation in Britain, Lincoln Institute, 2004

or ten kilometres from a city centre, better public transit systems, as well as cycling should be more viable (as in URBED's Wolfson Essay proposals). This may mean rethinking parts of our green belts, as there would then be no obstacle of 'Hope Value'.

The knowledge-based economies of Oxford and Cambridge are exceptionally valuable to the UK, and so should not be constrained. Hence, we need to find ways of convincing residents in the green belts that planned growth could be good for them.


The URBED Trust