Cambridge Cluster at 50

The Cambridge economy: retrospect and prospect

Final report to EEDA and partners

March 2011

SQW

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Executive Summary

Context and purpose

1. In May 2010, SQW was commissioned by the East of England Development Agency (EEDA) to examine the "*Cambridge Cluster at 50*". In commissioning the study, EEDA was supported by a wide range of local partners, including: Cambridgeshire County Council, Cambridge City Council, South Cambridgeshire District Council, Greater Cambridge Partnership, Cambridgeshire Horizons, the University of Cambridge (through the Institute for Manufacturing), St John's Innovation Centre and leading private sector representatives.

2. The purpose of the assignment was to analyse existing data and consult with businesses and other key stakeholders about the Cambridge economy, in order:

   - to understand better the performance of the Cambridge economy currently (including the impacts of recession), and the factors that underpin and explain this
   - to understand long term opportunities and threats for the economy of Cambridge, taking into account changes in government policy and also the different aspirations of new generations of Cambridge-based businesses and residents
   - to understand the potential synergies and conflicts that exist in relation to Cambridge's different economic roles, both now and looking forward
   - to examine the constraints to economic growth – infrastructural, workforce-related, spatial, attitudinal, institutional – and to distil what might be done to address these
   - to understand – in broad terms – the spatial implications of the above.

3. The main focus of the study was the high tech cluster, which includes the high tech firms, Cambridge University and related research institutions, and specialist services which are located in Cambridge principally to support these core activities. However, the client group agreed at the outset of the study that it would take a broader view of the Cambridge economy, and examine its different roles, including but extending beyond the high tech cluster.

The Cambridge economy today

4. Currently, the Cambridge area (including Cambridge City and South Cambridgeshire District)[1] has a resident population of around 265,000 people; it is home to around 153,000 employee jobs; and there are well over 10,000 businesses based in the area. On the basis of data from the East of England Forecasting Model (EEFM), the value of its annual economic output (GVA) is approaching £7.5bn (over 7% of the regional total) while GVA per job is

[1] For data purposes, we are defining the Cambridge economy as the Local Authority Districts of Cambridge City and South Cambridgeshire. In general, this study has not sought to adhere to a rigid definition of Cambridge: the focus is on the urban area (which falls within Cambridge City and parts of South Cambridgeshire) but where relevant and appropriate, reference is also made to the ring of market towns (Ely, Newmarket, Saffron Walden, etc.) and the wider sub-region

about £40k in Cambridge City and close to £45k in South Cambridgeshire (compared to the UK and East of England averages of around £37k). According to the 2010 UK Competitiveness Index[2], Cambridge is one of the five most competitive cities in the UK. Among local authorities, Cambridge and South Cambridgeshire are ranked 32nd and 24th for competitiveness out of 380 authorities nationally, with almost all those ranked as more competitive being located in London, Surrey and Berkshire (and in most cases due mainly to higher incomes). The Cambridge economy is therefore substantial, productive and competitive, and it contains institutions and firms of national, and in some cases global, significance.

5. Underneath these headline data, the Cambridge economy needs to be understood in relation to the five main roles it plays. All five are important, but the first two – which together comprise the high tech cluster - are likely to play a significant role in national economic recovery and growth, while others are concerned with servicing the local – but rapidly growing – population.

- Over the last 50 years, the area has developed a global profile and importance in terms of its **technology-based business community (Role 1)**. In the Cambridge area, there are about 900 high tech businesses employing in total about 37,000 people – close to a quarter of all jobs. In Cambridgeshire as a whole, the figures are 1,400 high tech firms employing 48,000 people[3]. They include some major businesses such as ARM and Autonomy which are global leaders in their respective fields; and also a large number of smaller enterprises, some of which are growing quickly. Within this context, there is a wide range of business models at play, some of which rely on angel and venture funding to develop cutting edge science, while others are more likely to finance their growth internally and incrementally. Overall, and despite the recent severe recession, the high tech community continues to grow and to innovate. The hard and soft infrastructure to support technology-based businesses is generally well developed, with networks playing a particularly important role in business growth. These are very varied, with social networking now a key part of the mix, and links often developed at three crucially important scales: locally, with London, and globally. The "culture" of Cambridge – where *"people go out of their way to be helpful"* – is really important in explaining the cluster's growth.

  However, there are also some weaknesses which may constrain future growth. These include a shortage of venture funding and housing and infrastructure constraints. The forecasts for the growth of the technology based business community are modest, although they need to be treated with some caution, particularly during a period of considerable economic uncertainty (for example, forecasts cannot predict the impact of disruptive innovations, such as the past emergence of biotechnology as a key driver of high tech growth in Cambridge). They suggest that over the next 20 years, employment and GVA will grow at little more than half the rate of the last 20 years[4].

[2] UK Competitiveness Index, 2010, Robert Huggins and Piers Thompson, Centre for International Competitiveness, Cardiff School of Management, University of Wales Institute
[3] Based on data for 2008 collated by Cambridge County Council Research Group
[4] Forecasts produced by Oxford Economics in March 2010. GVA is Gross Value Added, which is essentially the difference between inputs costs and output prices.

- Integrally related to the area's technology-based businesses is its **wider research community**, encompassing the University of Cambridge and various research institutes, many with genuinely world class science and research **(Role 2).** On virtually all global rankings, Cambridge University is consistently among the top five in the world. Over recent years, there has been substantial investment in facilities linked to the University and many of the research institutes – including development of the West Cambridge site for the University of Cambridge, Addenbrooke's Biomedical Campus (including new buildings for Cancer Research UK and the Laboratory for Molecular Biology) and expansion of the Genome Campus at Hinxton and the Babraham Institute. Further development of these assets is planned, including the expansion of the University into North West Cambridge.

  The links between Roles 1 and 2 are symbiotic and they have been very important with regard to the overall success and profile of the Cambridge area. For example, by 2005, 250 companies had been started on the basis of knowledge transfer from the University, including 175 located in the Cambridge area[5]. However these links have not always been straightforward; for example, over recent years, changing approaches to Intellectual Property within the University of Cambridge have been a source of some frustration.

- Cambridge has developed significantly as a **city centre economy (Role 3)** over the last decade or so as the centre has become a regional retail and business centre. Investment in the Grand Arcade catapulted Cambridge up the national retail rankings while maintaining the quality of the historic city centre. There have also been other significant developments, including Cambridge Retail Park (on Newmarket Road) and Cambridge Leisure Park (on the old cattle market site) which have complemented the established retail and cultural offer (linked to theatres, concerts, festivals and so on). All of this has been really important in terms of the "quality of life" and variety of facilities that Cambridge provides, and that in turn has proved very important in attracting and retaining what is, in part, a globally mobile workforce. However, there are concerns about the capacity of the central area to accommodate the range of businesses that want to locate there, and the impact on quality of experience of the ever-increasing number of people that want to use its services

- The last ten years have also seen the emergence of Cambridge as a **regional hub for the public sector (Role 4)**. Cambridge became the "capital" of the East of England region and it attracted a number of institutions as a consequence: the Government Office for the East of England, the East of England Development Agency, the Strategic Health Authority, and so on. With the change of government, many of these organisations are being abolished. However, most of the growth in public sector jobs has actually been in health and education. Together, these two sectors account for about 30% of total employment in the Cambridge area, with under 4% in public administration and defence. Based on current knowledge about the impact of the planned cuts in public spending, our best estimate is for a reduction of between 2%

[5] "The Impact of the University of Cambridge on the UK Economy and Society", Library House, 2006

and 4% of all employee jobs in the Cambridge area[6], and a slightly lower proportion in the rest of the county. This appears to be quite modest, but needs to be seen against the previous expectation that public sector jobs would contribute about one third of the net increase in employment for the Cambridge sub-area between 2008 and 2015[7]

- Finally, Cambridge has continued to function as an important **international visitor destination (Role 5)**. Although in some respects the "cinderella" of the economy – and an aspect that tends to be tolerated (at best) rather than supported locally – Cambridge's strengths in relation to tourism are important in understanding the area's current economic character. The fact that Cambridge continues to attract academics and business people from around the world is crucial in terms of its overall profile while international tourists – of all forms – provide a key source of income and one that is increasingly significant in relation to many of the Cambridge colleges as well as the commercial tourism (hotels, etc.) sector.

6. A key issue looking forward is how these different roles might all be accommodated and supported, recognising that they all have a claim on Cambridge as part of a balanced economy. While there are some synergies, there are also, undoubtedly, some dilemmas and tensions which will need to be resolved as the Cambridge area seeks to chart its future course. In considering how to address these dilemmas and tensions, the fundamental importance of the core Cambridge Cluster (including, crucially, the high tech firms, the University of Cambridge and related research institutes, but also other key players such as Anglia Ruskin University) to the future economic development of the area should be recognised. The other roles are important, both to businesses and residents, but they are secondary insofar as the Cambridge Cluster is likely to continue to be the main source of wealth creation for the area, and a significant contributor to national economic recovery.

Key issues looking ahead

The Cambridge Cluster as an international hub for the knowledge economy

7. Cambridge is a focus for globally significant science and its commercialisation, but it is competing with knowledge hubs across Europe and North America, and in emerging centres in countries such as India and China. In this context, central government needs to advance a policy framework that allows Cambridge and other UK hubs to compete effectively in what is an intensely – and increasingly – competitive sphere. From the consultations undertaken in the course of this study, five priorities which need to be addressed nationally were identified. Specifically, calls were made for:

- an effective *migration policy* that does not place restrictions on highly skilled or talented people from outside the European Economic Area seeking to work or study within the Cambridge area

[6] 4% of employees in the Cambridge area amounts to approximately 6,500 jobs
[7] The estimates of the impact of public spending cuts are based on research undertaken for this study and reported in Part B Role 4. The 'previous expectation' of growth in public sector jobs is based on forecast produced for EEDA by Cambridge Econometrics in January 2009.

- reforms to the *regulation of the healthcare sector*, particularly with regard to clinical trials, recognising that the UK now has one of the most stringent regulatory regimes in Europe which is seen by many as a deterrent to the growth of the bioscience sector

- reforms to *fiscal regimes*, including to encourage an increase in the volume of early stage investment finance (noting that the lack of finance is currently a real constraint to the growth of the high tech sector), and to support R&D, commercialisation and innovation

- continuing *funding for scientific research*, acknowledging that the strength of the cluster as a whole is premised in large part on the strength of the underpinning research

- linked to this, flexibility in terms of *research funding* with a stronger focus than hitherto on inter-disciplinary endeavour.

The Cambridge Cluster as a local place

8. As well as the national policy framework, there is a need to ensure that Cambridge itself – as a place – meets the needs of its businesses and residents, and in a way which supports continued growth of the high tech cluster. Across the roles that define the Cambridge economy currently, decisions with regard to the use of Cambridge – as a physical space – will have a bearing on future competitiveness. Specifically:

- there is a need to *recognise that "doing business" – particularly within and between emerging high tech businesses – is as much a social process as it is a narrowly economic one*; for this reason, designing and delivering new developments as social spaces – and not simply as physical locations for buildings – will be very important

- there is an urgent need to *improve connectivity between Cambridge railway station, the city centre and the principal employment sites* (Cambridge Science Park, West Cambridge and Addenbrooke's hospital site), acknowledging the strong demand for easy access to both the city centre and to London. A key element of this should be the development of a new station at Chesterton which also links into the Cambridgeshire Guided Busway. This would take some pressure off the city centre as a location for firms needing excellent access to London, and it would help integrate the Guided Bus and rail network, enhancing the value of both

- there is a need to develop an *holistic strategy and masterplan for the central area* which reflects and responds to the constantly increasing demands that the growing city-region places on a city centre whose quality is of paramount importance; and also to the changing nature of "doing business" in the 21st Century. The approach should be defined in relation to a series of "melting pots" such as those between scientific disciplines, different professions, and the interface between work and leisure.

Agenda for Action

9. Reflecting on these different priorities, a wide-ranging Agenda for Action has been developed. This ranges from lobbying government in relation to national policy and funding decisions and priorities, to actions which can be taken locally by the public and/or private sectors. Some elements of the Agenda for Action can be advanced quickly while others will take decades to implement; and whilst some will require substantial resources, others are more concerned with effective leadership and decision-making. Key themes within the Agenda for Action include the need:

- to fix the "funding escalator", recognising that it is currently not working effectively to support business growth
- to sustain Cambridge's profile in relation to globally excellent research, both within the University of Cambridge and in the public and private research facilities in the area
- to encourage, nurture and support the process of entrepreneurship, including through the provision of key social spaces for "doing business" such as St John's Innovation Centre and IdeaSpace at the Hauser Forum, and the development of networks such as for the Cleantech sector
- to refresh a range of planning policies and restrictions (including policies relating to headquarters operations and high value manufacturing) such that the Cambridge area as a whole is fully attuned to the process of "doing business" within a cluster which is both maturing and constantly evolving
- to make provision for key infrastructure, particularly in relation to housing and transport; within this context, supporting delivery of the planned scale and range of housing, and better connectivity between the city centre, railway station and key employment sites, ought to be the top priorities
- to sustain the quality of life that Cambridge provides, acknowledging that it needs to remain a place in which internationally mobile workers will choose to live and work. This includes the quality and range of city centre functions, and links within Cambridge and to London
- to ensure that growing businesses can recruit the workers they need, recognising a particular shortage of top quality management and marketing skills but also the imperative to attract internationally excellent professionals from all spheres
- to recognise and respond to the needs of key sectors within the cluster, both science-based and those that are concerned more with the "quality of life" that the Cambridge area needs to provide for residents and visitors alike.

10. This Agenda for Action is focused primarily on supporting growth of the high tech cluster, and ensuring Cambridge achieves more of its very considerable potential to contribute to the national economy. At present, there are real concerns that it will be prevented from doing so by constraints on business growth and a failure to match the strengthening offer of competing

locations. Many of these constraints are not new (indeed, some have been present for the last 50 years), although the recession and public spending cuts have accentuated some of the issues. It is essential, therefore, that the area receives support and investment from national government, and that the growth agenda which has been agreed by all parties locally is pursued vigorously but appropriately.

Towards implementation

11. In seeking to advance the Agenda for Action, various public and private sector partners will have important roles to play, both individually and collectively. This project was undertaken during a period of substantial change in institutional structures and reduced public sector funding, and as a consequence some organisations which would have played a major role in implementation are disappearing – notably Cambridgeshire Horizons and EEDA – whilst the role and resources of others – particularly the newly-formed Local Enterprise Partnership (LEP) for Greater Cambridge–Greater Peterborough and the Greater Cambridge Partnership – are still uncertain.

12. The creation of the LEP, with private and public sector support, provides an opportunity to work collectively, but it will need strong leadership to ensure some difficult but crucial choices are made, and to secure more investment, if the global strengths of the cluster are to be sustained. Equally, local business leaders and public sector organisations have vital roles to play individually to deliver many of the proposed actions. In addition, the Government's localism agenda suggests that securing the active support and talents of local communities will also be increasingly important.

13. The strength of the cluster lies in the strong relationships – many of a largely social nature – that exist locally, but also the cluster's strong and growing interactions with London and internationally. Hence partners need to look outwards as well as inwards, recognising that many of the businesses and institutions in Cambridge are competing on a global stage. At the same time, the intrinsic character of Cambridge must be sustained: it must be a place where people choose to live, work and do business, acknowledging that the boundaries between these different spheres are increasingly blurred; indeed this "blurring" – arguably – constitutes a primary source of the area's competitive advantage.

1: Introduction to the study

Purpose and objectives

1.1 In May 2010, SQW was commissioned by the East of England Development Agency (EEDA) to examine the "*Cambridge Cluster at 50*". In commissioning the study, EEDA was supported by a wide range of local partners including Cambridgeshire County Council, Cambridge City Council, South Cambridgeshire District Council, Greater Cambridge Partnership, Cambridgeshire Horizons, the University of Cambridge (through the Institute for Manufacturing), St John's Innovation Centre and leading private sector representatives. Together, EEDA and these partner organisations formed the study's steering group.

1.2 The purpose of the assignment was to examine the recent performance of the economy of the Cambridge area in the light of some mixed messages about its current health and future prospects; to understand the principal challenges and opportunities arising from it; and to consider its future potential and prospects in the light of the global financial crisis and the subsequent recession and public sector spending cuts. From the outset, however, it was agreed that *process* elements were crucial. Specifically, the study was intended to effect an informed dialogue with the business and academic/research communities about Cambridge's economic futures.

1.3 Drawing these two strands together, the objectives of this assignment were to engage businesses and other key stakeholders in an evidentially-robust discussion about the future of the Cambridge economy, in order:

- to understand better the performance of the Cambridge economy currently (including the impacts of recession), and the factors that underpin and explain this
- to understand long term opportunities and threats for the economy of Cambridge, taking into account, changes in government policy and also the aspirations of new generations of Cambridge-based businesses and residents
- to understand the potential synergies and conflicts that exist in relation to Cambridge's different economic roles, both now and looking forward
- to examine the constraints to economic growth – infrastructural, workforce-related, spatial, attitudinal, institutional – and to distil what might be done to address these
- to understand – in broad terms – the spatial implications of the above.

1.4 Consistent with these objectives, two key definitions were agreed from the outset:

- *Geography:* The principal spatial focus for this study was assumed to be Cambridge (defined as the physical footprint of the urban area). In terms of Local Authority Districts (LADs), the urban area falls within Cambridge City and parts of South Cambridgeshire – but this study was not about "lines on maps", and indeed many of the key issues and potential solutions are "cross boundary" locally and some also

have implications nationally. The wider functional economic geography of Cambridge extends beyond the city, and therefore – where relevant – reference was made to the other LADs in Cambridgeshire and in the Greater Cambridge Partnership (GCP) area, and the ring of market towns (Ely, Newmarket, Haverhill, Saffron Walden, Bury St Edmunds, Royston, St Neots, St Ives and Huntingdon). However, the coverage of this wider sub-region was not comprehensive: it was Cambridge rather than the sub-region which formed the principal focus of this particular exercise[8]

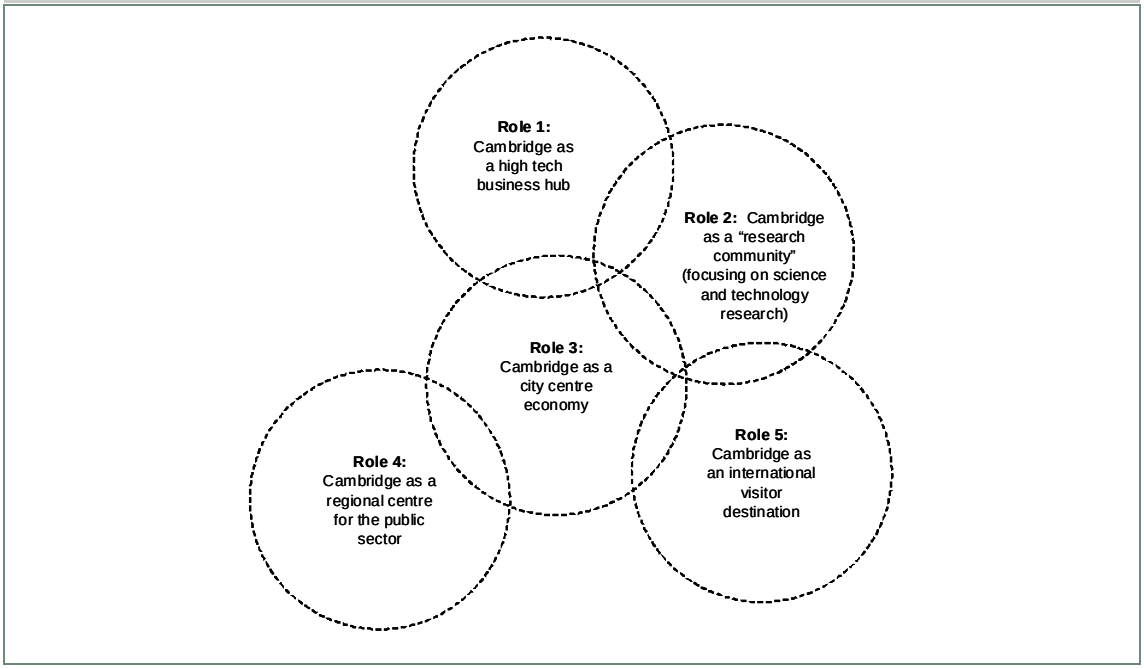
- *sectoral scope, etc.*: as "the Cambridge Cluster at 50", the title of the study indicated that the main focus was on the high tech cluster (including high tech firms, Cambridge University and the research institutes, and related specialist services). However the assignment was not concerned exclusively with high tech activity and the knowledge economy; it considered all of the main economic roles that Cambridge plays, and prospects and constraints in relation to them.

Approach

1.5 In approaching this study, it was agreed that Cambridge might most effectively be examined through the lens of five distinct "roles". These were identified on the basis of their economic significance (and validated both by data and consultations). These roles are summarised in Figure 1-1. All five roles say something functional about the Cambridge economy as it has evolved over the last fifty years. The roles vary in terms of their current and likely future significance to economic growth, but all need to be understood in terms of the relationship between business activity, institutional behaviour and – in one form or another – public policy. All five have a definable spatial footprint within Cambridge. And, to differing degrees, all five need to be understood in relation to a broader spatial canvass: some have an international rationale while others are focused much more on the growing local population (of both people and businesses).

[8] We understand, separately, that Cambridgeshire County Council is hoping to launch a review of the future roles of the county's market towns

Figure 1-1: Cambridge's key economic roles



Source: SQW

Note: (i) The "knowledge economy" is encompassed by both Roles 1 and 2; and (ii) no attempt is made in this diagram to quantify the relative importance of the different roles, or how the balance between them might be changing

1.6 However, as the diagram attempts to show, the roles have "permeable boundaries" and in that sense – although each has an implicit coherence – the different roles need to be used as a series of prompts, not as a rigid framework. In addition, all of the roles overlap although the nature of this overlap varies: sometimes it is synergistic (e.g. Role 1 and Role 2 are inter-dependent) but sometimes there may be tensions between different roles as businesses/institutions within them compete for "their part of Cambridge", whether this is defined in terms which are tangible (e.g. access to local workers, sites and premises, etc.) or intangible (e.g. how Cambridge is promoted on a global stage and branded).

Methodology

1.7 The study as a whole was divided into three broad phases of work:

- **Phase 1** was concerned with reviewing the existing evidence base as it relates to the wider Cambridge economy and completing a series of scoping conversations with key stakeholders. It culminated in a scoping report which was completed in July 2010 and discussed at a meeting with the Steering Group. Included within it were a number of propositions for testing during subsequent stages of the study

- **Phase 2** was focused on in-depth consultation, predominantly with businesses, members of the research community, and others within Cambridge who could make informed comments on each of the five roles depicted in Figure 1-1 and the propositions developed during Phase 1. Because of the intention to look forward rather than back, it included a particular (although by no means exclusive) focus on younger entrepreneurs – generally, individuals in their 20s/30s who were in the process of setting up and growing technology-based businesses. In total, individuals

from well over 60 firms/organisations were consulted on a bilateral basis. In addition, a number of workshop sessions were completed including: a grouping of early stage businesses which met at IdeaSpace; a group of manufacturing businesses which met at IfM; two groups of tenants from St John's Innovation Centre; and a meeting of businesses in East Cambridgeshire. We also attended meetings of the Greater Cambridge Partnership's operating and partnership boards at which emerging findings were presented and discussed. Phase 2 was substantively completed in October 2010

- Drawing together all of the preceding work and analysis, **Phase 3** was concerned with responding to the issues, challenges, blockages and opportunities identified in Phases 1 and 2, and developing an Agenda for Action for the future economic prosperity of the Cambridge area. Given the simultaneous institutional upheaval and funding uncertainties, this was intended to be a reasonably high level statement. Its purpose – in part – was to ensure that sight is not lost of the "big issues" facing Cambridge whilst the public sector is adapting to new funding and structural circumstances. Phase 3 was substantively completed at the end of 2010.

Report structure

1.8 The report that follows is divided into three main parts and it is also supported by a number of technical and supporting annexes:

- **Part A** provides an **overview report on the study as a whole** and it focuses on the big issues facing the Cambridge cluster as it looks ahead. It includes a high level Agenda for Action and it sets out some suggested next steps
- **Part B** contains substantive **reports on the five roles** that have been used to structure this exercise as a whole. Consistent with the study methodology, these rely largely on consultation evidence although, in all cases, we have sought to draw in secondary and other data in support. Each Role Report ends by distilling a response to the key questions identified during the scoping phase of the study
- **Part C** includes **three thematic reports**, focusing on key elements of the physical context for growth. It reflects on the availability of commercial land and premises; planning policies; and key issues relating to transport in the Cambridge area

1.9 There are, in addition, four technical and supporting annexes. These contain:

- an analysis of labour market and employment projections (Annex A)
- a detailed quantitative analysis of the high tech community (Annex B)
- a bibliography of the main documents used to inform the work (Annex C)
- a list of consultees and workshop participants (Annex D).

Acknowledgements

1.10 This study has benefited from significant inputs from around 125 people and organisations, and we would like to acknowledge them fully. This includes, most importantly, all those that were consulted bilaterally and/or attended workshops and other meetings during the course of the study (see Annex D). We would like to acknowledge the assistance of David Gill (SJIC), Peter Templeton (IfM) and Tim Minshall (IfM) in helping to convene a number of the workshop discussions. Tim Minshall, Walter Herriot and Charles Cotton have also provided further invaluable support in helping to navigate the high tech cluster more generally. Carter Jonas prepared the first Theme Report (in Part C), drawing on its extensive knowledge of the Cambridge property scene. Finally, we would like to thank EEDA and all the members of our Steering Group for the guidance, challenge, inputs and support they have provided throughout.

PART A: OVERVIEW REPORT

2: Characterising the Cambridge Cluster at 50

Introduction

2.1 Published in 1968, the first report of the East Anglia Economic Planning Council made the following observations with regard to the Cambridge sub-division:

> *Three facts of considerable significance for future planning stand out: first, the consistently high level of employment; secondly, the marked predominance of a few major industries in the manufacturing sector and the large numbers employed in professional and personal services especially in the University, colleges and hospital; and thirdly, the overall concentration of employment at the city of Cambridge with some induced growth recently at the edges of the sub-division. The construction of the M11 from London will add to the pressures for growth, which would be increased if ultimately Stansted were chosen as the third London airport.*
>
> *Future planning in this sub-division should take advantage of the important contribution that the numerous research and development activities in Cambridge can make to the national economy, and of Cambridge's further potential as a regional centre for offices and professional services, shops, entertainment and cultural activities, and as an international centre for tourism and specialist conferences. The major obstacles to this approach appear to us to be the immediate problems of labour shortage, because population and housing growth have not kept pace with growth in demand for labour; and the physical planning difficulties of preserving the architectural and historic environment*[9].

2.2 Reflecting back on the report of the East Anglia Economic Planning Council from approaching 50 years ago, three immediate observations need to be made:

- first, within the report, all five of the roles that have provided the analytical structure for this study were recognised and, to a degree, their subsequent growth was anticipated
- second, the intrinsic challenge of accommodating economic growth within a constrained physical environment – defined around invaluable architectural and historic assets – was well recognised
- third, the report notes that housing growth had not kept pace with growth in demand for labour – a problem which has persisted throughout the following 50 years.

2.3 So at one level – for Cambridge as an economy and as a place – nothing has changed: the economic roles of Cambridge are similar, as are the accompanying challenges. At another level, however, Cambridge is a fundamentally different place, and the global context in which it now operates has also changed substantially. Since the late 1960s, the resident population of Cambridge City and South Cambridgeshire has grown by about 100,000 – an increment of

[9] East Anglia: A Study – A first report by the East Anglia Economic Planning Council, 1968, HMSO – paras 153-154

around 40%. Connectivity has been vastly improved: the M11 has been built (as has the A14) and Stansted did indeed become the third London airport, but more generally, rail communications to London have been significantly upgraded and through high speed broadband, instant and continuous communication across the globe is now the norm.

2.4 Moreover – and most notably – the high tech community has grown substantially. The first report on the Cambridge Phenomenon in 1985 identified about 300 businesses. On the basis of data gathered by the Research Group at Cambridgeshire County Council, the number of people employed in high tech activities is estimated to have risen from about 31,000 to 48,000 between 1991 and 2008 while the number of businesses increased from just over 1,000 to about 1,400[10]. From a very early stage in their development, these high tech businesses are frequently global operations in terms of the customers they serve, ownership structures, investment decisions and the specialist labour markets on which they draw.

2.5 In charting the progress of Cambridge's high tech community, it is however important to note that the profile of growth across the high tech sector has not been without its "wobbles" over the 50 years. Commenting on the late 1970s, for example, Rob Koepp notes that:

> *The health of Cambridge's established high tech firms gave little indication that the area had a thriving technology cluster. At the time, not only Cambridge Scientific Instruments (CSI) but also Sinclair Radionics, a quirky but sometimes wildly successful local maker of calculators, personal computers, and assorted electronic gizmos, was being sustained by emergency financing and management from British government. Philips-Pye was entering a final phase of decline. Another highly regarded high tech enterprise, Cambridge Consultants Limited, had over-expanded and been close to dissolution in the early 1970s*[11].

2.6 A couple of decades later, Ionica – a spin out from the Generics Group – enjoyed a spectacular IPO when it was floated in July 1997 with shares trading at 390p and a market capitalisation worth just over one billion dollars. Just over a year later, administrators were called in and half of the firm's 1,200 staff were immediately made redundant. The dot-com bubble of the early 2000s also claimed some notable scalps. So the growth path has not been a smooth one – but much has been learned along the way.

2.7 In the remainder of this chapter – and as the backdrop to this Overview Report – we attempt to portray something of the character of Cambridge today, using the five roles depicted in Figure 1-1 as a vantage point. (Our comments here are intentionally brief; far more detail is provided in each of the Role Reports in Part B). We conclude this chapter by reporting on relative and absolute patterns of economic growth historically and we consider projections for the future.

Portraying Cambridge in 2010

2.8 Greater Cambridge includes some of the country's most significant assets. The combined strength of the research institutions and universities is unparalleled, and the current economic

[10] Figures are from unpublished data held by the Cambridgeshire County Council Research Group for Cambridgeshire. The latest published figures are for 2006

[11] *Clusters of creativity: enduring lessons on innovation and entrepreneurship from Silicon Valley and Europe's Silicon Fen* Rob Koepp, 2002 – page 166

contribution and future potential of businesses in the area is very substantial. On virtually all global rankings, Cambridge University is consistently among the top five in the world, and many of the area's research institutes have outstanding reputations (e.g. only 12 countries in the world have more Nobel prize winners than the Laboratory for Molecular Biology in Cambridge). According to the 2010 UK Competitiveness Index[12], Cambridge is one of the five most competitive cities in the UK. Among local authorities, Cambridge and South Cambridgeshire are ranked 32nd and 24th for competitiveness out of 380 authorities nationally, with almost all those ranked as more competitive being located in London, Surrey and Berkshire (and in most cases due mainly to higher incomes). In 'Cities Outlook 2011'[13], Cambridge is highlighted as one of the most recession-proof cities in the UK and one of the most likely places to lead Britain back to growth. On the basis of data from the East of England Forecasting Model, the value of the area's annual economic output (GVA) is approaching £7.5bn (over 7% of the regional total) while GVA per job is about £40k in Cambridge City and close to £45k in South Cambridgeshire (compared to £37k across the East of England as a whole). GVA is expected to increase to £10.8bn by 2020 and to £14.4bn by 2030, a much faster rate of growth than nationally, and to account for 1% of the UK total. Employment growth in the area is likely to be nearer 2% of the UK total[14].

Role 1: Cambridge as a hub for high tech businesses

2.9 In terms of its structure, Cambridge's high tech business community is best understood as a pyramid (or a series of pyramids) with a few large businesses and a plethora of smaller ones. On conventional metrics, relatively few businesses have achieved substantial scale yet, although the absolute number needs to be seen within the context of the size of the Cambridge economy. Evans and Garnsey[15] suggest that the cluster has grown just four firms of scale and that it has done so at a rate of one per decade: Domino, ARM, Autonomy and Cambridge Silicon Radio (CSR). All four of the firms identified by Evans and Garnsey, however, have genuine Cambridge pedigree:

- founded in 1978 as a spin-out from Cambridge Consultants, Domino sits at the heart of a sub-cluster linked to inkjet printing. Domino today employs over 2,000 people worldwide while Domino Printing Sciences (part of the wider group) has achieved turnover in excess of £200m
- formed in 1990, ARM was a spin-out from Acorn. Its business model has involved the designing and licensing of intellectual property (IP), rather than the manufacturing and selling of semi-conductor chips. It now employs 1,700 people worldwide and its headquarters are based in Cambridge
- founded in 1996 and initially operating from offices in St John's Innovation Centre, Autonomy specialises in the provision of infrastructure software. It currently has a market cap of $7bn

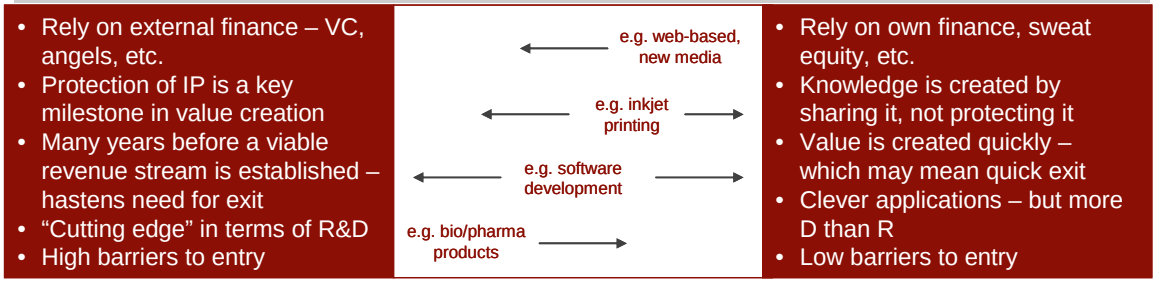
[12] UK Competitiveness Index, 2010, Robert Huggins and Piers Thompson, Centre for International Competitiveness, Cardiff School of Management, University of Wales Institute
[13] Cities Outlook 2011, Centre for Cities, January 2011
[14] Oxford Economics Regional Forecasting Model for the East of England, Autumn 2010 baseline forecast
[15] Evans and Garnsey (2008), *The Cambridge Cluster on the eve of the financial crisis, IfM*

- formed in 1999, CSR was a spin-out from Cambridge Consultants. It received early venture funding and first broke even in 2003. Following a successful IPO, its turnover was $253m in 2004 rising to well over $600m in 2009. Currently, it employs over 1,400 staff worldwide and its HQ is located on Cambridge Science Park.

2.10 In practice, Evans and Garnsey's assessment may understate both the number and rate of formation of large firms: one of our consultees with an excellent overview of the high tech business community suggested that seven $1bn companies have been created in Cambridge over the last 15 years – ARM, Autonomy, CSR, Cambridge Antibody Technology, Chiroscience, Selexa and Virata – although some of these have since been sold, reduced their presence in Cambridge or changed their name. And these firms are not the only ones of interest or consequence. The technology consultancies – including the four largest (Cambridge Consultants, PA Technology, TTP and Sagentia (formerly Scientific Generics)) and various others – continue to play an important underpinning role. Significant success is being achieved by the likes of Abcam, Cambridge Display Technology, PlasticLogic and Redgate among the more established businesses and by Owlstone, Cambridge Temperature Concepts, Light Blue Optics and Horizon Drug Discovery amongst the rapidly growing and very exciting portfolio of emerging ones.

2.11 In 2011 – perhaps as compared to 20 or 30 (and certainly 50) years ago – one of the most notable features of the high tech business community is simply its diversity. There is a tremendous sectoral mix - drug discovery, bioinformatics, software, computer hardware, electronics, ink-jet printing, computer games, clean tech and web-based new media all feature within the high tech cluster – and Cambridge has been at the forefront of the development of the technologies underpinning many of these sectors. Some of the high tech businesses are producing physical products but increasingly, many are not. In addition, there is a great diversity of business models which appear to stem, ultimately, from the relationship between the process of realising value and the nature of the scientific/technical knowledge (and the steps that are taken to protect it) on which that business is based. Some of these relationships are highly formalised while others are extremely fluid. From the vantage point of public policy, the diversity of these models is seriously important and they need to be understood properly for there is no such thing as a "typical Cambridge high tech firm". A simplified typology – and one that cuts across conventional sectors – is shown in Figure 2-1 below.

Figure 2-1: Business models within the Cambridge high tech community



Source: SQW

2.12 The left hand side of Figure 2-1 depicts what we might regard as the archetypal "Cambridge model". It is underpinned by genuinely "cutting edge" science and within it, the protection of Intellectual Property (IP) is a key feature. Typically, early stage business development relies

heavily on external sources of finance and in many cases, it is years – and sometimes decades – before a business can achieve a sustainable revenue stream and operate profitably. Within this model, the relationship between the business and the external financiers is absolutely critical – so much so that co-location (or at least real proximity) genuinely is very important. In Cambridge – over the last decade or so – we have seen the emergence of both a community of early stage business investors and the development of effective mechanisms through which they can be accessed. Business angel networks have become established and links to them – through, for example, business plan competitions within the University of Cambridge – have created a very effective "ecosystem".

2.13 This model is not perfect and it does have its critics. Latterly, progress has slowed because of the difficulty of securing exit in the context of poor IPO conditions; and this problem has been compounded by the retreat of much of the venture capital – as opposed to business angel – sector from Cambridge. Moreover, there is some suggestion that external investors have sometimes been brought in far too early with the result that timescales for realising value are much too short. The consequence may be badly misaligned incentives which often can only be remedied through premature trade sales. It is particularly in the drug discovery segment of the biotechnology sector that early trade sales are pervasive, a phenomenon that – in the eyes of many – is sub-optimal for the businesses, the science, and for Cambridge as a whole: these firms do not grow big and instead their IP is rapidly sold on, generally to one of the major pharmaceuticals companies. Because of this, Cambridge is in danger of being perceived simply as a research and development laboratory for the global pharmaceuticals sector: this may have benefits (e.g. a trade sale may lead to greater investment in R&D in Cambridge, as happened with Cambridge Antibody Technology), but it means that Cambridge risks being seen as peripheral to the corporate headquarters, where the big decisions for the future are made. Given the huge scale and potential growth of the global pharmaceuticals industry, a perception of peripherality could be damaging to investment and diversification in Cambridge.

2.14 Within Cambridge, there is however another model which is quite different in its structure, and which appears to becoming relatively more important, even for firms in sectors which traditionally would be expected to adopt the 'archetypal' model. Within this other model, the relationship between the business and "its knowledge" is very much looser; indeed, rather than protecting knowledge, the aim is to "get it out there" and to do so as quickly as possible. In this model, knowledge is created by being shared (essentially, an open innovation process), and underpinning it, there is typically a dense network of what the American sociologist Mark Granovetter describes as "weak ties". These may initially be entirely social and/or focused on technical problem solving, but they quickly morph into channels for recruitment, business development and routes to market. All sorts of networks have emerged informally within Cambridge, many of them supported by social networking media (Twitter, LinkedIn, etc.) and these seem to sustain themselves for as long as they are useful. Within this far more open business model – which seems to feature especially strongly within the web-based new media sector – speed is of the essence, value can be created very quickly, and there is a real sense of "can do". A prime example of such businesses is Redgate, a company which is influential in the high tech cluster as well as successful in its own right.

2.15 Soft starts - in which businesses start up informally, or can set up as consultancy operations initially in order to generate cash flow, before 'hardening' into product development - are typical of this second model, but are also increasingly common in sectors such as biotechnology. This may be partly due to deteriorating access to funding, but for some at least it is clearly a deliberate rather than forced choice.

2.16 Between the two extremes, there are many other models. For example, business models based on the licensing of key technologies appear to work well in a Cambridge setting. In its field, ARM is one of the most influential global firms but it has achieved this by licensing the production of its chips and securing royalties on their use, not by engaging in large scale production – or therefore large scale employment – directly. And there are examples of similar approaches in other sectors, including a few from within bioscience.

2.17 The conclusion, then, is that in the process of extracting value from knowledge, there is a great variety of models at work within the Cambridge cluster. Although they take different forms, many of them are founded on dense networks of "weak ties" which are intrinsically embedded within the local area even though the businesses themselves are – for the most part – genuinely global in outlook, operation and aspiration. For many of them, links with London are also important, particularly for finance, access to a bigger and specialist labour market, and research relationships. The paradox of the continuing importance of the "local" within a global high tech setting is vitally important for the future of Cambridge. Policy makers – locally and nationally – must take note.

Role 2: Cambridge as a "research community" (focusing on science and technology research funded principally by the public and charity sectors)

2.18 The continuing vibrancy of the Cambridge high tech business sector is fuelled in no small part by the scale and excellence of the wider research community. This "matters", arguably, at two different levels: first, there is the science itself, but second, there is the impact on the character of the labour market in and around Cambridge. The high tech business sector and the research community overlap in important respects and the relationship between them is central to the cluster's character and performance.

2.19 The most important observation with regard to Cambridge's research community is a very positive one. Cambridge University remains one of the world's best universities, and recent years have seen very substantial investment in both the University and other research institutions – for example, in West Cambridge, in the new buildings for the Laboratory for Molecular Biology and Cancer Research UK within the Addenbrooke's Biomedical Campus, the Genome Campus at Hinxton, at Babraham, and so on. The facilities that now exist within the Cambridge area are very impressive and – used appropriately – they ought to secure Cambridge's global positioning in science and the commercialisation of science. The priority now must be to exploit this investment to full effect, recognising that harnessing the benefits will require a strong policy framework which is implemented with real purpose and conviction, both locally and nationally.

2.20 However, the two domains have not always been "as one". Some entrepreneurs have expressed concern about the changing stance of the University of Cambridge with regard to Intellectual Property. In essence, the University has moved from a very liberal regime to one

which is more restrictive and in managing the University's interests in IP, Cambridge Enterprise has played a key role. For the entrepreneurs – and perhaps more especially the investors and business angels – any rules and restrictions in the exploitation of IP are a good bit less desirable than virtually none; and to make the point, evidence was cited of a significant decline in spin-out rates as the IP regime was changing[16]. Subsequently, however, the new arrangements appear to have settled down.

2.21 In addition – and separately – there has been some frustration surrounding the apparently inflexible stance of the University in relation to the use of its assets by would-be start-ups: why can't un-used or under-used laboratory space simply be made available free of charge? The answer to this question may rest in part on institutional inertia, but equally important are the rules within which the University itself must operate and frequently, these are not fully understood: commercial use of property, for example, changes its VAT status and this, in turn, has significant cost implications.

Role 3: Cambridge as a city centre economy

2.22 In the past, Cambridge's city centre offering has tended to be seen as quaint but somewhat out-of-kilter with a population which is growing in number and demanding in terms of its requirements. In part this has been caused by a city centre geography which is constrained both by a high incidence of historic buildings and open spaces, and by a very complex land ownership structure in which various colleges and the University feature strongly. Understandably, their property is used primarily to support their academic purpose, but this may not always coincide with the best interests of the wider local economy (part of the historic "town and gown" conflict). Latterly, however, there has been significant investment, most notably in the Grand Arcade (which took years to develop but has subsequently seen Cambridge rise rapidly up the national retail rankings) and in leisure amenities, particularly in and around the old cattle market site. As a consequence, Cambridge's city centre offer, although disparate, is greatly improved and it is now, arguably, commensurate with a city of its size, and in some respects much better (e.g. the cultural offer, including theatres, concerts, festivals and the like, is more extensive and diverse than most UK cities of the size of Cambridge, and certainly those within little more than an hour of central London). Nevertheless, continued growth of the catchment area, and increasing expectations, mean there will be a need for continued improvement in the city centre offer.

2.23 The difficulty of achieving this continual improvement is compounded by the fact that the central area is spatially fragmented, which in turn is creating real challenges in terms of access and coherence. Moreover, there is significant demand for office space within the city centre; this stems from the financial and business services sector (as might be expected) but also from the high tech and research communities. Of great symbolic importance in this context has been the announcement from Microsoft of its intention to relocate its research facility from a prime site in West Cambridge to a more central location close to the railway station and within the CB1 development. Its reasons for moving include better access to London; the need for a bigger site; and the preference of its staff for a city centre – rather than

[16] See Creating the climate for innovation: The Cambridge Phenomenon – Jack Lang, University of Cambridge www.proinno-europe.eu/.../Creating_the_climate_for_innovation__The_Cambridge_Phenomenon.pdf

(effectively) a business park – location. Microsoft's decision has challenged the premise of planning policy within the city, this restricts users of office space from occupying space designated for R&D but – as with Microsoft – planning policies are powerless to influence moves in the opposite direction. More generally, the planning framework makes little or no provision for corporate HQ functions within the central area, yet as the cluster matures, it is in this domain that greatest demand may well emerge (for example, see paragraph 2.13 regarding concerns that Cambridge may miss out on investment because it is seen by the global pharmaceutical industry as solely as a location for R&D). With difficult access issues and complex land ownership structures and 'town and gown' relationships, development processes are slow, and the existing planning framework needs to evolve to respond to the functional evolution of wider cluster's growth dynamic: if high tech firms succeed in becoming large corporate players, many will want their head office functions to be located in city centre locations And as the high tech sector and other parts of the Cambridge economy demand more business, financial and professional services, there will not be enough general office space in central, accessible locations to meet this demand There is available Grade A space on the Science Park and in West Cambridge (see Theme 1, Part C) but this has restrictive use clauses, and there is very little space in the central area. CB1 will provide some accommodation but there are likely to be serious capacity issues within a five year timeframe.

2.24 In the rest of the Cambridge sub-region, there are concerns that Cambridge city will continue to capture an increasing proportion of retail spend, and that only those town centres with a highly distinctive offer (e.g. around heritage, as in Ely, Bury St Edmunds and Saffron Walden, or because of accessibility improvements, such as at St Ives once the Cambridgeshire Guided Busway is operational) may be able to retain their current range of facilities and services. However, the market towns are unlikely to benefit from constraining the growth of retailing in Cambridge, which is in competition with other major centres such as Milton Keynes and Norwich.

Role 4: Cambridge as a regional centre for the public sector

2.25 Over the last decade, Cambridge has emerged as the regional capital for the East of England; the Government Office, Regional Development Agency, Strategic Health Authority, Arts Council England–East, the East of England Regional Health Observatory and the Homes and Communities Agency have all established a substantial physical presence, mainly in locations on the edge of the city. With the austerity programme announced by the new government, some of these organisations will be abolished and others will be significantly down-sized.

2.26 However, most public sector jobs in the recent past have not been in public administration, but in education, and health and social care; together, these two sectors accounted for about 30% of employee jobs in Cambridge and South Cambridgeshire in 2008. These are less vulnerable to public spending cuts, but they are certainly not immune; for example, Addenbrooke's Hospital has announced that 500 jobs will go over the next three years, and Cambridge University has launched a voluntary redundancy scheme across the whole institution. Although the full implications of the announcements in the Comprehensive Spending Review for public sector spending in the Cambridge sub-region have still to be worked through, our initial estimates suggest that planned public spending cuts will result in

the loss of between 2% and 4% of all employee jobs in Cambridge and South Cambridgeshire, and a slightly lower proportion in the rest of the county. Recent announcements such as those mentioned above and others by Cambridgeshire County and Cambridge City Councils, suggest that an impact towards the upper end of this range is likely (a reduction of 4% is equivalent to around 6,500 jobs in the Cambridge area). This needs to be seen against the previous expectation that public sector jobs would contribute about one third of the net increase in employment for the Cambridge area between 2008 and 2015[17].

Role 5: Cambridge as an international visitor destination

2.27 The first report of the East Anglia Economic Planning Council published in 1968 recognised the importance to Cambridge of international tourism and specialist conferences; on this front at least, little has changed over the last 43 years. Tourism remains a key part of the local economy, accounting for 6% of employment in Cambridge and South Cambridgeshire combined, and generating approximately £350m of expenditure in 2007 (according to the Cambridge Economic Impact Model" used by East of England Tourism). Nevertheless, tourism is met with ambivalence at best, particularly insofar as it impacts on the city centre.

2.28 However, visitors provide an important source of income and contribute to the vibrancy of the city centre. Cambridge colleges are increasingly active in the provision of B&B accommodation and in the conference market (college turnover deriving from the conference market amounted to nearly £30m in 2008/09). Despite some significant recent investment in hotel capacity within Cambridge, there is consistent evidence[18] to suggest that the market for larger conferences (above 300 delegates) in particular is under-provided for currently: development plans for both Cambridge Science Park and the Addenbrooke's Biomedical Campus make specific provision for hotel/conference facilities, but not at this scale.

2.29 For Cambridge as a whole, international visitors are important – whether they are academics, business people, students or tourists. Their experience of Cambridge is integral to the city's positioning on a global stage. The economic contribution of visitors deserves more sympathetic recognition.

Inter-relationships between the roles

2.30 Many of the most complex issues concerning Cambridge in 2011 and into the future are at the interface between these different roles. These interfaces are both positive and negative. The most obvious positive one - which has numerous dimensions - is between the high tech business and research communities. However, others include the opportunity that the relocation of some University departments to West Cambridge, and the reduction in some public sector functions, may offer for expansion of other uses, and benefits that visitor spend generates for the colleges and for the range of city centre retail and cultural facilities and activities. There are, of course, also problematic interface issues, some of which have already been mentioned (e.g. concerns about the effect of the University's changing policies regarding Intellectual Property on the number of business spin-outs).

[17] Cambridge Econometrics forecasts, January 2009
[18] For example, the 2008 report by Cambridgeshire Horizons on conference provision in Cambridge

2.31 There is a strong spatial dimension to conflicts between different roles, with a particular focus on the city centre. This is the location of choice for retail, leisure, financial, business and professional services and a substantial number of high tech firms. It continues to be the sole or primary focus for most visitors to greater Cambridge, despite active promotion of the wider area. The future of the city centre is therefore crucial, but equally it is important to make other parts of the city more attractive to take some of the pressure off the central area.

2.32 A key challenge for the future will be to ensure the benefits of the interfaces are captured, and the conflicts minimised. But where conflicts cannot be avoided and choices are inevitable, they should be made with a perspective that the health of the high tech cluster is likely to be of greatest importance to the Cambridge economy in the long term.

Historical patterns of economic growth – and projections for the future

2.33 A key question in relation to the five key roles and their inter-relationships is what the balance has been between them in driving forward Cambridge's economy over the last 50 years, and how might this change in the future.

2.34 These questions are very difficult to answer. In part, they are hard because the roles do not translate neatly into standard sector-based definitions and data sources. Historical data are insufficiently robust to build a 50-year time series while modelled projections and forecasts also have their limitations. Nevertheless, using data produced by Oxford Economics on the basis of the East of England Forecasting Model (EEFM), we have tried to look backwards to 1991 and forwards to 2030 in relation to both employment and GVA. Data for 1991-2008 are historic (and therefore "real"); while those from 2008-2030 are modelled. The forecasts were prepared in March 2010. They therefore take account of the effects of the recession and anticipate some reductions in public sector employment, but not the full impact of decisions made by the Government in the Comprehensive Spending Review in October 2010. The results from this process are summarised in the tables that follow.

Table 2-1: Baseline (2008, '000 jobs) and annual growth rates in employment, 1991-2008 and 2008-2030 across the different Roles[19]

	City & S Cambs	City & S Cambs	City & S Cambs	County	County	County
	2008 Baseline	1991-2008	2008-2030	2008 Baseline	1991-2008	2008-2030
Sectors at the core of high tech (Roles 1 and 2)	28.2	2.3%	1.5%	44.2	1.7%	0.9%
Sectors linked to city centre functions (Roles 3 and 5)	45	2.1%	1.8%	83.5	2.3%	1.2%
Sectors linked to the public sector (Role 4 - plus elements of Role 2)	54.8	2.2%	1.2%	93	2.9%	1.0%
Sub-total - 3 sectors	128	2.2%	1.5%	220.7	2.4%	1.0%

[19] Note that as defined here, the allocation of sectors to roles is mutually exclusive (i.e. no sector is attached to more than one role). A different approach was adopted in the context of Part B of the report

	City & S Cambs	City & S Cambs	City & S Cambs	County	County	County
	2008 Baseline	**1991-2008**	**2008-2030**	**2008 Baseline**	**1991-2008**	**2008-2030**
Total economy	**175.2**	**1.7%**	**1.3%**	**328.6**	**1.9%**	**0.9%**
Rest of the economy	47.2	0.6%	0.6%	107.9	1.0%	0.7%

(Source: Oxford Economics)

Table 2-2: Baseline (2008) (£bn at 2005 prices) and annual growth rates in GVA[20 21], 1991-2008 and 2008-2030 across the different Roles

	City & S Cambs	City & S Cambs	City & S Cambs	County	County	County
	2008 Baseline	**1991-2008**	**2008-2030**	**2008 Baseline**	**1991-2008**	**2008-2030**
Sectors at the core of high tech (Roles 1 and 2)	1.5	7.4%	3.9%	2.2	6.7%	3.5%
Sectors linked to city centre functions (Roles 3 and 5)	1.4	4.5%	4.4%	2.3	4.5%	3.7%
Sectors linked to the public sector (Role 4 - plus elements of Role 2)	1.7	3.4%	2.0%	2.7	3.6%	1.8%
Sub-total - 3 sectors	4.7	4.8%	3.4%	7.2	4.7%	3.0%
Total economy	**6.6**	**4.5%**	**3.2%**	**11.0**	**4.4%**	**2.8%**
Rest of the economy	1.9	3.9%	2.4%	3.8	3.9%	2.4%

(Source: Oxford Economics)

2.35 The tables suggest that in 2008, the five roles together accounted for close to 75% of employment in Cambridge/South Cambridgeshire and 67% of employment across the county. The corresponding figures with regard to GVA were 71% and 65% respectively. On this definition, activities linked intrinsically to Role 1 and elements of Role 2 accounted for 16% of employment in Cambridge/South Cambridgeshire and 23% of GVA (suggesting notably higher levels of productivity than for the economy as a whole); the corresponding county-level figures were 13% and 20% respectively. We estimate that the economy linked to Cambridge's city centre functions (Roles 3 and 5) accounted for a higher share of employment (26% in Cambridge/South Cambridgeshire) but a lower proportion of GVA (21% in Cambridge/South Cambridgeshire).

2.36 With regard to the dynamics of change, over the best part of two decades the two tables suggest further that:

- in terms of employment, all five roles grew at a similar rate, and faster than the economy of Cambridgeshire as a whole. This tends to confirm views expressed elsewhere[22] that the Cambridge economy has proved relatively resistant to recession

[20] GVA is Gross Value Added, and in essence is the difference between input costs and output value.
[21] Note that the GVA data presented is this table are different from those elsewhere in this report. This is because the data here rely on a particular definition of GVA (which excludes GVA deriving from the ownership of dwellings (and is therefore lower)) and because the data are in 2005 constant prices

- in terms of GVA, there were marked differences between the roles: the value of output from high tech sectors – Roles 1 and 2 – grew much more quickly than the economy as a whole whereas growth linked to the public sector was much more sluggish.

2.37 Conversely, looking forward:

- the most rapid growth in both employment and GVA is projected in activities linked to city centre functions (retail, hotels & catering, personal services, etc.)
- the high tech sector is projected to grow more slowly than in the past in relation to both GVA and employment; however the rate of growth remains faster than that for the economy as a whole
- very modest growth is projected for both GVA and employment in the public sector (Role 4).

2.38 The forward projections should be treated with much caution: they are trend-based and modelled data reflecting "business as usual" assumptions. They suggest some level of rebalancing within Cambridge – away from Role 4 and towards other roles in which the private sector features more prominently. It is also important to note that in the past the Cambridge area has benefited from various unanticipated disruptive innovations, such as the emergence of biotechnology as a major factor influencing growth of employment and GVA, and the collapse of the UK microcomputer industry and its spin off benefits (e.g. the formation of ARM). These changes would not have been captured by econometric forecasts at the time.

2.39 However, on "business as usual" assumptions it is Roles 3 and 5 (city centre functions), rather than Roles 1 and 2 (the high tech cluster), that look set for the fastest rates of growth going forward (particularly when measured in terms of employment). In thinking through the future of the Cambridge cluster, it will be important to formulate an appropriate response: the forecasts suggest that Cambridge may not have been making the best use of its knowledge-based assets, and that there needs to be some re-balancing away from consumption-oriented city centre functions and towards outward-looking high tech and knowledge based activity. Arguably this is a microcosm of the UK situation, but the potential of the high tech cluster in Cambridge is such that actions to reverse its forecast drop in the contribution to growth are critically important to both local and national economic and employment growth and clear leadership is required.

[22] For example, "Cities Outlook 2010", Centre for Cities, January 2010

3: Overarching themes for the next 50 years: the Cambridge cluster in national and global space

Introduction

3.1 One of the most important observations with regard to the Cambridge Cluster at 50 concerns the extent to which it is formatively defined in both national and global space. This observation is crucially important in respect of the high tech cluster, and also in relation to tourism (Roles 1, 2 and 5). The future success of the Cambridge Cluster will depend on the effectiveness with which Cambridge-based firms and institutions – and indeed Cambridge itself – are able to operate at these scales.

The global perspective

3.2 High tech businesses are frequently global operations from the outset, certainly in terms of the customers they serve and sometimes with regard to recruitment, financing and operational structures. During our consultations, we were told of one Cambridge-based firm that had commercialised technology developed within the University of Cambridge and then grown its business on the back of contracts with the US military. Another – very small – enterprise had used its Cambridge-based networks to secure early clients in Mexico while it operated through an internationally networked model which was shaped by the home locations of its key staff; it saw itself as a "Cambridge firm" but in truth, its Cambridge presence was very limited. A third firm – from the bioscience sector – was seeking to develop operations in continental Europe in order to benefit from what it regarded as a far more accommodating regulatory regime.

3.3 In addition, many technology-based firms within Cambridge are internationally owned; this includes obvious examples (e.g. Microsoft, Nokia) but also a good many less well-trumpeted ones. For businesses of this nature, Cambridge (as any remote location) can quickly fall out of favour – for example, Kodak's European research facility on Cambridge Science Park was closed just four years after it opened. However, foreign ownership can also bring significant benefits: for example, the acquisition of Cambridge Antibody Technology by AstraZeneca in 2006 led to more investment than is likely to have occurred had the business remained independent, and resulted in the company more than doubling its space at Granta Park.

3.4 More generally, for most firms in the high tech sector, Silicon Valley remains the real powerhouse and – particularly with regard to larger scale and riskier finance – its influence is immense: most business leaders with aspirations for real growth spend a great deal of time in Silicon Valley and many expect to establish some kind of physical presence there. Moreover it is the US market that remains the main driver for most technology-based firms – the growth of China, India and the other BRIC countries notwithstanding.

3.5 For the University of Cambridge and the major research institutions, the global arena is equally important. Labour markets and recruitment are genuinely global as is the reach of the research in which they are engaged. Much of it is advanced collaboratively, and in this context, Cambridge needs to retain its pre-eminence as a global centre for science. Recently published global university rankings suggest that it is currently holding its own – but the competition is relentless.

The national perspective – and the importance of links to London

3.6 The Cambridge cluster – and the challenges and threats it is facing – also needs to be understood within a national setting.

3.7 Of greatest importance in this regard is its relationship with London. A genuine world city and just 45 minutes away, the character and performance of the Cambridge cluster is inherently shaped by its relationships with London – in particular, by links relating to labour markets, science and finance. These relationships have grown and deepened significantly over past decades and are likely to intensify further.

3.8 In many respects, Cambridge shares London's labour market and this is a source of enormous competitive advantage: commuting from Cambridge to London may not be desirable, but it is perfectly feasible and – particularly where there are two careers to accommodate within a household and/or where joining a new high tech start-up is less than a secure career move – it is one reason why Cambridge is managing to attract top talent. Moreover – as we were told during our consultations – London offers what Cambridge never will: the buzz of a really big city. For younger entrepreneurs in particular, this can be irresistible; but in this context, examples were evidenced of reverse commuting from London to Cambridge within the younger high tech fraternity. London also offers Cambridge access to specialist marketing and management skills which are difficult - some consultees would say impossible - to source locally. In effect, the shared labour market means that Cambridge benefits from (and contributes to) the agglomeration effects that are generated by a very much bigger city; whilst not without its downsides, the impact in terms of the competitiveness of Cambridge-based businesses appears to be overwhelmingly positive.

3.9 Science and research links between Cambridge and London are also strong and growing. In April 2010, One Nucleus was formed from the merger of the Eastern Regional Biotechnology Initiative (ERBI) and the London Biotechnology Network; the new organisation spans 60% of the UK's life science industry base, four of the UK's five Academic Health Science Centres and three of the world's top universities. Moreover, austerity notwithstanding, plans for the UK Centre for Medical Research and Innovation at St Pancras – a £600 million joint venture by the Wellcome Trust, the Medical Research Council, Cancer Research UK, and University College London – were given the green light in the Comprehensive Spending Review in October 2010. The new Centre is due to be completed in 2016, by which time the development of the Biomedical Campus at Addenbrooke's Hospital should have made substantial progress. The fact that these two major initiatives are – literally – 45 minutes apart represents a tremendous opportunity and it is one from which Cambridge ought to be able to benefit.

3.10 The financial sector in UK is very London-centric and this seems unlikely to change. Although there is a strong business angel community in Cambridge, there is only one substantial VC fund operating locally (Amadeus), and the vast majority of UK-based VC is in London. External investment often requires close working relationships between the investor and the enterprise over a number of years, which is obviously facilitated by the physical proximity between London and Cambridge.

The challenges for the next 50 years

3.11 Looking ahead, Cambridge-based businesses and science-based institutions need to be able to operate effectively in both national and global space. In many respects, they have the wherewithal to do so. Nevertheless, in this context, our consultations unearthed some real challenges. Many of these relate to the policy framework within which particular firms and organisations operate. Because of this, they tend not to be within the immediate bailiwick of local partners and they can only be addressed by central government. They include:

- *Migration policy* – the labour markets for high tech businesses and the major science-based research institutions are global, as are the markets for students at both universities and the language schools. In this context, restrictions on international migration are seen as seriously unhelpful. Current attempts to cap migration are not welcome[23] and indeed, there was a strong sense that it needed to be made easier rather than more difficult through, for example, the issuing of visas (Case Study 1 provides an illustration of the global competition for the best talent, and Case Study 2 illustrates the benefits to the national economy of foreign students who start businesses after graduating)

- *Healthcare regulation* – in the bioscience sector in particular, there was a strong sense that the UK is "over-regulated" and that its relative position in these terms had deteriorated over the last decade; the claim was made that clinical trials, for example, now leave bioscience businesses at risk of corporate manslaughter charges and for many, the "hoops and hurdles" this generates are a real deterrent. The view was expressed that continental Europe is now much easier and that because of this, operations could well be established there. Clearly, regulations of this nature do serve a purpose, but there was a consistent sense that the balance was now out of kilter and needs to be revisited

- *Fiscal regimes* – one aspect of this concerns access to finance. The dearth of early stage investment finance is – everywhere – a current problem. Among our consultees, there was a strong sense that the UK is relatively disadvantaged in these terms. We have found no evidence that the situation in the rest of Europe is any better (see Case Study 3), although the UK tax regime has become progressively more complex (a problem which the current Government appears intent on addressing[24]). In addition, the volume of early stage finance in the USA in general, and Silicon Valley in particular, is clearly considerably greater. Nevertheless, there is a real

[23] For example, see Financial Times, 7 February 2011, page 2, article titled "Universities attack immigration policy"
[24] See www.hm-treasury.gov.uk/84668.htm

concern that Cambridge is less well served than it needs to be to realise the potential for business growth in the area, and that it is perceived to be by government. The likely demise of key public sector sources (as dispensed through the likes of EEDA) is considered to be a significant problem because of the leverage effect those resources have had on other sources of funding.

Another aspect of fiscal regimes concerns tax treatment of investment in research, commercialisation and innovation. Examples of ways in which different treatment could support innovation include: scrapping VAT on commercial use of University buildings when this involves commercialisation of research through business start ups; and raising the upper limit on rates relief for empty business space (currently set at around 100 sq ft) when that space is within an innovation centre or science park. A comparison with fiscal incentives for innovation in Singapore is provided in Case Study 1.

- *The imperative for inter-disciplinary endeavour* – One of the strongest arguments made by the younger entrepreneurs in particular surrounded the importance of genuinely inter-disciplinary endeavour, but also the institutional barriers to effecting it. Key technologies in the future are likely to be intrinsically inter-disciplinary in their character: regenerative medicine was cited as a case in point. Yet pursuing these can be difficult because of the structure of research funding. For the Research Councils and for BIS, this is an issue that ought to be revisited.

- *The scale of research funding* – The scale of future funding for research is an understandable concern for Cambridge institutions, but it is also extremely important to the future economic contribution of the Cambridge Cluster, because of the interrelationships between the research sector and high tech firms. The European Union Innovation Scoreboard for 2010 shows that public and business R&D expenditure in UK in 2008 was below the EU's overall standard, which in turn was below that of USA and Japan[25]. Cambridge is competing internationally for the best talent, and in the context of a decline in research funding from industry over the last five years, Government policy on the scale of research funding, and the extent to which it is focused on genuine centres of excellence, is crucially important to Cambridge.

[25] http://ec.europa.eu/enterprise/policies/innovation/files/ius-2010_en.pdf

Case Study 1: Singapore's incentives to attract technology entrepreneurs

Singapore provides an example of the incentives available to attract technology entrepreneurs and the competition facing Cambridge.

The National Research Foundation's Technology Incubation Scheme provides capital for foreign technology entrepreneurs to invest in Singapore-based start-ups. The target entrepreneurs have a proven track record of success in multiple companies, and have previously received investment from top-tier venture firms. The idea is to ensure higher-risk start-up companies have guidance from more experienced entrepreneurs. The NRF pays for 85% of the investment while the entrepreneur takes care of the rest. Investments are capped at US$367,000. The scheme has a total of US$37 million to invest.

Other financial incentives for technology based firms include:

- Innovation Development Scheme - Co-funding to support innovation in products, processes and applications. Supportable project costs include expenditure in the following: Manpower; Equipment and Materials; Professional Services; Intellectual Property Rights. Available to Singapore-registered business entities engaged in the innovation of products, processes or applications.
- Research Incentive Scheme for Companies - Co-funding to support the set-up of R&D centres, and/or the development of in-house R&D capabilities in strategic areas of technology. Supportable project costs include expenditure in the following: Manpower; Equipment and Materials; Professional Services; Intellectual Property Rights. Available to Singapore-registered business entities undertaking R&D activities
- Initiatives in New Technology - Co-funding to support the manpower development in the application of new technologies, industrial R&D and professional know-how. Available to Singapore-registered business entities introducing or developing new capabilities

Tax incentives for R&D include:

- 150% tax deduction for R&D expenses on R&D undertaken in Singapore.
- R&D Tax allowance amounting to 50% of the first $300,000 of taxable income. The allowance can be used to offset income in a subsequent year of assessment if the company spends more on R&D done in Singapore
- R&D incentive for start ups – enables loss making start ups spending at least $150,000 per year on R&D in Singapore to convert up to $225,000 of tax losses arising from the R&D expenditure to cash grants, at a rate of 9% (i.e. a grant of up to $20,250

Source: www.nrf.gov.sg

Case study 2: Economic impact of foreign students – an example from Massachusetts Institute of Technology

A 2009 report on the economic impact of MIT Alumni entrepreneurs (see source, below) identified 25,800 currently active companies founded by MIT alumni that employ 3.3m people and generate annual revenues of US$2 trillion, producing the equivalent of the 11th largest economy in the world. The MIT research also found that:

- about 30% of foreign students who attend MIT found companies at some point in their lives. This is a much higher rate than for US citizens who attend MIT
- about 5,000 firms were started by MIT graduates who were not US citizens when they were admitted to MIT
- about half of these companies created by 'imported entrepreneurs' are headquartered in the USA, generating their principal revenue ($16bn) and employment (101,500 people) in the USA
- MIT's foreign students are more inclined to found manufacturing firms than US students. Of the 2,340 companies founded by foreign MIT alumni in the USA, 673 (29%) are manufacturing firms. Manufacturing firms on average have a greater economic impact than service firms
- the main factors determining where MIT entrepreneurs set up their businesses were quality of life, proximity to key markets and access to skilled professionals. Most located close to where they had been working or attending university.

Source: 'Entrepreneurial Impact: the Role of MIT', Edward B Roberts and Charles Eesley, MIT Sloan School of Management, February 2009

Case Study 3: Fiscal incentives for angel and venture funding

According to EBAN, the European Trade Association for business angels, there are fiscal incentives specifically available for venture capital, private equity and angel funding in eight countries of Western/Central Europe (Belgian, France, Ireland, Italy, Germany, Luxemburg, Portugal and United Kingdom). These include government guarantees, reductions on tax rates or tax credits. Fiscal incentives in the US for angel investors are generally more generous than in Europe.

The longest established approach to stimulate the informal venture capital market has been tax incentives. Typically, under such schemes private individuals receive tax relief for specific types of investments in specified types of businesses. These can be structured in several ways: tax relief on the amount invested, exemption of capital gains from tax, tax deduction for losses, and writing-off or rolling-over capital losses. The aim of such schemes is to improve the risk-reward ratio and thereby increase both the supply of both investors and capital. The major use of tax incentives in Europe has been in the UK, with its Enterprise Investment Scheme (EIS) and France, with its Société Unipersonnelle d'Investissements à Risque (SUIR). Ireland, Flanders and The Netherlands have also offered tax incentives to business angels in the past.

Equity guarantee schemes have been an alternative fiscal approach to encourage angel investment. In Finland and Austria existing schemes for the institutional venture capital industry have been extended to include business angels, while The Netherlands and Wallonia (in Belgium) created specific schemes for angels. Aernoudt et al suggest that "these schemes rarely represent good value for public money as the negative selection argument is often preponderant in the decision of a business angel to guarantee the deal" ("Public Support for the Business Angel Market in Europe: A Critical review, Venture Capital, 2007, page 78). Indeed, the schemes in the Netherlands and Wallonia were subsequently closed.

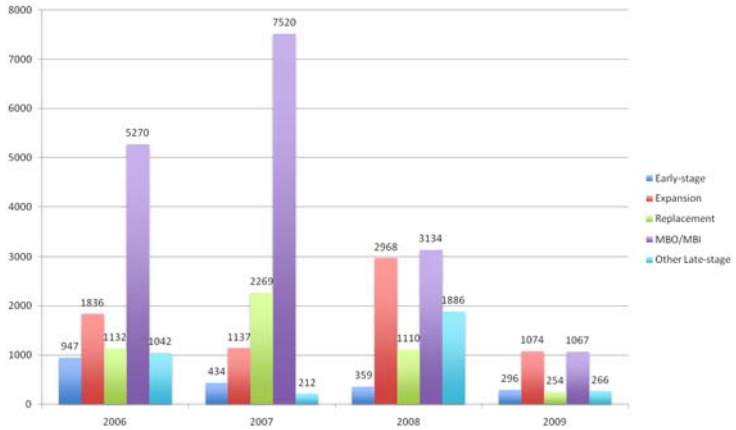
Evaluations of the EIS have suggested that at least half of the monies would not have been invested by these investors in the absence of the scheme, and that companies benefitted - for example, by attracting investors who also provided business advice and expertise (Cowling et al, "Study of the Impact of EIS and VCTs on Company Performance, HM Revenue & Customs Research Report 44, 2008). However, survey evidence by Mason and Harrison (1999) found that business angels are not attracted to professionally managed collective investment vehicles (Venture Capital Trusts) because they want to be able to make the investment decisions and engage with the businesses in which they invest.

Tax incentive schemes also have disadvantages: they may attract "dumb money" – passive investors who do not want to provide hands-on support to their investee companies or lack the competence to do so; there is a danger that financial intermediaries will try to distort the scheme in an effort to reduce investment risks; tax incentives are administratively complex, expensive to monitor and the interpretation of eligibility creates uncertainty for investors; the effectiveness of tax incentives is influenced by the state of the economy; and increasing the supply of finance does nothing to address the problem that investors have in finding suitable investment opportunities.

Business angels in the UK argue that the potential effectiveness of the EIS has been reduced by artificial barriers. The rules exclude certain types of investment. For example, the "closely connected" rule excluded certain types of investors, the overseas subsidiaries rule created difficulties for technology-based firms and the upper limit (30%) on the size of the shareholding has been problematic in cases where multiple funding rounds are raised, and the requirement that investments have to be in ordinary shares prevents the use of convertible instruments which are helpful in overcoming some of the difficulties in valuing new businesses. Some of these rules have subsequently been relaxed. Such schemes may also come into conflict with the EU's state aid rules. This has restricted the use of EIS to companies with less than 50 employees and which have raised less than £2m in previous years. This seems to be particularly inappropriate when funding for all stages of investment has declined dramatically (see chart below), and angels are having to take companies through more funding rounds than previously because of the lack of early stage institutional venture capital.

Source: mostly from "Public Policy Support for the Informal Venture Capital Market in Europe: a Critical Review", Colin Mason, University of Strathclyde Business School. Published in International Small Business Journal, 2009

BVCA UK Investment by Stage – 2006-09 (£M)



4: Overarching themes for the future: the Cambridge cluster in local space

Introduction

4.1 In spatial – but also economic – terms, the current character of Cambridge owes much to the combined and cumulative impact of three key documents:

- The *Holford Report* published in 1950 recommended that the population of Cambridge should be limited to 100,000 people by restricting development in the City and in the villages nearest to it. The aim of this policy was to preserve the special character of Cambridge as a university town within a rural setting. This policy was reinforced by the introduction of a strong Green Belt around the City and nearby villages.
- The *Mott Report* published in 1969 advocated exceptions for the development of science and University research-based industries. This opened the way for the development of Cambridge Science Park and other similar schemes
- The *Cambridgeshire and Peterborough Structure Plan* published in 2003 reversed previous policies of dispersal and instead placed far greater emphasis on urban extensions to Cambridge, including on land released from the Green Belt.

4.2 In essence, then, the early years sought to protect and preserve Cambridge as a university town in a rural setting and to this end, the growth of Cambridge was severely restricted. Only over the last eight or so years has there been a change of policy which is allowing the city's urban footprint to expand. What we are observing currently is the legacy of the early policies of restraint and the initial impact of much later ones which support urban expansion.

Cambridge in local space: the 2010 snapshot

4.3 From our consultations and other work completed in the course of this study, two observations are important with regard to the functionality of Cambridge as a physical space:

- first, there has been significant development on edge-of-Cambridge locations and much of it has been of a very high quality: Cambridge Science Park, West Cambridge, Addenbrooke's Hospital site, etc. Located within these settings are some of Cambridge's strongest assets in terms of its high tech cluster – both firms and research-based institutions. Major investments have been made and planned for and – with a positive management response – there ought to be scope for significant further growth (see Case Study 4 for evidence that Cambridge has broadly 'got it right' in relation to its main science park developments).

Case study 4: what makes science parks successful?

Science parks vary hugely in scale, focus and effectiveness. The UK Science Parks association lists as members schemes ranging in scale from single buildings to parks extending over 150 acres. Cambridge Science Park is among the largest of the UK science parks. Babraham Research Campus, Cambridge BioMedical Campus (on the Addenbrooke's site), the Cardiothoracic Bioincubator at Papworth, Chesterford Research Park, Haverhill Research Park, IQ Cambridge (formerly Cambridge Research Park, at Waterbeach), Granta Park, St John's Innovation Park and the University of Cambridge West Cambridge site are also all listed as members of UKSPA. Around the world, variations are even more extreme: for example, Zhongguancun Science Park in Beijing hosts over 20,000 enterprises employing nearly 1m employees, and Research Triangle in North Carolina extends over 7,000 acres, employs 40,000 and includes three universities.

With this degree of variation in scale, comparisons between science parks are therefore problematic. However, a conference on "Understanding Research, Science and Technology Parks: Global Best Practices" in March 2008, organised by the US National Research Council, and including contributions from around the world, concluded that common elements of successful science and technology parks included:

- Champions – the presence of committed champions who match sustained, high level attention with significant support for the growth and development of a science park
- Leadership – effective leadership and professional management to facilitate networking among entrepreneurs, researchers, investors and others within and around the science park's innovation ecosystem
- Funding – designated and sustained public funding and active private participation, combined with effective public policies to support companies that seek to convert ideas into innovations and innovations into products for the market
- Bridging institutions – to preserve the vision of the science park over the long period it takes for the park to mature and become successful
- Soft infrastructure - including the positive human capital built over many years of public investments in education and skills training, public policies that encourage entrepreneurial culture, and the presence of networks among professionals
- Metrics – which help management set clear goals and over time gauge the effectiveness of the science park.

The science parks in the Cambridge area vary with respect to some of these success factors. However, arguably – and in the context of the scale of some international parks – Cambridge as a whole should be regarded as a comparator to the likes of Research Triangle (they have almost the same number of employees in high tech firms), rather than CSP or any of the other science parks in the Cambridge sub-region. In this context, Cambridge fares reasonably well in relation to the above list of elements. Its main strengths include strong human capital, the role of universities and colleges as bridging institutions, and the presence over time of a succession of high profile individuals who have championed Cambridge. Its main weaknesses are probably in relation to a single leadership focus and the lack of sustained public and private sector funding.

Trinity Centre, Cambridge Science Park

Source: SQW and www.cambridgesciencepark.co.uk

But:

- second, the city centre is in general the location of choice for many organisations, and various different components of the wider Cambridge cluster are competing for it. It is in demand from retail and leisure uses, and many business, financial and professional services, and there is also significant pressure for additional housing provision. Many of the high tech firms we spoke to also expressed their desire to be centrally located and some, most notably Microsoft, were converting this desire into action.

4.4 From our consultations, it was apparent that the draw of the city centre and the wider central area rested with two main factors. The first was concerned with access to London. As explained in Chapter 3, the degree to which Cambridge and London are thoroughly intertwined – as living and working spaces in high tech fields and more generally – is growing and because of this, easy access to London is operationally important for a good number of firms and other organisations: a city centre location means that London is accessible within an hour whereas a location on Cambridge Science Park or at West Cambridge adds significantly to both time and cost.

4.5 The second was the fact, simply, that the city centre *is the city centre.* Citing conventional economics, the Nobel Prize-winning economist, Robert Lucas, argued in 1988 that – because of costs – "*cities should fly apart*". But they don't. He went on to observe, *"what can people be paying Manhattan or downtown Chicago rents for, if it is not to be around other people?"*[26]. Agglomeration effects – through clustering – matter greatly. Through this study, we have been told repeatedly about the importance of networks of relationships as the essence of "doing business" in Cambridge: they are the route to early stage financing, to recruitment, to business development, to technical problem solving, to building trust – and to having fun. These networks are simply much easier to sustain in city centre locations: the coffee shop culture is thriving and, increasingly, it is the setting in which business – which is an overwhelmingly social process – is done (and as an anecdote, it is interesting to note just how many of our consultees, particularly the younger ones, wanted to meet in coffee shops rather than in offices, as in earlier studies of the Cambridge cluster).

4.6 The challenge for Cambridge, however, is clear. Its city centre is physically small. Moreover it is highly constrained both as a result of its historic character and the ownership structure of land and property within it. Everyone – including a growing resident population – wants the city centre, but they simply cannot all have it. The implication of Table 2-1 and Table 2-2 (Chapter 2) is that it is mainly the conventional city centre uses (retail, leisure, etc.) that are "winning out". But what of the high tech business community, the distinctive – and high value – element of the Cambridge Cluster more generally?

The challenges for the next 5 years

4.7 Building on the planning framework set out in the Cambridgeshire and Peterborough Structure Plan, there are, in our view, some relatively straightforward steps that could be taken to improve the functionality of Cambridge's physical space in relation to the wider

[26] *On the mechanics of economic development*, Robert Lucas, Journal of Monetary Economics, 22, 1998: 3-42

cluster. We consider that these are critical in terms of its overall competitiveness. They include:

- *Designing Cambridge's new developments as social spaces, not just as locations for business and research:* One of the biggest challenges for the edge-of-town developments is that to function, they need to be effective as social spaces, not just as a location for smart, new, buildings. From our consultations, it was evident that the more established sites – Cambridge Science Park, St John's Innovation Centre – have developed some kind of social milieux. It is the newer ones – notably West Cambridge – that still appear to be bereft (although the Hauser Forum has begun to address this deficit on West Cambridge, most provision for social spaces has so far been within organisations on the site rather than explicitly shared). It may be that this is simply a function of time. Nevertheless it is notable that investing in social amenities within the big developments tends to be "something for later"; usually because developers are reluctant to incur the cost of 'social infrastructure' until they have generated some returns from the business space, and operators are unwilling to take the facilities on until there is evidence of demand. However, this can lead to a lack of social facilities for years: for example, plans for hotel, restaurant and conference facilities are for the medium term in relation to the Addenbrooke's Biomedical Campus while it has taken 40 years for hotel and substantial conference facilities of this nature to become a real prospect in relation to Cambridge Science Park.

- *Improving connectivity between the railway station, city centre and the principal employment sites:* The perceptions of isolation with regard to the principal employment sites – both in relation to each other and also the city centre and railway station – were one of the most consistent findings from the 60 or so consultations conducted as part of this study. To some extent the reality might be different, but it is perceptions that determine behaviour and in this context, there is a real challenge. None of this has been helped by the ongoing delays to the Cambridgeshire Guided Busway, and uncertainty about the speed and reliability of the service on the public road sections through the city: by now, that really ought to have "solved the problem" at least with regard to Addenbrooke's hospital, the railway station, the city centre and Cambridge Science Park. Assuming it will become operational soon, and that it will link these locations with a fast and reliable service, the main 'outlier' will be West Cambridge. A regular and direct shuttle-bus between West Cambridge and the other main high tech locations, combined with greater efforts to support social interaction, could do much to improve connectivity and change perceptions. The impact could be considerable. More generally, it is essential that new developments within the city take pressure off the city centre as the location of choice.

- *Improving connectivity with London:* consultations also revealed the importance of links with London for many firms, a factor which increases pressure for a city centre location. One initiative which could both improve links and ease pressure is development of a new parkway station at Chesterton, which should also link with the Guided Bus. This would increase the attractions of the northern fringe to some firms which might otherwise seek a central location, and it would intercept a great deal of

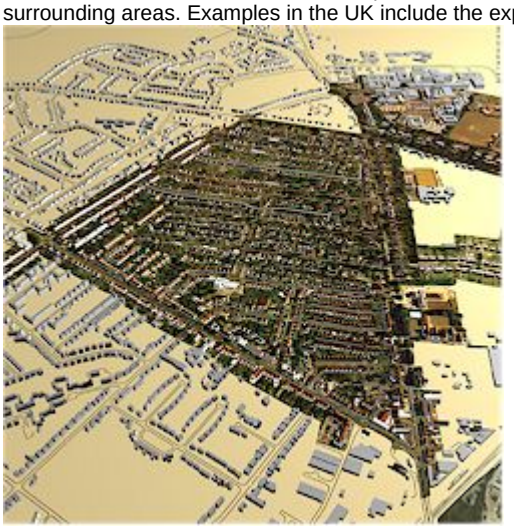
commuter and business traffic heading for the existing station from the northern side of Cambridge which currently adds to congestion in the city

- *Developing a creative "strategy and masterplan" for the central area that moves well beyond anachronistic land use classes and instead recognises and responds to the changing nature of "doing business" in the 21st Century knowledge economy:* Finally, we suggest that serious consideration ought to be given to developing a comprehensive and long term strategy and masterplan for the central area (including the area – north to south - between Castle Hill Cambridge Leisure Park, and – west to east - from the Backs to the Cambridge Retail Park). This would need to be premised on an understanding of the process of "doing business" in Cambridge, recognising that this is changing fundamentally. To continue to be creative and innovative, Cambridge needs provision for all sorts of "melting pots" – between scientific disciplines, between different professions, and at the interface between work and leisure – and the city centre needs to play its part. Equally, the city – including the central area – needs to be a place in which HQ functions are welcomed; this is the *quid pro quo* of a successful high tech cluster and provision really needs to be made for it. At the same time, the intrinsic physical character and assets of Cambridge city centre need to be recognised and conserved. Case Study 5 provides examples of other cities which have addressed similar constraints.

Case study 5: finding solutions to the expansion of historic city centres

Very few cities have the same intensity of constraints and pressures on the city centre as Cambridge; it faces a unique situation resulting from the mixture of historic university and college buildings, precious open spaces and complex land ownerships, combined with increasing competition from a variety of different activities for use of the city centre, and the prospect of sustained further growth in those pressures. However, other cities have had to deal with similar conflicts between maintaining the quality and functionality of an historic city centre whilst coping which sustained growth.

Some cities have been in the fortunate position of being able to expand the city centre without destroying the historic core or the surrounding areas. Examples in the UK include the expansion of Bristol city centre into the old docks area, and Newcastle city centre along the riverside – both areas which had been abandoned by previous uses. A spectacular international example is Shanghai, which developed Pudong on the opposite bank of the river to become the new city centre. Unfortunately, Cambridge city centre does not have the luxury of an adjacent area of dereliction into which it can expand.



Cities which have faced the same absolute physical constraints have either expanded upwards, through significant intensification of use of parts of the central area whilst preserving other parts, or developed new districts linked by high quality, high capacity and fast transport routes. Both possibilities were promoted by Cambridge Futures in their two reports in 1999 and 2004.

A dramatic example of the intensification solution is in Malmo: the "Turning Torso", shown below is a 190m residential tower designed by Santiago Calatrava for the European housing exhibition Bo01 held in Malmö in 2001, and seen by the city council as a modern symbol for the city. Less dramatic, but also effective, were the Cambridge Futures proposals for 'densification', illustrated opposite.

Two examples of cities which are not dramatically different in scale to Cambridge are Grenoble and Montpellier. Both have been among the fastest growing cities in France for the last 25 years, and both have addressed city centre constraints partly through developing tram systems. Grenoble already has four tram lines operating. Montpellier has two, intersecting in the city centre and at the TGV rail station, and along which some more intense 'beads' of development have been encouraged. A third line is under construction and a fourth is planned. The tram operating company also operates a cycle sharing scheme.

5: An Agenda for Action

5.1 The report has set out a description and analysis of the different roles in Cambridge together with an analysis of their future prospects. Chapters 3 and 4 have highlighted key national issues which need to be addressed together with actions that can be addressed through local leadership. Informed by these challenges, the discussion in the previous chapters, and the more detailed analysis in the Role Reports (Part B), the following ambitious Agenda for Action is proposed.

Table 5-1: Action Areas

Action area	Key issues to address	Possible actions
Funding	'Funding escalator is broken': • Bank lending has reduced (net lending to firms has been negative since the recession) • Amount of Venture Capital has reduced, and is focused on later stage of firm development and low risk areas (poor returns from technology in last decade). VC funds are also focused on keeping their existing portfolio alive until exit opportunities return • Business Angel funding is not filling the gap – not enough of it, and there are few exit opportunities (combination of VC and IPO constraints) • A dis-functional IPO market means the only exit route is through acquisition, which has other consequences for Cambridge firms • Availability of public sector grants and support for venture funds have reduced, and likely to decline further. Cambridge needs to dispel myth that it is well served with funding sources at all levels (viz 2008 Library House Cambridge Cluster report) Lack of funding means that consultancy/boot strapping (soft start) is too often a necessity rather than choice – slows firms with real growth potential and is especially serious for biomedicine and some other technologies which need patient money	Support initiatives such as establishment of Cambridge Commercial Lending Company and the Silicon Valley Bank in Cambridge Maintain public sector support for R&D/commercialisation (e.g. R&D tax credits) and for risk finance post RDA (including Proof of Concept), focusing on leveraging private funding to fill gaps in the escalator Improve further the links between Cambridge firms and London based funds Monitor and publicise the real situation in the Greater Cambridge area regarding funding availability
University/ research sector	Need to maintain funding for basic science to sustain University of Cambridge research excellence and continued generation of new ideas with commercial potential Need to focus diminishing public sector funds on a smaller number of centres of genuine excellence – danger of spreading jam too thinly, or in wrong places Opportunity to bid for funding for a Growth Hub and/or Technology & Innovation Centre More linkages across tertiary education institutions in Greater Cambridge might pay dividends Slow development and lack of atmosphere on West Cambridge site makes it unattractive to many employees of corporate R&D facilities (e.g. Microsoft)	Lobby for focus of basic and applied research funding on UK centres of excellence (including Cambridge) Facilitate links between University of Cambridge, ARU and CRC – e.g. to enable good researchers at ARU to join University of Cambridge research teams; to ensure full spectrum of business needs for skills, consultancy and research are met; and to encourage and support successful entrepreneurship Develop a single, strong Cambridge bid for Growth Hub and/or Technology and Innovation Centre status Increase active marketing of West Cambridge site to corporate research facilities, with the Hauser Forum as a social and professional focal point for the site and more open/welcoming access for people working on the West Cambridge

Action area	Key issues to address	Possible actions
		site to other meeting and eating spaces (e.g. at IfM and the Computer Dept)
Entrepreneurship & business networks	The number of new starts in the high tech sector appears (based on currently available data) to have reduced in recent years – but not much is known about quality and there may be a shift to IP commercialisation through other routes Traditional business networks and places do not meet the needs of many young entrepreneurs. Flexibility and fluidity of actual and virtual networks, combined with attractive and accessible social spaces, are essential If networks become too fragmented they may fail to capture the full value of the Cambridge cluster. As scale increases specialised networks such as for the Cleantech sector are an obvious response, but there needs to be transparency in their operation and a possibility of cross fertilisation.	Maintain currency and accuracy of Cambridgeshire High tech database Review data to understand whether there really are fewer start ups and if so, whether that is a problem or not Encourage the Cambridge Network to continue its activities to act as a 'network of networks' Develop sector specific networks for growth areas such as Cleantech Plan in facilities and focal points for social interaction for all new developments – e.g. NW Cambridge Lobby to include Cambridge in the national scheme which provides a National Insurance holiday for start ups
Property/ planning	There is a shortage of genuine business incubation/innovation centre space in Cambridge, with a particular crunch expected in the future supply of bio-incubator space with wet lab facilities Manufacturing space is in short supply in Greater Cambridge. Land and property prices militate against use of sites for most manufacturing, but the situation is made worse by: • The local authorities having allowed a steady loss of manufacturing land and buildings to redevelopment for housing (e.g. Hauxton) • Planning policies (policy 7/2 in the Cambridge Local Plan and policy ET/1 in the South Cambs Development Control Policies DPD) restrict the scale of manufacturing facility that can be developed throughout Cambridge and South Cambs to under 1850 sq m. This discriminates against large scale, high value manufacturing Planning policies (including science park use conditions and local user restrictions) also discriminate against headquarter functions locating in Cambridge, yet HQ facilities provide a high proportion of high value jobs and help retain wealth for the local area (same policies as above) Over the last 20 years, most new business space developed in the Cambridge area has been restricted to R&D and related uses (i.e. the planning permission has been for B1(b) uses). Given the importance of financial, business and professional services to future employment growth in the sub region, in future more open B1 permissions should be granted – this will not prevent R&D uses (e.g. Microsoft) from occupying this space, but it will enable more financial, business and professional services to occupy office space in locations of choice. Pressure on the city centre office space – from high tech and service firms – will become intense unless other developments such as West Cambridge provide a better social as well as business milieu. Cambridge City Local Plan policies 7/5 to 7/11 support expansion of the universities, prevent new language schools or expansion of existing schools by more than 10%, and are silent on further and other education (eg private schools and colleges). Given the importance of all forms of education to Cambridge's economy and	Encourage further development of incubator/innovation centres in Greater Cambridge, and the take up of space in Edinburgh House (SJIP) Lobby for a further relaxation of the VAT rule which means research facilities cannot formally include business incubation space without threatening their charitable status and VAT exemptions Stop the net loss of manufacturing land, and remove the cap on the scale of high value manufacturing facilities that can be developed – other planning considerations can be used to prevent intrusive activities Remove the constraint on HQ functions setting up in Cambridge, whether these are the HQs of local firms or inward investments Allow the development of more open B1space, in and around Cambridge, whilst maintaining the restrictions on science parks to R&D uses(B1(b)). Ensure business space in and around the city is planned to incorporate social and small scale retail facilities, to provide a much better social milieu for the workforce. Develop a vision for the future city centre, and a plan for its implementation, to ensure the central area can accommodate a sustained and substantial increase in people and businesses using its facilities without damaging the quality and attractions of the place. Review policies towards educational establishments to reflect better their contribution to the local economy

Action area	Key issues to address	Possible actions
	employment, it is difficult to see why language schools are singled out to prevent their expansion.	
Infrastructure	There are concerns about the availability of two main types of housing in and around Cambridge: • Housing which is affordable for people on modest salaries who don't qualify for state support but are absolutely essential to the proper functioning and future growth of the local economy • High quality executive housing in the £1m plus price bracket The serious delay to Cambridgeshire Guided Busway has soured attitudes towards it, and damaged the credibility of local government to resolve transport issues Congestion within and around Cambridge is hugely expensive and a major bone of contention for the business community. The absence of direct public transport links and safe cycle routes between the major employment sites within the city is a deterrent to business links and a reason why the city centre is the most sought after location for many high tech as well as business, financial and professional services London links are increasingly important to the business community, and also to Cambridge residents. London has a specialist labour market which is crucial to some firms (e.g. to obtain specialist marketing and management skills), it is the location of most risk capital, and it has unparalleled cultural and leisure facilities which many people in Cambridge use. Where a couple resident in Cambridge both work in specialist areas, one of them may need to seek a job in London. The rail and road infrastructure needs to be able to cope with a constant growth of traffic that these interactions will generate.	Continue to support the development of an appropriate quantity and mix of housing to meet the demands of the business community. Forward funding of infrastructure through TIF or similar schemes is a key element of this Review affordable housing policies and targets in the light of reduced social housing grant, to ensure that as far as possible sufficient affordable housing of all types is provided Ensure the Cambridgeshire Guided Busway is fully operational as soon as possible, and that it provides a fast and reliable service - including through the city where is will use public roads Lobby for rapid implementation of affordable improvements to the A14 Lobby for continued improvements to the rail links to London – whether or not high speed rail remains a possibility. These should include a station at Chesterton, an island platform at Cambridge station, and other measures to increase capacity and improve reliability and quality There is a need for creative and bold thinking to address congestion issues in Cambridge from public and private sectors in partnership. This includes a review of private commuter car parking in the city support a frequent shuttle bus service and high quality cycling routes to complement the Cambridgeshire Guided Busway, in order to provide fast, frequent and convenient links between the major employment sites within the city – the northern fringe, city centre, Addenbrooke's and West Cambridge
Quality of life	There are concerns about the quality of recent development in the Cambridge sub region, including the density at which new housing has been developed, which except in the city centre is not in keeping with the characteristics of the area The quality of the central areas of Cambridge and the market towns is threatened by the assumed cessation of funding for the public realm, except through planning agreements Maintaining the quality and the fitness for purpose of Cambridge city centre is extremely important to both the sub region's economy (it is the location of many jobs which are crucial to the whole economy, and the main destination for most visitors) and its growing resident population There is a long term ambition for a medium/large conference facility (there is a gap in provision for integrated facilities for more than 300 delegates) and concert hall in Cambridge, which will never be achieved unless provision is made for it now	Monitor and if necessary review requirements concerning development densities and the proportion of affordable housing to ensure these do not have unintended consequences for quality Prioritise funding for public realm improvements and management measures where they are considered essential to maintain the economic vibrancy of the central areas of Cambridge and the market towns A strategy and masterplan for the whole of the city centre is needed, which addresses the conflicts between the need to increase the capacity of the centre to accommodate growth of office, retail and leisure uses to serve a growing city region, and the constraints on expansion of the centre, many of which give the place its essential qualities Assess demand for a conference facility in the 300-500 delegate range, and if proven, identify and reserve an appropriate site

Action area	Key issues to address	Possible actions
People & skills	Many Cambridge firms have difficulty in recruiting specialist managers and marketing staff locally – increasingly, they are sourced from London, where they continue to live while working part of the week in Cambridge. There is also a shortage of manufacturing expertise, which affects firms' decisions on whether to undertake production or outsource and could (unverified) lead to a sub-optimal exploitation of the research base Consultees among firms, the universities, research institutes and language schools all complained the new visa restrictions will harm their business, whilst having no significant impact on the problem the government wants to address.	Increase training in management, marketing and manufacturing Lobby for removal of the new visa restrictions (including providing evidence of the damage they will do/are doing)
Sectors	High value manufacturing has the potential to play an increased role in the future growth of the Greater Cambridge economy. It forms a key part of the downstream value chain for many Cambridge firms, and would generate much needed jobs and GVA in the local economy. However, within Cambridge and South Cambs (though less so elsewhere in the sub region) the planning system does not favour manufacturing, and manufacturing skills are in short supply. Partly as a consequence, many firms adopt a different business model or undertake manufacturing further afield. Development of the Addenbrooke's Biomedical Campus, the international excellence of R&D in this area, and the strong record of successful commercialisation, combined with the existing critical mass of biomedical companies, makes this sector crucially important to the future success of the Cambridge Cluster. However, the biomedical sector is one of the most affected by funding constraints, the need for specialist facilities (including bio-incubator space) which may not be provided by the market, and the impact of acquisition by foreign firms. The sector in the Cambridge sub region is also strongly interconnected with a wider geographical cluster which includes Hertfordshire and London. Research into other technologies, trends and emerging sectors which have significant implications and potential for growth in Greater Cambridge - such as that into Clean Tech and Computer Games, supported by GCP or EEDA – has helped raise awareness and position the sub region for new investment. The source of funding for such work in future is unclear Tourism is generally perceived negatively in Cambridge: as a nuisance to be managed, rather than an economic benefit to be promoted – despite the substantial wealth and jobs it generates. Our understanding is that agents for conferences perceive Cambridge as suffering from a lack of "*working together*" and that there is a need to show a greater *"hunger for business"* . Previous research commissioned by Cambridgeshire Horizons focused on the potential for development of a large scale conference/concert facility, which seems unlikely to be achievable in the foreseeable future. However, from our discussions, there appears to be unmet demand in Cambridge for conferences with 300-500 delegates in integrated facilities.	Develop a manufacturing strategy and action plan for the sub region, which seeks to ensure a supportive environment for manufacturing, including the provision of substantial sites for larger scale high value manufacturing and integrated value chain activities in the sub region Develop a strategy and action plan for the biomedical cluster in the sub region and beyond, to ensure the hard and soft infrastructure is in place to support its continued growth and value creation for the benefit of this area. Identify a research programme to review and develop action plans to secure appropriate sector growth opportunities For tourism (a) more education in needed about the benefits, to change public/political attitudes; and (b) a more strategic approach is needed to maximising benefits from conferences Consider the scope for greater collaboration between Cambridge based organisations and others (eg UKTI) to stimulate economic growth based on Cambridge's strong international networks – see Case Study 6 for an example of initiatives being taken elsewhere.

Source: SQW

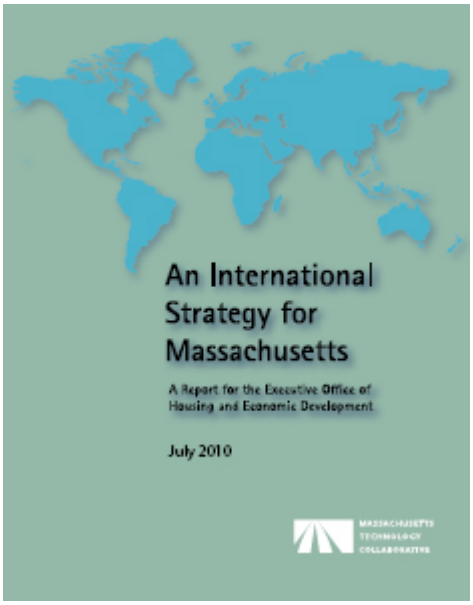
Case study 6: economic development through international trade – Massachusetts international strategy

In July 2010 the Massachusetts Technology Collaborative published an international strategy for Massachusetts, with a message of support from the State Governor. The Massachusetts Technology Collaborative is an economic development agency focusing on the formation, retention and expansion of technology-related enterprises in Massachusetts. It attracts Federal and State funding, and has a three person executive supported by a five person executive committee and a Board of 18.

The State of Massachusetts has an employed workforce of 3 million, over one third of which is in 10 highly concentrated innovation clusters. Although much bigger is scale, the employment structure of Massachusetts has strong similarities to that of Greater Cambridge.

The international strategy is based on three premises which also have relevance to Greater Cambridge:

- job creation in Massachusetts is tied to the ability to connect to and succeed in global markets
- the State is well positioned for success in the global arena because it is a centre of innovation, a leader in key growth industries, and home to world class universities and research centres
- even with severe budget constraints, the state can do much more to maximise exports, galvanise international business partnerships, and increase foreign direct investment.



The strategy identifies some key conditions for success, including strong leadership, effective public-private partnership, a close relationship with Federal organisations involved in promoting international trade, and making foreign students partners in the state's international business development efforts. Specific recommendations include:

- organise focused conferences for foreign audiences
- conduct inward trade missions
- help obtain visas for foreigners who wish to visit, work or invest in Massachusetts
- designate volunteer overseas ambassadors
- organise overseas alumni events
- develop a research capability to analyse economic trends, etc, and charge users for these services.

A feature of the strategy and recommendations is the identification of complementary roles for the state, the universities and private firms and individuals.

6: Towards implementation

6.1 The Agenda for Action set out in Chapter 5 is ambitious. It includes a large number of proposals, which range from lobbying government regarding policy and funding decisions, to actions which can be taken locally by public or private sectors to effect change. Some of the proposals will require substantial resources, but others depend more on making difficult decisions and effective partnership working. Some require short term action (e.g. a single, strong Cambridge bid for Growth Hub and/or Technology and Innovation Centre status), others are more of a slow burn, requiring persistence over an extended time period.

6.2 In some respects – in the immediate aftermath of the Comprehensive Spending Review and with the prospect of a long period of public sector spending restraint – the Agenda for Action could not have been drafted at a worse time: the shelving of significant planned improvements to the A14, for example, has come as a real disappointment to local stakeholders and one that was met with incredulity from the business community.

6.3 The Cambridge Cluster, however, needs to look forward positively. And it does have reasons for confidence. It has benefitted from substantial investment over the last decade, particularly in the institutions linked to Role 2. Moreover some of its high tech businesses are thriving: ARM and Autonomy, for example, are genuine global leaders in their respective fields, and many of the smaller and newer enterprises are growing quickly. The performance of the city centre economy is also much stronger now than a decade or two ago. It was against this backdrop that when asked about their views with regard to the future of the Cambridge Phenomenon, just over 60% of the 300 or so delegates at the Cambridge Phenomenon Conference on 5th October 2010 considered themselves to be "*cautiously optimistic*", while almost all of the rest claimed to be "*very optimistic*".

6.4 However, optimism should not lead to complacency. The employment and GVA forecasts for the high tech cluster are cautious, and international competition for the best research businesses and people is relentless. Cambridge has proved itself consistently good at research and innovation, but action is needed to ensure that this competitive edge is maintained.

6.5 In seeking to advance the Agenda for Action, various public and private sector partners will have important roles to play, both individually and collectively. Business leaders, the universities and research institutes, the local authorities and other public sector organisations all have vital and distinct roles to play to deliver many of the proposed actions. In addition, the Government's localism agenda suggests that securing the active support and talents of local communities will also be increasingly important.

6.6 But it is also essential that actions by different partners all 'pull in the same direction' and that, although government may hear many Cambridge voices, there should be consistency and coherence in the messages. In this context, the recently formed Local Enterprise Partnership for Greater Cambridge–Greater Peterborough has an important role, albeit with very little resource. The White Paper, *"Local Growth: Realising Every Place's Potential"*, which launched Local Enterprise Partnerships as a coalition between business and local government

stated that *"we particularly encourage partnerships working in respect to transport, housing and planning as part of an integrated approach to growth and infrastructure delivery"*. Public and private sector partners in the Greater Cambridge–Greater Peterborough LEP – including all the local authorities – signed up to achieving a rate of jobs growth over the next 15 years in excess of that set out previously in the Regional Spatial Strategy. This will be challenging, and will require a sustained and vigorous approach to securing housing development to match employment growth, and the infrastructure necessary to facilitate both.

6.7 The area already has a good track record of taking an integrated approach to growth and infrastructure delivery, but the future will be challenging. Infrastructure delivery is vital – and the highest priorities are probably the Cambridgeshire Guided Busway and the A14 improvements, both of which have come unstuck for different reasons, together with the development of a new station at Chesterton and the continuing delivery of high quality and affordable housing. We would urge that all of this is advanced within a refined spatial framework that takes on board fully the ways in which business is increasingly done. In this context, a refreshed paradigm for the city centre really needs to feature strongly, as does a resolution of the A14 problem, since some of the major development sites for housing and employment - including Northstowe, North West Cambridge and much of the NIAB development - are dependent on resolving congestion issues related to the A14 corridor. The new LEP ought to give these issues early and reflective consideration, along with the increasing importance to the high tech and research communities of links with London, as well as their global networks.

6.8 More generally, the investment of the recent past must be "sweated" to optimal effect. Certainly for the Biomedical Campus at Addenbrooke's Hospital and for West Cambridge, the (political) hard work has been done in terms of making provision for additional capacity. In both cases, though, buildings are unlikely to be developed speculatively and intervention may be needed to help realise the latent demand, including from inward investors. Within the Cambridge area, there are substantial resources for the continuing development of knowledge-based economic activity, but these do need to be put to work proactively.

6.9 Within all of this, central government too must play its role. The new Government has recognised the need for economic rebalancing between consumption oriented and wealth creating activities. Cambridge has some of the best wealth creating resources anywhere, but it needs help to realise their potential. Only at central government level is it possible to revisit policy with regard to migration, the regulatory environment, the fiscal regime, the focus for research funding and funding for major infrastructure projects. Government also has substantial influence, post financial crisis, on firms' ability to access finance of various kinds, and a duty to support innovation, since this was one of the few areas that Government explicitly decided should be delivered centrally when it announced the formation of LEPs. In sustaining – and refreshing – the capital and labour needed by the cluster as it looks ahead, all of these various levers need to be used.

6.10 Strong leadership is essential to ensure that different parties all play their essential roles in achieving the area's potential. The business community must be fully involved alongside local government in providing leadership and securing change. Certainly for the next period, businesses are likely to be better resourced than the public sector and creative solutions need

to be devised. Cambridge has seen them in the past – through, for example, the emergence of the Cambridge Angels and Cambridge Network. It is seeing them currently – in the form, for example, of entirely self-generated informal business networks founded on social media. It needs to see them in the future too. Work has been underway to develop local solutions to financial constraints on firms, for example through proposals for a Cambridge Bank. Based ultimately on globally excellent science and a workforce that is second to none, initiatives of this nature should provide the motor for economic growth over the next 50 years, particularly if the spatial development framework evolves in response. They also demonstrate the local commitment and capacity to generate the wealth and jobs that the country needs, provided government is prepared to play its part in facilitating that growth.

PART B: ROLE REPORTS

Role 1: Cambridge as a hub for high tech businesses

Introduction

B1.1 Whilst it is certainly a mistake for the economy of Cambridge to be conflated with high tech businesses, it is the population of high tech businesses – and the entrepreneurs and "knowledge workers" within them – that sets Cambridge apart. And it is Cambridge's success – or otherwise – in generating, attracting and growing high tech firms that is preoccupying policy-makers as the wider cluster looks to the future. Cambridge continues to be at the forefront of new and emerging technologies; plastic electronics, for example, is expected to experience significant global growth and Cambridge is leading the way with companies like Plastic Logic and Cambridge Display Technologies.

B1.2 It is against this backdrop that we have explored and examined the past performance and immediate future prospects of the Cambridge area from the perspective of high tech businesses. This report on *Role 1 – Cambridge as a hub for high tech businesses* – focuses on three main sets of issues:

- first, we attempt to chart the recent performance of the high tech sector, in terms both of the business population and patterns of employment
- second, based on an extensive programme of consultations and workshops, we report on the views of Cambridge's high tech businesses in terms of opportunities and constraints to growth
- third – and in the light of the analysis presented in the first two sections – we attempt to respond to the critical issues raised at the start of this study with regard to the current health and future prospects of the high tech business community.

Quantifying the scale of the high tech community[1]

Introduction

B1.3 High tech activity is not easy to measure. However a comprehensive database which captures the "high tech community" is maintained by Cambridgeshire County Council's Research Group, with a full update every two years. In the paragraphs that follow, we define the "high tech community" and we then chart quantitative changes within it over the period 1991 to 2008.

[1] Note that a more detailed analysis of changes within the high tech business community – with a particular focus on changes between 2006 and 2008 – is provided as a separate annex to this report (Annex B)

Classifying the 'high tech community'[2]

B1.4 The majority of enterprises classified as 'high tech' are identified as such on account of their industry sector (e.g. computer software, electronics engineering or telecommunications). Within Cambridgeshire, however, a significant number of specialist employers would be omitted if a rigid sectoral definition was applied. For example, scientific research departments at Cambridge University are important employers within the wider "high tech community". As defined here, the "community" also includes technical testing and consultancy businesses, specialist precision engineers, wholesalers supporting high tech manufacturers and business support companies.

Changes in the high tech business community – 1991 to 2008

Overall scale of employment and numbers of businesses within the high tech business community

B1.5 Table Table B1-1 and Figure B1-1 provide an overview of changes in high tech 'community' employment and businesses over the period 1991 to 2008 in Cambridgeshire.

B1.6 The two charts suggest that there was significant growth in *jobs* from 1991 through to 2002, followed by a dip in 2004 and a plateau through 2006. However, significant growth resumed in the most recent period, 2006 to 2008. The decline in jobs in the period 2002 to 2006 was characterised by reductions in high tech manufacturing in the main: electronics engineering, computer hardware, chemicals and instrument engineering all experienced employment loss. Services generally remained strong, growing throughout the period. The one exception was telecommunications, with employment reducing from as early as 1997.

Table B1-1: Employment and businesses in the 'high tech community' in Cambridgeshire, 1991 to 2008

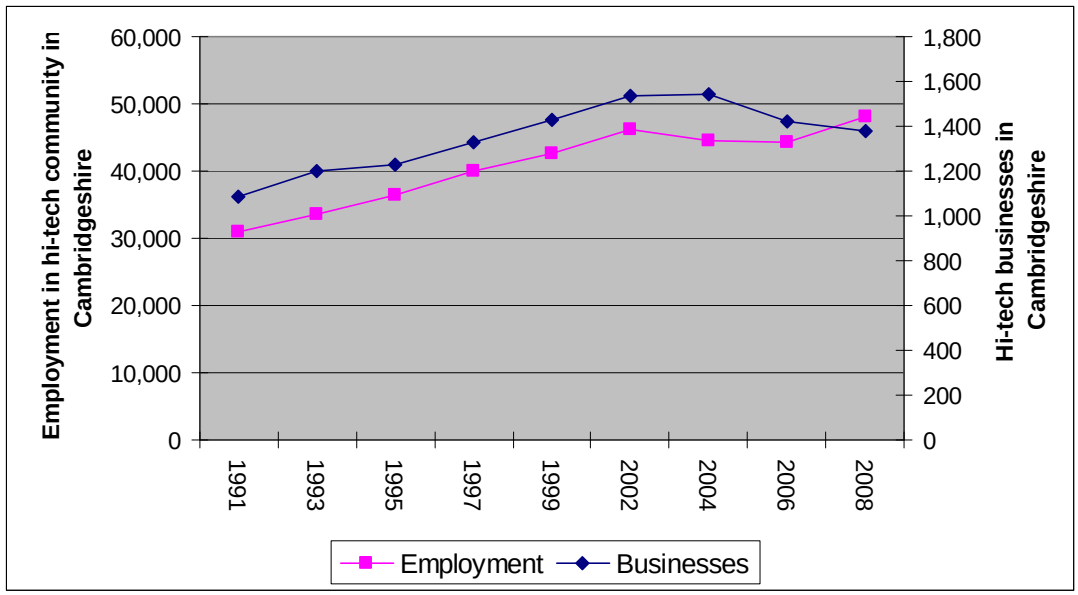
Element	1991	1993	1995	1997	1999	2002	2004	2006	2008
Employment	30,934	33,541	36,423	40,101	42,527	46,224	44,525	44,374	48,099
Businesses	1,083	1,200	1,225	1,327	1,426	1,539	1,540	1,420	1,379

Source: Cambridgeshire County Council Research Group

B1.7 The profile of *businesses* over time is rather different. Growth in the county was steady from 1991 through to 2002; numbers remained at the same level in 2004 and have declined through 2006 to 2008. There has been a significant reduction in numbers of very small computer service businesses – as part of a general trend towards fewer micro businesses in high tech.

[2] Note that in quantifying the high tech community – and drawing on the database developed and maintained by the Research Group at Cambridgeshire County Council – the definition includes Role 1 and key elements of Role 2 as discussed within this report

Figure B1-1: High tech community employment & businesses in Cambridgeshire, 1991 to 2008



Source: Cambridgeshire County Council Research Group

Perspectives at the scale of individual local authority districts (LADs)

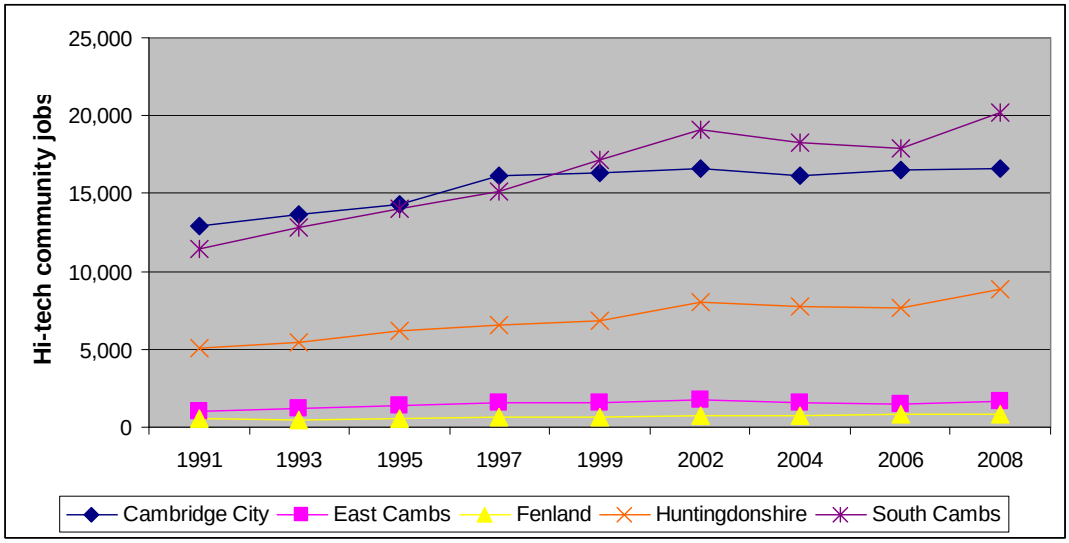
B1.8 Tables Table B1-2 and Table B1-3, and Figure B1-2 and Figure B1-3 provide a district level breakdown of trends in employment and businesses from 1991 to 2008.

Table B1-2: High tech community employment in Cambridgeshire districts, 1991 to 2008

District	1991	1993	1995	1997	1999	2002	2004	2006	2008
Cambridge City	12,933	13,615	14,276	16,171	16,325	16,573	16,109	16,518	16,577
East Cambs	1,011	1,171	1,384	1,523	1,554	1,751	1,591	1,479	1,630
Fenland	518	496	548	665	674	733	780	787	849
Huntingdonshire	5,068	5,472	6,146	6,591	6,806	8,023	7,742	7,676	8,868
South Cambs	11,404	12,787	14,062	15,145	17,162	19,140	18,303	17,914	20,175
Cambridgeshire	30,934	33,541	36,416	40,095	42,521	46,220	44,525	44,374	48,099

Source: Cambridgeshire County Council Research Group

Figure B1-2: High tech community jobs in Cambridgeshire districts, 1991 to 2008



Source: Cambridgeshire County Council Research Group

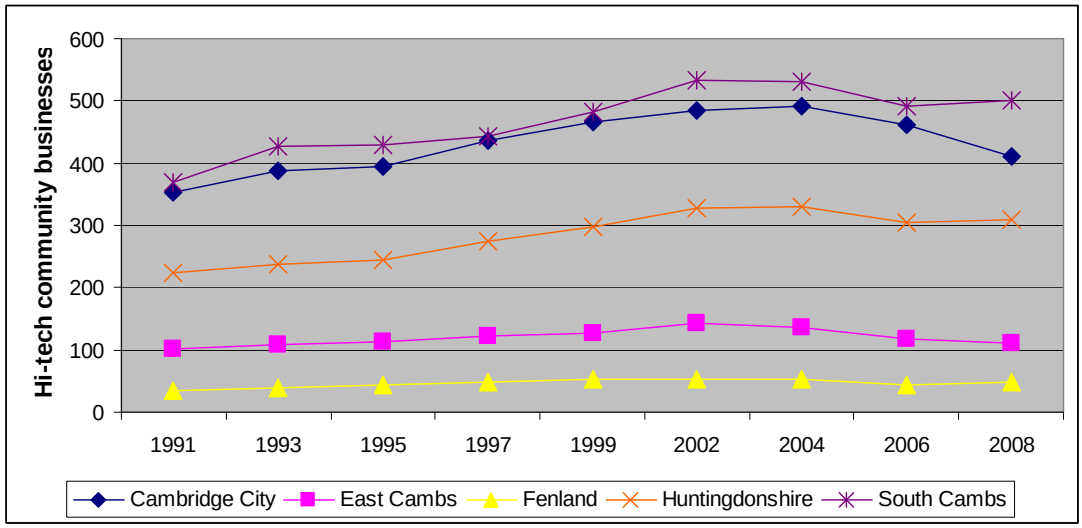
B1.9 The table and figure show clearly how South Cambridgeshire has experienced the highest rate of growth in high tech *employment* over the 17 year period 1991 to 2008. Following initial growth in the period 1991 to 1997 high tech employment growth within Cambridge City has stalled somewhat. Growth in Huntingdonshire has been significant during the period. In contrast, both East Cambridgeshire and Fenland have experienced only modest growth in high tech jobs.

Table B1-3: High tech community businesses in Cambridgeshire districts, 1991 to 2008

District	1991	1993	1995	1997	1999	2002	2004	2006	2008
Cambridge City	352	388	395	437	466	484	492	461	410
East Cambs	101	108	113	122	127	142	136	118	110
Fenland	35	39	43	49	52	52	52	45	49
Huntingdonshire	225	237	245	275	298	328	330	304	310
South Cambs	370	428	429	444	483	532	530	492	500
Cambridgeshire	1,083	1,200	1,225	1,327	1,426	1,538	1,540	1,420	1,379

Source: Cambridgeshire County Council Research Group

Figure B1-3: High tech community businesses in Cambridgeshire districts, 1991 to 2008



Source: Cambridgeshire County Council Research Group

B1.10 The profile of *businesses* shows a somewhat different picture. Huntingdonshire, Fenland and East Cambridgeshire all record relatively more high tech businesses than high tech jobs. The number of high tech businesses is not growing as fast as the number of high tech jobs, reflecting to some extent consolidation in the structure of the computer services industry sector in the county.

B1.11 All districts experienced a reduction in the number of high tech businesses recorded in 2006 as compared with 2004, although growth resumed in most areas between 2006 and 2008. Cambridge City experienced the biggest reduction in numbers of businesses. However, as discussed more fully in Annex B, some of the increase in high tech enterprises in South Cambridgeshire in 2008 reflects companies relocating from Cambridge City.

Conclusions from the analysis of data

B1.12 Overall, between 1991 and 2008, the total number of employee jobs in Cambridge and South Cambridgeshire increased from 108,000 to 155,900, an increment of over 43% (ABI). According to Oxford Economics, total employment rose from 131,000 to 175,000 (+33%) over this timeframe while Cambridge Econometrics' data suggest a change in employment from 147,000 to 179,000 (+21%). Over the same period, the number of high tech jobs increased from 24,000 to about 37,000, an increment of well over 50%. Whichever set of numbers we choose to believe, the implication, then, is that *within the two core districts, high tech employment has grown more quickly than the economy as a whole*.

B1.13 Beyond this key finding, three key conclusions stand out:

- overall, the number of high tech jobs in Cambridgeshire increased from almost 31,000 in 1991 to over 48,000 in 2008. Against this overall backdrop, high tech employment in Cambridge has been static over the last decade while South

Cambridgeshire has seen very rapid growth. There is some evidence from the analysis of Cambridge County Council's high tech database (see Annex B) to suggest that Cambridge acts – effectively – as a business incubator for other parts of the county with a good number of high tech jobs being "exported" to other districts – particularly South Cambridgeshire – as firms grow

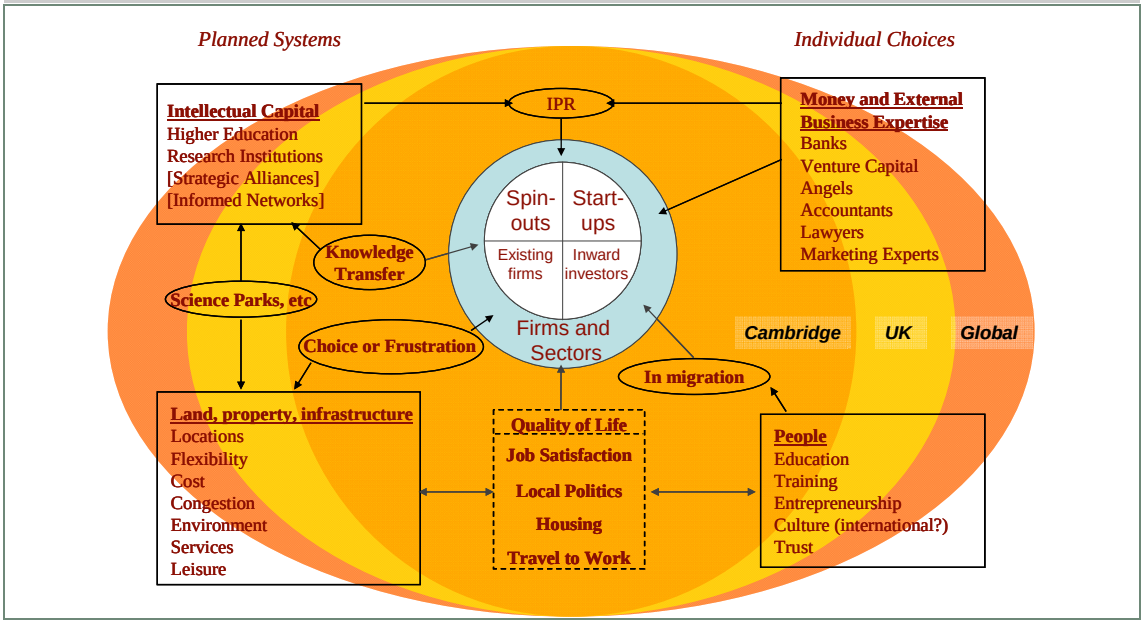
- the number of high tech businesses in Cambridgeshire increased from 1,100 in 1991 to around 1,500 in 2002 and 2004. Subsequently, it appears to have fallen back to around 1,400. In the context of rising employment, the inference is an increase in average business size – from 29 jobs (in 1991) to 35 in 2008. Typically, larger high tech businesses are found in Cambridge and South Cambridgeshire while much smaller high tech enterprises are prevalent in Fenland and East Cambridgeshire

- in the very recent past, employment in both high tech manufacturing and high tech services has increased. Whereas the former increased by 4% between 2006 and 2008, the latter grew by some 11%. The recent growth in high tech manufacturing employment is in contrast to the longer term trend: the number of jobs in high tech manufacturing has fallen significantly since 1991.

Consultation with high tech businesses

B1.14 The analysis of secondary data generates some important findings. However it says relatively little about either the process of growth, or future business prospects. To generate some insights into both, we engaged in a process of consultation with high tech businesses. With the agreement of our steering group, this was not – and was never intended to be – an extensive or statistically robust survey; instead, we sought to meet with a range of businesses and engage in a reasonably intensive but qualitative and exploratory discussion. This included some well established Cambridge success stories such as ARM. It also – quite intentionally – included a good number of much smaller businesses that had been formed by a new generation of younger entrepreneurs (the likes of Owlstone, Cambridge Temperature Concepts, Hypertag, and so on). We also met with a number of angel investors and network orchestrators, and other business people with some kind of overview in terms of the realities of "doing business" within Cambridge. Throughout, we used – as the basis for discussion – the diagram set out below and we asked consultees to describe the challenges and opportunities facing their business in these terms.

Figure B1-4: Framework for discussions with high tech businesses



(Source: SQW)

B1.15 In the paragraphs that follow, we attempt to provide a flavour of the range of views expressed by members of the Cambridge high tech business community, focusing strongly on the issues implicit within the specification of Role 1 and the relationships identified in Figure B1-4 .

(i) Process of business start-up

B1.16 Amongst the businesses we spoke to, a wide range of different business start-up models were identified:

- a good proportion of firms were effectively business service providers operating on a consultancy basis and were able to fund growth through retained earnings
- in software/new media, we were told about the very fine line between (a) being a free lancer and (b) setting up a firm: there seems to be a transition from being an employee and then from one *modus operandi* to the other (and this labour market in particular appears to be fluid with people staying with one firm for no more than a year or so and then moving on)
- there were a few examples of new firms being set up around a product concept – and often these did then rely on external funding of some form (although "sweat equity" also featured strongly – i.e. founders take low or no salary for a period but build up the value of their share ownership)
- there were relatively few examples of firms being set up by one person – generally, new business start-ups involved groups of individuals who were friends (or at least peers)

- in relation to the start-up process, there were several examples of "*bored PhD students*" being attracted away from their studies and into something more interesting – initially to solve technical problems but subsequently to develop new businesses

- amongst biotech businesses, start-up models were typically more formalised and involved teams from the outset. Generally this was because barriers to entry appeared much higher and the protection of Intellectual Property (IP) was a key concern. Typically, these enterprises were funded externally at – or shortly after – the point of start-up and for many of the drug discovery businesses, the expectation was that profitable trading would take years to establish; for this reason, self-financed start-up and growth was not really considered to be an option

B1.17 In addition, it was notable that an increasing number of start up businesses were being formed by entrepreneurs who had already started and later sold one or more businesses previously. Typically these people were willing and able to form management teams with complementary skills, and were in a position to put more equity into the business, both their own and external investment. The growing prominence of the serial entrepreneur suggests that the cluster as a whole is maturing.

(ii) Networks / culture

B1.18 For early stage businesses, networks were universally regarded as hugely important – and the comment was made (in a variety of contexts) that "*Cambridge is a place where people go out of their way to be helpful*". At the Cambridge Phenomenon Conference on 5th October 2010, 300 delegates were asked whether they found it easy to make contact with successful entrepreneurs in Cambridge and to benefit from their experience; 58% gave an affirmative response.

B1.19 From our consultations, examples of "*people being helpful*" were numerous. The view was expressed that "*good will gets passed on*" – it is a "*Cambridge thing*". Even in sectors in which intellectual property is strongly protected, networks are effective, but – in the eyes of several consultees – they work best when they are not managed/formalised by technology transfer offices and the like. And in more general terms, Cambridge was seen by many as a "*village with a global brand*".

B1.20 These "networks" – more or less formally constituted – appeared to be vital in terms of how businesses operate and grow:

- for the younger entrepreneurs – particularly those operating in software/IT/new media – virtual networks are really important: "tweeting" and "twittering" seem to be continuous and increasingly important as the "glue" for "doing business". These provide the basis for a raft of different "real" networks, many of which (a) are quite transitory (i.e. the networks, not necessarily the relationships) and (b) tend to have their origins in technical problem solving but actually serve to put like-minded people in touch (which is important for recruitment and potentially also for business development purposes). Examples of these networks – which may be more-or-less formally constituted – include "*Cambridge Geek Nights*", "*First Tuesday*", "*Open Coffee*", "*Cam Creative*", "*Refresh Cambridge*", "*CAMedia*". However a further

related – and important – observation was made: through informal networks, Cambridge has a great culture of technical problem solving but a much "thinner" culture in terms of enterprise *per se* – certainly as compared to Silicon Valley which is still held up as the principal benchmark

- within the Cambridge area, there is evidence of pre-start-up networks, and in this context North America is also definitely the source of key ideas. One example is the TEDexCAM conference that was run last year and was very successful. This was all about crossing disciplinary boundaries and engaging in "data mashing", etc., as a route to coming up with completely off-the-wall ideas and forging collaboration, etc. It also included a "Hackathon" for which prizes were awarded. All of this gave creative, tech-based, people (most of whom were young) some high profile exposure and visibility. "Unconferences" also seem to feature. All of this boils down to radically different approaches to networking

- in addition, more formally constituted networks appeared – from our consultations – to be playing an important, but changing, role. Cambridge Network was seen as generally helpful. One comment was made that its membership fees were worth paying because it meant access to its website for recruitment purposes. Equally, ERBI – now One Nucleus – was considered to be useful, principally as a vehicle for putting like-minded people in touch. In both cases though, the Networks face the paradox that while local relationships are important, these need to be understood within the context of business models that are globally networked, including in relation to some really quite small and new enterprises. A good number of the firms we spoke to were intrinsically networked as a way of "doing business" – i.e. their physical presence in Cambridge was relatively small but they were moving forward through remote working, etc., with skilled people in other parts of the UK and internationally.

(iii) Networks and early stage financing

B1.21 One of the most tangible expressions of "*why networks matter*" related to early stage finance and – perhaps – it is in this context, that the "Cambridge ecosystem" is both most compelling but also – perhaps – most exposed:

- for students at the University of Cambridge, Cambridge University Entrepreneurs appears to have emerged over the last decade as a very effective vehicle for linking would-be entrepreneurs to potential investors, notably (although not exclusively) Cambridge Angels – a highly influential network of business angel investors. Business Plan competitions seem to be especially important in this regard. And once these links are made, they can be very important and quite enduring: Owlstone and Cambridge Temperature Concepts both established important relationships with investors through this route, as did Light Blue Optics

- more generally, networks of known contacts – what the American academic, Mark Granovetter describes as the "strength of weak ties" – appear to be extremely important. Cambridge Angels was, for example, described by one of its members as

essentially a "*dining club*" while another explained that its size was constrained by the number of people that could, sensibly and comfortably, sit around a single dining table. In essence, financing propositions are presented to Cambridge Angels before dinner and then discussed during it before decisions are made

- where external investment was being sought, it was apparent that close working relationships between the investor and the enterprise were crucial over a number of years, and that this in turn was impacting on cluster geographies. For example, for software/new media firms, London seemed to be a much better source of early stage finance than Cambridge. A number of businesses have relocated there to be close to their investors but also to other, similar, firms – a new cluster is emerging in an area called Silicon Roundabout (junction of City Road and Old Street in London) which links to major customers (e.g. Channel 4). However we also heard about relocations from London to Cambridge for broadly similar reasons: one Cambridge-based investor started to work with a company in West London but that firm relocated to Cambridge so that it could sensibly "tap into" the investor's very well established and Cambridge-based networks.

B1.22 In general, the perception was that Cambridge is relatively well served in terms of angel finance – particularly for those on the inside track as a result of University of Cambridge business plan competitions and the like. There were examples of angel financiers getting heavily involved in the businesses in which they were investing and contributing much to their development; in general this was welcomed. Where businesses were very reliant on angel investment, salary packages were structured so as to maximise incentives to grow the value of the business and expedite exit (and hence the salaries of "paper-millionaires" were pegged back to levels which were not much different from junior academic salaries). However, in recent years, angel funding has been frustrated by the lack of exit routes, largely because of the reduction in VC funding and of opportunities for IPOs.

B1.23 By contrast, Cambridge was not seen to be a good place in terms of venture capital investment – i.e. investments of perhaps >£500k. Although a decade or so ago, Cambridge appeared to be "catching up" in terms of VC, the general view was that this might have been illusory and it certainly was temporary. On the VC front, Cambridge is "nowhere" currently: it is behind London and London is well behind Silicon Valley. Quite simply – and despite the continued active presence of at least one major fund, Amadeus – the whole set-up is seen as far too small in scale. The consequence – in the view of one group of consultees – was that emerging technology-based businesses in Cambridge are "*more like falafel stands than Midsummer House*". Technologies are being commercialised but only when it is relatively quick and easy to do so (i.e. a maximum of about 5 years before exit and total early stage investment of around £500k). If commercialisation timescales are longer term, and/or if the process needs to happen at scale, Cambridge is increasingly not the place for it.

B1.24 Instead, would-be entrepreneurs requiring investment on this scale are looking to London or, increasingly, to Silicon Valley: Cambridge is good for smaller scale activity, but not for large scale investments. The appeal of north America was explained in part by the fact that there are, simply, many more rich individuals with money to invest (but also important tax breaks to encourage them to do so), and many more VC funds with a portfolio of investments (and

therefore a spread of risks). Sandhill Road in the Menlo Park area of Silicon Valley was seen as the global hub of technology-based VC. In order to secure significant early stage investment, there is a need to be a part of this. In his book, *Who's Your City*, Richard Florida makes a very similar set of observations:

> *Only companies within a twenty-minute commute of the VC firm's office are considered worthy of a high risk investment. Not even high tech companies whose products and services are based in long-distance communication are considered worth the risk if their physical location is too far away. That isn't to say that firms don't make exceptions – but given the hands-on demands of venture capitalism, being close to clients, investors and colleagues is highly prioritised. The twenty-minute rule in part explains why so many start-up companies eventually find themselves moving to Silicon Valley, even if they were founded elsewhere*[3]

B1.25 In relation to this overall picture, the comment more generally was that routes to early stage funding are much more difficult now than 5-10 years ago. In general terms, both business angels and venture capitalists have struggled to achieve exit and as a result, the view is that there is "*simply less money about*". In the UK context, as well as retreating spatially to London, the concern was expressed that venture capitalists are losing interest in, and are not well attuned to, the needs of technology-based businesses; in part this is because of some major failures resulting from "over-promising" early on, particularly in the field of drug discovery.

B1.26 Within this overall context, a key finding from our consultations was just how prevalent some level of early stage public sector financing has actually been for some technology-based businesses in Cambridge. A high proportion of early stage entrepreneurs had received some level of public sector finance. One commented that recently, it had received EEDA funding when its own bank had refused to lend to it. Another remarked that the business would not have started at all were it not for a (then-)DTI SMART Award almost a decade ago. A third – a bioscience business – noted that EEDA funding had allowed it to explore avenues of investigation that just would not otherwise have been possible. In all cases, consultees found it extremely difficult to isolate definitively the impact of public sector funding or to articulate the counterfactual position (what would have happened without it) – and this, arguably, is a finding in itself in relation to impact evaluations. Nevertheless, many mentioned it unprompted and most commented on its importance in exploring and developing future business strategy.

(iv) Links to the University of Cambridge

B1.27 Through our consultations, we observed a rather complicated – and fluid – set of relationships between the high tech business community on the one hand and the University of Cambridge on the other. In general terms, although many of the entrepreneurs were Cambridge University graduates, very few of them had continuing links with the University post-graduation. Most regarded the University of Cambridge as important for two reasons: (a) it generated a source of skilled, science-based, and high calibre graduates, and (b) it has a brand that is globally recognised. Links beyond this, however, were quite limited.

[3] *Who's Your City* – Richard Florida, 2008 – pages 27-28

B1.28 There was also some sense that – particularly in the past – the University had not done all that it might to have supported the cluster's growth. For example, one of the younger entrepreneurs had graduated as an engineer in the late 1990s. He claimed that at the time he graduated, he had absolutely no idea that the University of Cambridge had any connection at all to high tech businesses – he had no idea what the Cambridge Phenomenon was, or that there were a lot of tech-based firms in the area. Levels of awareness might have improved subsequently, but at that time, the average student was, literally, oblivious. The growth in student-led business competitions and high profile University investments (not least in West Cambridge) may well have changed perceptions subsequently.

B1.29 Amongst many of the entrepreneurs – and the investors, some of whom had academic posts – there was some frustration with the University of Cambridge. In essence, this boiled down to a view that the University "wanted it both ways". In the past, the University's approach to intellectual property was perceived as being extremely laissez faire and this meant that scientists and others with entrepreneurial intent had some space to "do something"; indeed, we were told of one company where the US-born founder had opted to complete his post-graduate studies at the University of Cambridge because of its liberal regime in respect of intellectual property. However the view was that latterly, the University had become very much more "hands on" and that it wanted to "protect everything". This vantage point was understood in principle, but it fell down in practice – in the eyes of some – because (a) the University (through Cambridge Enterprise) lacked the wherewithal to see it through and (b) it generated a cumbersome bureaucracy. The consequence, in the eyes of at least some of our interviewees, has been inertia and missed opportunities.

B1.30 There was also some frustration that the University of Cambridge was not exactly "fleet of foot" with regard to the optimal use of resources. For example, the question was asked as to why under-used (or even vacant) lab space is not made available to would-be start-ups free of charge and more generally, there was a concern that University resources were not being "sweated hard enough". In practice though – as we consider in the context of Role 2 – the University itself is not immune from external hurdles (e.g. with regard to VAT status).

B1.31 A few post graduate courses were explicitly mentioned as important for would-be entrepreneurs, e.g. the masters' course in Bioscience Enterprise (led by Prof Chris Lowe). However in the main, this has not been a major source of entrepreneurs in the Cambridge area: it is characterised by a very high proportion of international students and while some will remain in Cambridge after graduating, most tend to move away. There were mixed views as to how useful the Judge Business School was in relation to would-be entrepreneurs and particularly in terms of producing a cadre of "business developers" (rather than "geeky entrepreneurs").

(v) Anglia Ruskin University

B1.32 Our consultations with high tech businesses also pointed to the importance of Anglia Ruskin University (ARU) within the broader cluster. Although difficult to evidence, the general sense was that ARU is playing a key, if understated, role – not as a source of research, but as a generator of skilled people. In addition, initiatives such as Anglia Ruskin Entrepreneurs and

the Entrepreneurs Network in Residence programmes highlight its role in supporting the broader business skills needed.

B1.33 From our consultations, ARU appeared to have a particular role in relation to the growing web-based/new media and computer games sector – both through the provision of relevant degree courses and the hosting of key networks and events. Within Cambridge, there are some major players in the sector. One example is Jagex, a publisher and developer of on-line games (with two offices in Cambridge (including its HQ) and one in London, and over 350 staff). It was formed in Cambridge in 2001 and by 2007, it had one million pay-to-play subscribers.

(vi) Intellectual Property – and the link to business models

B1.34 Among the firms we consulted, attitudes to Intellectual Property (IP) varied enormously:

- in relation to the software/IT/new media firms, attitudes to IP were extremely relaxed: a relatively open stance went hand-in-glove with a commitment to continual networking as a route to problem solving. In terms of specific IP, etc., the view was that other network members would either (a) not understand the issue well enough to be able to exploit it and/or (b) not have time to do anything about it. For both reasons, there was no reason not to share insights, etc., and – given the support and help that emerged through networking processes – every reason to be "open"

- with regard to inkjet printing – another distinctive sub-sector – one of the firms we consulted had established a micro cluster in which it invited other firms to deposit pieces of equipment so that all firms could "*play*". This was seen as a route to "*coming up with new things*" – it was, literally, an innovation lab

- conversely, in bioscience in general – and drug discovery in particular – the protection of IP is critical in terms of the business model. "Hard starts" with substantial Angel/VC funding are protective of their IP as it is the IP – rather than a stream of sales – that is effectively the source of "value" (e.g. one of the firms we consulted with significant external funding (from Cambridge Angels) had protected its IP with two patents). As progress is made towards clinical trials, "value" increases, often to the point where companies exit. And typically, all of this happens before revenue streams have been established.

B1.35 Firms' approaches to IP are important, for they define, effectively, the foundation of business models. In the bioscience sector in particular, some considered that this led to "*premature exit*" – what one of the speakers at the Cambridge Phenomenon Conference on 5th October 2010 likened to "*corporate veal production*". Opinions were divided with regard to both the inevitability and desirability of this model. One view – expressed during the consultation process – was that VC funding is brought in far too early and its timescales for exit are too short such that the interests of the investor and the interests of the firm are fundamentally misaligned from the outset and exit is the only option. Other consultees recognised the argument but were far more sanguine about the role of Cambridge as a commercial laboratory for big pharma which no longer wants to take the risks in-house but instead will acquire an equity stake in businesses or even buy them outright once the underlying development

process appears to be making real headway. With the personalisation of medicine and healthcare strongly on the agenda, there is more realism with regard to the scale of the gains to be made while the timescale for drug development (an average of 17 years, in a highly regulated healthcare environment) is now well understood. For both reasons, "de-risking" in drug discovery and development appears to be a primary consideration and the corporate and ownership structure of bioscience businesses in Cambridge is the apparent consequence. Changes in ownership are very frequent and they often take place un-noticed: frequently these firms have no "brand", no website and – outside of the bioscience sector – they have little or no public profile.

B1.36 However, even in the arena of bioscience and drug discovery, the suggestion was made that it is possible to generate revenue reasonably quickly. Key to this is a different approach to value creation and one which has more parallels with other high tech sectors, notably IT. Consultees suggested that it could be achieved through the identification and exploitation of platform technologies which, through licensing and other arrangements, can lead to early revenue streams. Consultancy is another way to generate early revenue streams, although consultees were less positive about this because it is very time consuming and therefore likely to distract from the main business of product development.

B1.37 The suggestion was that while there were precedents within Cambridge, this alternative approach to value creation has certainly not been the predominant "Cambridge model" to date – in part because it needs to be driven forward by commercial business leaders and it cannot simply rely on scientists backed by venture capitalists who are pre-disposed to exit as the route for realising value.

B1.38 Whatever the rights and wrongs of these two arguments, it was evident from our consultations that while bioscience encapsulates some of the potentially most important technologies – with massive potential application in the arena of personalised healthcare – there are still some very fundamental challenges at the core of the business model. These relate ultimately to the relationship between value creation and realisation in the context of a highly regulated operating environment. For some in the sector, there is real frustration.

(vii) Skills and labour markets

B1.39 At the Cambridge Phenomenon Conference on 5th October 2010, 300 delegates were asked for their views on "*the greatest threat to the success of technology companies in Cambridge*". A vote followed. "*Inability to recruit executives with commercial skills*" was identified as "*the greatest threat*" by 36% of those who voted. "*Lack of funding*" received 32% of the vote and "*lack of physical infrastructure*" was identified as "*the greatest threat*" by 23%. Our consultations were broadly consistent with this assessment.

The labour market for technical skills (science, engineering, IT, etc.)

B1.40 On the basis of our consultations, it was apparent that in general, Cambridge is a very good place to recruit staff with high level technical skills; there is – as one consultee put it – "*a big population of geeks and nerds*". The University of Cambridge generates the highest calibre science graduates. Although it was widely acknowledged that many new, young, graduates find the lure (and particularly the salaries) of the City of London irresistible, there was also

recognition that Cambridge-based firms do hold on to a few (particularly those with higher degrees) and, for many of the start-up businesses, "*bored PhD students*" are a skilled, motivated and flexible resource. More generally, once individuals reach the age of about 30, the sense was that Cambridge becomes a more attractive place to live and a good number are willing to move back. Among the businesses we spoke to, recruitment of technical staff was not seen as an issue. First and foremost, a supply of high quality scientists and engineers is generated in Cambridge (and in this context, the role of ARU was also noted, especially in terms of IT/software skills). Second, it was acknowledged that those with technical skills are generally willing to relocate to Cambridge and/or to work remotely for Cambridge-based enterprises (which is generally possible given business models). Third, particularly in bioscience, the observation was made that the pool of available labour has been significantly augmented through the restructuring of big pharma (and associated job losses) in Harlow and Stevenage.

B1.41 In terms of recruiting scientists and engineers, many businesses relied on personal networks and particularly for the smaller firms, social networking – of the form described in paragraph B1.20 – also played a role. In addition, more formal recruitment channels – such as the Cambridge Network and its website – seemed to play an effective role.

B1.42 The labour market geography that was generated in response was a curious mix. Particularly for younger, IT-based, professionals, the "bicycle economy" defined the labour market's spatial footprint. Many of these people lived in the city centre and were very keen to work there – and the sense from their employers was that a journey to either Cambridge Science Park or West Cambridge was seen as a long distance excursion and a serious inconvenience. On the other hand, there was also evidence of a spatially very extensive labour market for technical skills with reasonably long distance commuting: some of those who could not resist a London lifestyle (including some of the entrepreneurs) would "reverse commute" to work in Cambridge; those working in biosciences would commute reasonable distances, generally from the south (Hertfordshire, Essex); while those relocating to work in Cambridge would often tend to live to the north of the City (where housing was considered to be more affordable) and then commute in. These broad patterns were heavily influenced by the age/stage of workers: younger workers opted for the town centre/London whereas those in their 30s and beyond typically commuted into Cambridge from the surrounding towns and villages.

B1.43 Within the technical labour market, "labour supply" was not therefore a serious problem. Comments were made about housing and its affordability, but solutions – of varying forms – were being found and there was no evidence to suggest that business growth was being compromised because of labour or skills shortages or gaps.

The labour market for commercial skills (sales, marketing, business development, etc.)

B1.44 The situation with regard to what we might label "commercial" skills was quite different. In this context, Cambridge was seen simply as "too small" to attract "the brightest and best" while the perception that Cambridge was effectively a focus for science – rather than a hub for the growth of science-based firms – tended to become self reinforcing. Moreover, there was some suggestion that the "Cambridge offer" was just not good enough to attract these

highly mobile individuals: while Cambridge ranked highly in terms of the quality of its schools (which was seen as important), the quality and availability of its housing stock at the top end was considered to be mediocre. As one consultee put it, *"if I'm coming from Silicon Valley and I want a nice, £3m, house in Cambridge, where do I find it?"*.

B1.45 The view expressed consistently by our business consultees was that to find good commercial skills, firms needed to look in two places within the UK: London and, to a lesser extent, the Thames Valley/M4 Corridor. In response, a number of businesses appeared to have established some kind of physical presence in London simply because it was the only route to securing first rate business development professionals. Even so, "the problem" appears to have been far from solved.

B1.46 Cambridge – and the firms within it – undoubtedly benefits from and generates "*good science*". A few notable exceptions notwithstanding, the challenge of converting this to sustained business growth was widely noted and a core part of "the problem" was considered to be commercial skills – hence the outcome of the vote at the Cambridge Phenomenon Conference. However, the suggestion was also made that this line of argument was in danger of conflating two different issues: while the recruitment of high calibre individuals with foremost commercial skills is difficult, the "the problem" is more deep-seated and it relates to business structures and processes (and financing models) which are simply not designed for organic growth. There were some examples of firms with excellent business processes – Abcam was referenced repeatedly – but these were few in number. If the more general argument is accepted, it is apparent that addressing the labour market issues will only provide part of the answer.

(vii) Supply chains

B1.47 Technology-based businesses in Cambridge tend to be intrinsically well – and deeply – networked. This observation applied to the whole process of "doing business" including, where relevant, to firms' supply chains. That said, many of the businesses we spoke to were not actually making physical products. In turn, this observation is consistent with Evans and Garnsey's characterisation of the Cambridge cluster in terms of sharing a common pool of skilled local labour and job mobility, *not* in terms of value chains (for these are international rather than local in their geography)[4].

B1.48 For firms engaged in some form of production, the majority are doing so at a small scale and in these circumstances, they tend to find a network of local suppliers seriously helpful – mostly because there is easy scope for frequent dialogue and, given their stage in the business development life cycle, slightly higher unit costs are really not relevant (as production scales are small). These firms commented on their suppliers falling broadly into three groups:

- those within cycling distance – i.e. within Cambridge itself
- those within an hour or so – and in this regard, a supplier located in Ipswich or Northampton (and there were examples of both) was at no disadvantage compared to

[4] *The Cambridge High Tech Cluster on the Eve of the Financial Crisis*, Evans and Garnsey (2009), IfM Working Paper

one from St Ives or Ely (i.e. the distinctive nature of the market town argument is a bit questionable)

- those located anywhere around the globe.

B1.49 With regard to supply chains, the "bicycle economy" was evidently important and extreme localisation did appear to confer some real benefits. However amongst the firms with which we consulted, these benefits should not be overstated: once production achieves any kind of scale, the globalisation imperative becomes overwhelming. This observation was made both in terms of physical products but also in relation to some technical inputs – e.g. the sourcing of design solutions.

(viii) Commercial property and sites for employment uses

B1.50 For early-stage technology-based businesses, the "offer" around commercial property is seriously important. The need, overwhelmingly, is for premises that are cheap, flexible and well-located and, in the main, the sense from our consultees was that on balance, the Cambridge offer is "not bad". From the perspective of our business consultees, three main groups of observations need to be made in this context.

B1.51 First, it was apparent that over the last couple of years, some new and different physical spaces have emerged for business incubation. These "spaces" merge completely with the process of start-up. Two were the source of some comment:

- within Redgate, provision had been made to host a few new, early stage, businesses. In some cases, this has just meant the provision of spare desk space. However Redgate also hosted a "Springboard" programme for a year, based on the North American concept of the "Ycombinator". Following a competition, this brought four teams of would-be entrepreneurs to Cambridge with the expectation that they would receive mentoring and a small amount of cash (to cover living expenses) from Redgate for a few months; at the end of this time, Redgate might take an equity stake, if it liked what it saw. Views on the success of the Springboard initiative were quite mixed. The programme has not been rolled forward

- IdeaSpace had been established within the Hauser Forum. The concept of IdeaSpace was seen as a good one. Again though, there were mixed reviews as to how well it is working in practice.

B1.52 Second, it was evident that the more established specialist provision for early stage businesses was continuing to play an important role. From our consultations, the tenants of St John's Innovation Centre (SJIC) tended to complain about the cost of office space as did those of the Innovation Centre on Cambridge Science Park, but in both cases, there was also enthusiastic acknowledgement of the distinctive benefits of "*their* space" (especially when discussed in relation to each other). With regard to SJIC, tenants acknowledged the help and support they received from both the management team and from other tenants. One former tenant – now one of the major Cambridge success stories – noted just how important it had been that the then-managing director of SJIC had cast a blind eye to the fact that for a period, a dozen or so staff were crammed into a very small unit thereby violating every rule in the tenancy

agreement; this flexibility had been really important in enabling the business to grow. More generally, one of the current tenants commented that SJIC was both energising and motivating because it provided a continual "buzz" and "*a sense that anything, literally, is possible*". Similar levels of enthusiasm were expressed by tenants of the Innovation Centre on Cambridge Science Park. Here, the overarching theme was the flexibility of the space and the fact that there was genuine scope to meet informally with other small businesses through shared kitchen space and the like.

B1.53 With regard to the bioscience sector, the picture was more complicated and there were differing views. One firm commented that a key reason why it had been established in the Cambridge area (rather than Manchester) was that flexible and reasonably cheap space (including wet lab facilities) was made available at Babraham. Other consultees however noted that the amenities for bioscience firms to the south of Cambridge were "outrageously expensive": £39 psf was mentioned as the "going rate". In addition, there was concern that the required covenants were very onerous. These two sets of observations were ultimately not inconsistent: the "flexible and reasonably cheap" space at Babraham was also acknowledged to be that which was "quite scruffy", but it met the needs of start-up businesses, particularly given the fact that many of these firms really do not have a public persona (see paragraph B1.35). There was a concern that in smartening up premises, rental levels were in danger of escalating significantly. Small, technology-based start-ups need cheap premises; they are much less concerned about their aesthetics and looking ahead, real account must be taken of this.

B1.54 Third, the "prime business location" within Cambridge was acknowledged to be the city centre, a judgement that was tempered only by the difficulties of getting there. Overwhelmingly, given the choice, high tech firms – and particularly those with a strong service sector element – would opt for a city centre location. Although they have learned to live with it, being located at Cambridge Science Park or in West Cambridge or at Cambridge IQ (Waterbeach) was seen as second best. In the main, firms' preference for city centre locations seemed to be driven by two main factors:

- there was a strong – and we would suggest growing – sense that "*working spaces" need also to be "social/meeting spaces"*. In this context, it was noteworthy, for example, that although a smart new development, West Cambridge was perceived to be "miles away from anywhere" and its principal shortcoming appeared to be a lack of informal meeting spaces (i.e. no pub). More generally, we were struck by just how much business appeared to be being done in social/meeting spaces – coffee shops, restaurants, pubs, etc. This related intrinsically to the importance of informal networking and the increasingly fuzzy boundaries between work/leisure, social/business, friend/colleague, supplier/client. But it also sits at the core of how a cluster functions and how agglomeration economies are generated. And for many knowledge-based businesses in Cambridge, this is the very lifeblood

- in addition, *access to London was crucially important for a good number of businesses* and this is simply much easier and much cheaper from locations close to the railway station. The comment was made that a taxi fare from the station to West Cambridge costs about £12 and the taxi ride can take 30 minutes. For a consultee

based on Cambridge Science Park, the fact that there is no direct bus to the station was both inexplicable and a major concern. For both labour market and commercial reasons, Cambridge based technology businesses need to be part of the "London scene" and good access to London is therefore critical. This is simply much easier for businesses based in the city centre, particularly when a good number of their employees also live there (although the proposed Chesterton station would greatly improve access to the rail link for businesses on the northern fringe of the city).

B1.55 The competitive advantage of city centre locations vis-à-vis the principal employment sites on the city fringe has been further highlighted by the recent decision of Microsoft to relocate its flagship research activities from West Cambridge to a site which is close to the station and part of the CB1 development. Symbolically – for West Cambridge – this move is seriously unhelpful. But for Microsoft it makes a great deal of sense: it is part of its wider expansion plans; it means that most of its staff will live closer to their place of employment; and it facilitates closer effective links with London.

(ix) Infrastructure

B1.56 For our high tech business consultees, two aspects of infrastructure provision generated some comment: housing and transport.

B1.57 With regard to the former, several firms commented that staff – other than those who were willing to adopt (effectively) a student lifestyle (sharing houses, etc.) – simply could not afford to live in Cambridge. Hence a good number were compelled to live outside the city and commute in. The geography of this wider labour market varied. For firms located on Cambridge Science Park and within St John's Innovation Centre, commuting was generally from the north, east and west. For bioscience firms, it tended to be from the south. In addition, there was a general comment that many travel to work patterns were determined by the need to accommodate dual career households in which at least one party needed good access to London – hence travel from the south again featured. Notwithstanding these wider issues, firms commented that they would simply like to see more housing that their staff could afford, ideally within Cambridge itself. And particularly from those consultees that themselves lived in newly developed housing, a further observation was provided: whilst housing development has happened (and is happening), many of the new schemes are "thin" with regard to wider amenities, and these are important.

B1.58 However there was a second issue with regard to housing (to which reference has already been made). In essence, it concerned the availability of "top end" housing options. These were considered to be in very short supply and – for Cambridge to sustain its long term competitive position – the view was that greater provision really ought to be made: Cambridge needs to be a place where globally mobile and wealthy workers can and will choose to live, and the housing offer needs to reflect this.

B1.59 With regard to transport, surprisingly little reference was made to the strategic road infrastructure, notably the A14. However the difficulties of travelling across Cambridge – particularly between the main employment sites, the town centre and railway station – was a cause of much concern and frustration. In this context, the progress of the Cambridgeshire Guided Busway (CGB) was met with complete derision, particularly from tenants of

Cambridge Science Park. For the local authorities (and firms did not generally distinguish between the County Council as the transport authority and other local authorities), the level of concern from the high tech business community needs to be taken on board. To be effective, the CGB always was going to need a degree of good will and a willingness to change well-entrenched travel modes and habits; but on the basis of our consultations at least, the stock of good will now appears to be seriously depleted. Once the legal wrangles are resolved and the weeds are cleared from the track, there will be a major PR job to do in re-establishing the scheme's credibility. It is also important that – once operational - the CGB provides a fast, reliable link between north Cambridge, the city centre and station, and Addenbrooke's. This is clearly a challenge because of its use of existing roads between the science park and the station.

(x) Cambridge as a place to live

B1.60 In the main – and perhaps not surprisingly – most of our consultees were broadly positive about Cambridge as a place to live. Housing and transport issues notwithstanding, Cambridge was seen as offering a good "quality of life" with excellent schools and healthcare; a vastly improved town centre following the completion of the Grand Arcade; some excellent restaurants; and a good cultural offer. As one consultee put it, *"I don't have time to enjoy all the concerts and events that happen, but it is very good to know that they are going on"*. Some of the younger entrepreneurs commented that the Cambridge nightlife was quiet while one of the older ones bemoaned the continuing absence of large scale concert facilities; a general comment was that "Cambridge is still not London". In the main, though, most of our consultees appeared to be satisfied.

B1.61 Against this backdrop, there were very mixed – and to some extent contradictory – views on the extent to which Cambridge should be allowed to grow.

- one argument – made by several consultees – was that Cambridge should grow, and that it should attract in a suite of global businesses. This was explained in terms of putting Cambridge on the map and generating critical mass, particularly in terms of business development professionals. It was also explained in terms of virtuous circles of business relationships (i.e. more clients/customers within the local area)

- however, another argument was that the essential nature of Cambridge would be eroded if the city was allowed to grow any bigger. Cambridge – as an economy and as a city – thrives because of its networks. As explained by the anthropologist, Robin Dunbar, there is a limit to the scale of networks owing to the number of social relationships that individuals can sustain, something around 150-200. One degree of separation is possible in defining a trust-based network and on this basis, a working population of around 40,000 was considered to be optimal. This is roughly the scale of Cambridge's current working population in the high tech cluster.

B1.62 Looking ahead, the question of scale – and how big Cambridge should become – is clearly very tricky. Decisions that are made need to be informed by a thorough understanding of how the place works and its critical interdependencies. In this context, it is instructive to take some account of entrepreneurs' long term ambitions for their own businesses. Two observations are important in this context:

- for most of the firms to whom we spoke, the medium term (3-5 year) ambition was one of exit. Very few wanted to grow their business. Instead, they wanted to take it to a certain size, sell it and make some money, and then start again. For these individuals, the motivating factor was the start-up process and none had aspirations in the direction of large scale corporate management – it was not what they regarded themselves to be good at or where their interests really lay

- in the main, consultees were not unduly worried that Cambridge allegedly has failed to grow large firms. Indeed, many even disputed it. ARM was held up as a large, global, player – albeit one that achieved global reach as a result of patents, licences and royalties, rather than direct employment. This model was regarded as highly successful and one that ought to be emulated. The implication was that businesses within Cambridge and the city itself could grow in terms or profile, reach and influence without a major increase in physical scale.

(xi) Cambridge on an international stage

B1.63 Finally, we must make some comment on Cambridge in a global sense. Throughout this discussion, the importance of networks within Cambridge has been repeatedly emphasised as the defining core of the cluster. However it would be seriously wrong to assume that somehow Cambridge is an isolated self-sustaining ecosystem; it isn't. Many of the businesses – and the business processes on which they are based – are at once both localised and highly globalised. Amongst our consultees, we observed, for example, that:

- even among relatively small businesses, operations are built on a global footing from the outset – there is little sense of "getting things right in the UK and then looking internationally". Quite often firms operate through networked structures and their activities are located wherever their key workers happen to live and/or their customers happen to be. For at least one, securing a robust early sales route in North America was very important

- many were aware of peers who had been attracted to Silicon Valley in order to set up businesses. Reasons for not following included mundane issues like student debt and visas (i.e. obtaining permission to work in North America is not that easy). But – as we argued in paragraph B1.24 – for businesses wanting to raise serious VC finance, Silicon Valley was definitely the place to be and most of our consultees were fully aware of the situation

- in part because of the University of Cambridge, many founders / early employees are not UK nationals – people come from all of the world to study at the University of Cambridge, and some set up businesses in the Cambridge area

- for small businesses looking to sell their product/services to international customers, the Cambridge brand is really important and useful.

Conclusions

Research questions

B1.64 At the end of Phase 1 of this study, a number of research questions were posed with regard to *Role 1 – Cambridge as a hub for high tech businesses*. In the light of the evidence gathered in the course of preparing this Role Report, we offer some summary responses by way of conclusion. These are set out in the table that follows.

Table B1-4: Key research questions linked to Role 1

Question	Response
How will the apparent lack of finance impact on the growth of the Cambridge high tech cluster over the medium term and – in the context of a likely reduction in public sector grant funding – what might be done about it?	There is much less early stage finance available now as compared to 5-10 years ago and this will certainly impact on the cluster's growth. In the past, high tech firms also benefited from public sector grant funding. This has been seen as an important part of the mix. In the light of both changes, it may be that the cluster stalls – but this is not inevitable, not least because the VC-based model was not without its own flaws and the reduced availability of finance is a generic, not Cambridge-specific, problem. It could be that the shortage of finance might effect a change in prevailing business models with, perhaps, a far greater incentive for – and discipline to achieve – the early establishment of revenue streams. Potentially this may be achievable through licensing arrangements, undertaking R&D contracts for others, or providing consultancy services.
Is there scope to increase the incidence of "soft starts"? Where are the levers in this context, and what – if anything – can be done locally to support it? What is the likely scale of new starts emerging from the University and research infrastructure in the future given the increased emphasis on licensing as a route to commercialisation?	With regard to the scope for an increased incidence of soft starts: • Carter Jonas concluded that there is a shortage of incubator/innovation centre space in Cambridge. ICs support soft starts by (a) having virtual tenants which use the IC as their mailing address, phone reception and for meetings, but don't have to take space there until and unless they want to; and (b) providing access to business support to their virtual and actual tenants. The social enterprise centre and the Hauser Forum are obviously important steps forward for different types of start up, but arguably they and SJIC are not sufficient for the scale and range of start ups Cambridge needs to generate – i.e. not just in high tech and social enterprise sectors • Some consultees questioned whether there may be scope for the University of Cambridge to make spare lab space available for what would in effect be soft starts. • Informal and formal networks and social spaces in which to meet are very important to the soft start model. So supporting them is important, since they are one of the most distinctive comparative advantages offered by the Cambridge sub region. Many factors combine to determine the scale of spin-outs emerging from the University and wider research infrastructure. However, a best guess would be that there will be a continuing flow of spin-outs and start-ups with business models that allow a soft start; but a possible decline in those that require substantial amounts of 'patient' investment over extended development periods (this is not just the case for bio-science but can also apply in other disciplines such as physics and materials)
Are younger entrepreneurs in Cambridge ambitious in relation to growth and what do they see as the principal opportunities and constraints? Will the current complement of business support providers be a help or a hindrance in realising these ambitions? Is the current and likely future supply of land and premises likely to be sufficient in scale, quality and location to meet the needs of the high tech cluster?	Younger entrepreneurs in Cambridge are ambitious in relation to growth, although most seem interested in an exit-based growth model rather than one of long term and organic growth: it is the process of start-up that seems, in general, to be the real drive and few express any interest at all in the management of an established business The relationship between business support providers and younger entrepreneurs was difficult to ascertain. What was clear, however, was that younger entrepreneurs were generally identifying their own solutions and in this context, relationships with other Cambridge-

Question	Response
	based businesses and people were critical In theory, providing finance has been secured, future provision of land and premises ought to be sufficient. That said, the overwhelming preference is for city centre locations and in this part of the property market, there may well be a very limited supply of affordable options
Is it possible to develop criteria to identify a sub-set of high tech firms for which it would make business sense to develop manufacturing and other activities across the value chain locally?	Many high tech firms are not dealing with physical products and hence their supply chain – in the conventional sense – is really quite "thin" For firms undertaking some kind of production, there is evidence of local sourcing, although not in any kind of exclusive sense. Three geographies seemed to be very important: within Cambridge, within an hour, and globally. If quality can be assured, the third of these brings significant cost advantages (largely because of labour costs). For the first two, links are already in place. Potentially, more could be made of these. In particular, there is a need to recognise that some very local manufacturing capacity is important and employment land therefore needs to be made available
What services are being offered by Enterprise Hubs/Innovation Centres/Science Parks within other high tech milieux (including some internationally)? How do these compare with those available to Cambridge firms?	The international comparison of science parks and similar developments, referenced in Case Study 2 in Part A, concluded that the main strengths of Cambridge in relation to international comparators are strong human capital, the role of universities and colleges as bridging institutions, and the presence over time of a succession of high profile individuals who have championed Cambridge. The main weaknesses are probably in relation to a single leadership focus – including collaboration between the different specialist schemes in the Cambridge area - and the lack of sustained public and private sector funding. In addition, our Theme 1 Report (see Part C), on the demand for and supply of land and property in the sub region, concludes that there is a shortage of incubator and innovation centre space in Cambridge, and of grow on space, focused on the high tech cluster, relative to comparable cities.
Is the development pipeline and land availability situation sufficient in quality and quantity for the scale and type of growth likely to materialise in the high tech sector specifically, and the business sector more generally, over the next 10 years?	There is a shortage of genuine business incubation/innovation centre space in Cambridge, with a particular crunch expected in the future supply of bio-incubator space with wet lab facilities Manufacturing space is in short supply in Greater Cambridge. Land and property prices militate against use of sites for most manufacturing, but the situation is made worse by: • the local authorities having allowed a steady loss of manufacturing land and buildings to redevelopment for housing (e.g. Hauxton) • planning policies (policy 7/2 in the Cambridge Local Plan and policy ET/1 in the South Cambs Development Control Policies DPD) which restrict the scale of manufacturing facility that can be developed throughout Cambridge and South Cambs to under 1850 sq m. This discriminates against large scale, high value manufacturing Planning policies (including science park use conditions and local user restrictions) also discriminate against headquarter functions locating in Cambridge, yet HQ facilities provide a high proportion of high value jobs and help retain wealth for the local area (same policies as above)

Source: SQW

Role 2: Cambridge as a "research community" (focusing on science and technology research funded principally by the public and charity sectors)

Introduction

B2.1 The Cambridge research community as discussed in this Role Report comprises three main components:

- research undertaken within Cambridge University (CU)
- research undertaken at Research Council funded institutes
- research undertaken at charitably funded institutes.

B2.2 In practice the second and third of these are chiefly focussed on the biological and medical sciences.

B2.3 There is a very substantial research effort undertaken within the corporate sector which provides the focus for Role 1. In addition, there are several other centres of research that, whilst less substantial, need to be acknowledged:

- Anglia Ruskin University has active researchers in a number of fields, notably including digital media, and has enhanced its research standing over recent years. It also runs important entrepreneurial courses and has increasing links with the high tech business community
- the Animal Health Trust near Newmarket which undertakes research and provides services has links to the cluster of equine activities around the town
- the British Antarctic Survey, principally funded by the Natural Environment Research Council, employs over 400 people in Cambridge and in support of its five research stations. It is part of a cluster of polar-related research groups including the Scott Polar Research Institute (part of Cambridge University)
- the National Institute of Agricultural Botany has its headquarters in Cambridge where most of its 220 staff are based. It has charitable status and plans to expand its research capabilities through the construction of new research facilities (financed by land sales)
- TWI (formerly The Welding Institute) is a research association which has internationally recognised expertise in a variety of technologies for joining materials.

B2.4 Funding for research undertaken within CU comes from the Higher Education Funding Council for England (HEFCE), the Research Councils, government departments, charitable bodies, international organisations and industry. Funding from industry may be through

contracts for specific research projects, but it may also be through a gift that has no strings attached. As the data below show, Cambridge is amongst the UK's top research locations and it has been described as the best place outside the USA for a bio-science researcher to work.

B2.5 Data in the third section of this Role Report demonstrate the scale of research. Its broad quality can be gauged through the high rankings achieved by many departments in the Research Assessment Exercise and by the strong position that Cambridge University achieves in international league tables; where it usually ranks in the top four places. However, before looking at the current position which those data describe, it is instructive briefly to consider some highlights in the development timeline.

A brief look back

B2.6 Scientific research at Cambridge University has a long history as was documented in SQW's 1985 Cambridge Phenomenon report.

> *The University's excellence in science can be illustrated by reference to many individual pieces of research or the work of many departments, but probably the best example is the physics department (Cavendish laboratory) because of its long and distinguished record. It was endowed in 1870 and at once attracted a stream of scientists who were already or soon entered the forefront of their particular fields. In the period up to the 1930s, physicists in the Cavendish were responsible for many of the major breakthroughs in atomic structure and crystal structure; in the second world war Cavendish scientists played leading roles in the development of radar, telecommunications and electronics; and after the war the laboratory led the world again by applying physics in two totally new fields, molecular biology and radio astronomy. The Cavendish also played a vital role after the war in the development of electron-optical analytical techniques which, in conjunction with work in the engineering department, led to design and construction of major new scientific equipment by local industry".*

B2.7 The early (1947) molecular biology research, housed in the Cavendish, was funded by the Medical Research Council (MRC) in support of work by Max Perutz and John Kendrew using X-ray diffraction to study proteins.

> *"The unit quickly diversified into other areas, including the structure of DNA, mechanism of muscle contraction, and structure of viruses, and became one of the birthplaces of modern molecular biology….*
>
> *The MRC, realising the potential for medical applications of these developments, provided a new building for the unit, and in 1962 the Laboratory of Molecular Biology on the new Addenbrooke's site was opened. Since then, the Laboratory has been a prolific source of new ideas, discoveries and inventions, establishing its reputation as a leading international research centre.*
>
> *The Laboratory has won nine Nobel Prizes, shared by 13 scientists, for key discoveries and research undertaken in Cambridge.*

> *Discoveries made at LMB have also formed the basis of many biotechnology companies, including Domantis, Cambridge Antibody Technology, Ribotargets, Protein Design Labs, Celltech, and Biogen."*[5]

B2.8 At the time of writing a new building for the LMB is under construction at the Addenbrooke's site, providing about 300,000 sq ft of usable space for 450 scientists; the investment being justified both by the quality of science and the benefits it has produced. At the topping out ceremony on September 10th 2010, the Minister for Universities and Science, David Willetts, said:

> *"This super-lab will be the global site for a new age of research collaborations aiming to alleviate human suffering. The MRC Laboratory of Molecular Biology has already made great strides towards this goal, ploughing back more than £300m of commercial income generated by its discoveries into the life-saving science of the future. This new facility will build on that success."*[6]

B2.9 The Babraham Institute was founded in 1948 and initially focused on animal physiology. Its research focus now is on biomedical research to discover the molecular mechanisms that underlie normal cellular processes and functions, and how, over lifetime, their failure or abnormality may lead to disease. The Institute has an extensive campus that incorporates a bio-incubator.

B2.10 A third major research location, now some 20 years old is the Wellcome Trust Genome campus at Hinxton. The campus is a 55 acre site which houses the Sanger Institute (established with a £300 million grant from the Wellcome Trust) and the European Bioinformatics Institute. The Institute's first director, Sir John Sulston, was previously a researcher with the LMB (in 2002 he and two former LMB colleagues were awarded the Nobel prize for their work there).

> *"In 1996, both the Sanger Centre and the neighbouring EBI began to migrate into purpose built new buildings. These would be home to some of the most important genetic discoveries of the 20th and 21st Centuries. A second building development to extend the Campus' facilities was opened in 2005, creating a state-of-the-art new home for staff amenities and a data centre to house the growing data storage needs of the Sanger Institute and EBI."*[7]

B2.11 Whilst less visible than breakthroughs in the life sciences, other disciplines have achieved significant advances, for instance in light emitting polymers and plastic electronics (both centred on the Cavendish). An impressive group of new laboratories is now visible on the West Cambridge site (Computing, Manufacturing, Photonics, Physics of Medicine) and a major plant science laboratory is nearing completion in the Botanical Garden (funded by the Gatsby Charitable Foundation).

[5] Source LMB website
[6] MRC press release
[7] Hinxton website

Current position

Scale of Cambridge University and its research funding:

B2.12 The most comprehensive data set on the University of Cambridge is in the report produced by Library House which typically provides data for 2004. This defines the University as comprising, in addition, the Colleges, Cambridge Assessment (CA) and Cambridge University Press (CUP). The headlines are

- 11,964 undergraduates (FT)
- 5,396 graduates (FT) plus 2,371 (PT)
- 11,700 direct employees
- annual expenditure of £951 million
- income from Government (including HEFCE and the Research Councils etc.) of £223 million (excluding CA and CUP)
- local impact is not measured but regionally 77,000 jobs are said to be supported (which implies a very high multiplier).

B2.13 The value of Cambridge University is significant. Various attempts have been made to quantify its impact, although inevitably, these rely on significant assumptions (some of which could be debated). For example, in its report, *The impact of the University of Cambridge on the UK Economy and Society*, Library House generates out some big estimates of the University's impact: it concludes that the economic impact of the loss of the Cambridge Cluster (including Cambridge University, related research institutions and the high tech firms) on the UK over the next ten years would require the replacement of a net present value (NPV) of £57.5bn in GDP and approximately 154,000 new jobs. This amounts to 4% of UK GDP in 2010, or 7% of the entire national debt.

B2.14 Time series data showing sources of research income are given on the CU website. These underline the importance of Government funding which on a narrow definition accounts for 50% of the total.

Table B2-1: A snapshot of the recent development of research funding £m

Sponsor type	2004/4	2004/5	2005/6	2006/7	2007/8	2008/9 (%)
UK Research Councils	66.4	74.1	82.1	93.2	112.3	123.3 (46%)
UK Charities	52.2	57.2	60.0	60.6	68.5	71.6 (27%)
UK industry and commerce	20.5	20.3	19.7	16.8	18.4	14.6 (5%)
UK Government bodies	12.3	7.8	7.1	9.2	9.9	9.5 (4%)
UK health and hospital authorities	1.9	1.5	1.2	1.0	3.5	8.4 (3%)
European Commission	10.4	10.9	11.6	12.7	14.2	19.0 (7%)
Overseas	10.6	10.8	12.3	15.4	16.0	19.3 (7%)

Sponsor type	2004/4	2004/5	2005/6	2006/7	2007/8	2008/9 (%)
Other sources (plus Full Economic Cost transitional funding)	1.8	5.9	9.6	2.6	1.1	1.2
Totals	176.3	188.7	203.9	211.5	243.0	266.9

Source: Cambridge University website

B2.15 The relative scale of the research effort at Cambridge University can be seen from data showing the top five recipients of core funding from HEFCE (QR), which broadly reflects the quality of research undertaken, and income from grants and contracts (including Research Councils, charities, government, industry and others).

Table B2-2: Leading universities' income from research grants and contracts 2007/08 £m

	Grants & Contracts		QR	
	Science & Engineering	All subjects		Science & Engineering Plus QR
University of Oxford	251.4	285.3	104.2	355.6
Imperial College London	251	255.5	91.8	342.8
University of Cambridge	223	243.0	107.1	330.1
University College London	203.6	211.2	101.3	304.9
University of Manchester	159.5	175.7	77	236.5

Source: HEFCE and HESA

Location of research

B2.16 In spatial terms there are three major concentrations of research in Cambridge and two outlying research campus developments:

- in central Cambridge
- on the either side of the Madingley Road in West Cambridge
- in and around Addenbrooke's Hospital
- at Babraham (the Babraham Institute)
- at Hinxton (the Wellcome Trust Sanger Institute and the European Bioinformatics Institute).

B2.17 For Cambridge University, a crude indication of relative scale of research by discipline can be obtained from the numbers of staff submitted to the Research Assessment Exercise (RAE). Comparisons have to be drawn with caution because, although Cambridge submits over 95% of its tenured staff for the Assessment, staff employed on research contracts are only submitted if their seniority entitles them to act as a Principal Investigator. Moreover the numbers shown below cannot be taken as indicative of employee numbers. In addition to researchers who are not submitted to the RAE, both technical and administrative support staff are omitted. Taking Engineering as an example, 150 staff were submitted for the RAE, whilst the University telephone directory lists well over 500 staff in the Engineering Department.

Table B2-3: Number and approximate location of CU staff submitted to the RAE

Research area	Submitted staff	Location	Research area	Submitted staff	location
Cardiovascular medicine	10	Addenbrooke's	Agric', vet' and food science	39	West Cambs
Cancer studies	34	Addenbrooke's	Earth systems and env' science	45	Central Cambs
Cancer studies (ICR)	66	Central Cambs	Chemistry	63	Central Cambs
Infection and immunology	46	Addenbrooke's	Physics	141	West Cambs
Other hospital based clinical subjects	54	Addenbrooke's	Pure & applied mathematics	135	West Cambs
Epidemiology and pub' health	10	Addenbrooke's	Statistics and operational research	16	West Cambs
Primary care etc	5	Addenbrooke's	Computer sci' & informatics	45	West Cambs
Psychiatry, neuroscience & clinical psychology	41	Addenbrooke's	Chemical eng'	31	Central Cambs
Biological sciences	214	Central Cambs	General eng' and mineral and mining engineering	150	50% West Cambs 50% Central Cambs
Biological sciences ICR)	31	Central Cambs	Metallurgy and materials	30	Central Cambs

Source: HEFCE

B2.18 Very tentatively this suggests the spatial distribution of the University's scientific and technological research is broadly split as follows:

- around Addenbrooke's Hospital 17%
- in central Cambridge 46%
- along Madingley Road/West Cambridge 37%.

B2.19 In addition, there are 11 MRC research centres, units and groups in Cambridge (including the LMB) and most of their staff are located in and around Addenbrooke's, as is the Cancer Research UK Cambridge Research Institute (CRI) which has some 18 research teams. When these are taken into account, research employment at Addenbrooke's is, probably, at least on a par with the other two locations. Looking to the future it is probable that both Addenbrooke's and West Cambridge will grow in research scale relative to central Cambridge sites.

The Addenbrooke's Biomedical Campus and links between the NHS and the research community

B2.20 The master plan for the Biomedical Campus allocates 25 acres for biomedical research (in addition to the land required for the LMB).

> *"planning consent is being secured for 215,000 sq m of research, clinical treatment and higher education development. High quality flexible accommodation can be provided in secure managed surroundings, on either virtual freehold or leasehold terms.*
>
> *Countryside Properties and Liberty Property Trust have extensive experience in bespoke property development and excellent knowledge of the biomedical industry. The Campus has been expertly master planned by the developers and their architects to respond to specialist property requirements of all sizes."* [8]

B2.21 The aim is to attract occupiers before constructing the buildings. Given that individual buildings of four to five stories each provide some 50,000 sq ft , there will be a need to attract major firms and/or research institutions. The possibility of an incubator building was explored but, although favoured by some leading MRC researchers, it was not seen as viable by Cambridge Medipark Ltd (which is owned by the Cambridge University Hospitals NHS Foundation Trust and the two developers). The LMB building sets a tone of international excellence and has facilitated initial infrastructure development. However, although targetted marketing has recently been given a new impetus through Cambridge University Health Partners (CUHP), it seems unlikely that the Biomedical Campus will achieve rapid development unless there is a source of funding for speculative development.

B2.22 In addition to developments through Cambridge Medipark Limited's campus the Health Trust has separate plans for developing a private hospital, a hotel and a conference centre.

Cambridge University Health Partners (CUHP)

B2.23 CUHP's broad objective is to drive forward the relationship between the NHS and Cambridge University. It will also seek to ensure good links with the MRC and other research institutes. Its potential importance is underlined by the appointment of the Regius Professor as Chief Executive and a senior member of the NHS directing team as Chief Operating Officer. The website describes CUHP as:

> *"A strategic partnership aiming to improve patient care, patient outcomes and population health through innovation and the integration of service delivery, health research and clinical education."*

It states further that:

> *"Cambridge University Health Partners is one of only five Academic Health Science Centres in England recognised by the Department of Health as internationally competitive centres of excellence in the integrated delivery of health care, health research and the education of health professionals"*

[8] Cambridge biomedical campus website

B2.24 Whilst its remit is still evolving, CUHP already provides an easy to understand portal into Cambridge's biomedical community and, as well as providing a forum for high level liaison, it may be expected to undertake some project management tasks and, possibly some project implementation.

The Babraham Institute

B2.25 The Institute is a registered charity, sponsored by the Biotechnology and Biological Sciences Research Council (BBSRC) although there is currently some debate about governance issues. Research is also supported by the Medical Research Council (MRC) as well as medical charities.

> It *"…..undertakes innovative biomedical research to discover the molecular mechanisms that underlie normal cellular processes and functions, and how, over lifetime, their failure or abnormality may lead to disease"*.
>
> *"There are approximately 450 members of the Institute, including around 30 research Group Leaders, 70 graduate (PhD) students, 90 postdoctoral research scientists, support staff, administration staff and working visitors, coming from all over the world. This diverse, international mix produces a stimulating research environment. The work of the Institute is recognised as internationally important, and in some areas, world-leading."* [9]

B2.26 The Institute has strong links with the LMB and links with CU are strengthening, including: two joint appointments; a number of college fellowships; and dialogue with Cambridge Enterprise. Only half of its funding comes from the BBSRC; the other half has to be won through competitive bidding and despite the relatively positive outcome from the Comprehensive Spending Review (CSR), competition for more funds is likely to become tougher (currently Babraham has a success rate of around 50%).

B2.27 Babraham Bioscience Technologies Ltd (BBT), the Institute's IP arm, is responsible for the Babraham Research Park which provides space and facilities for spin-outs/start-ups and allows more established firms readily to access the Institute's expertise (partly through 6 monthly "show and tell" seminars). BBT's head is also responsible for the provision of services to incubator tenants and undertaking proof of concept translational research.

B2.28 There are two modern buildings, each providing 20,000 sq ft, which were constructed speculatively with public sector financial assistance. These are currently 96% occupied and tenants include two Babraham spin-outs and two CU spin-outs. A third building with 8,800 sq ft financed with the help of a BBSRC loan will be largely taken by tenants who need to be re-housed from unsatisfactory older premises. There is no ready prospect for attracting private investment to build further speculative wet lab space. The incubator will, therefore, only fulfil its developmental function if successful tenants can be encouraged to move out to larger premises elsewhere. This is problematic as there is said to be a dearth of grow-on space for companies requiring wet-lab facilities. Given the importance of the bioscience sector to the

[9] Babraham Institute website

Cambridge high tech cluster and economic growth more generally, this is a serious gap in provision..

The Wellcome Trust Genome campus at Hinxton[10]

B2.29 The Hinxton campus is a 55 acre site which houses the Sanger Institute and the European Bioinformatics Institute.

> *"The Sanger Institute now employs some 800 staff and the EBI a further 300. Crucially the research agenda of the Institute has broadened from its initial focus on genome sequencing and it is possible that the, recently appointed, new director may take this process further. There is room for expansion on the site and an outstanding planning permission for units to house research groups from industry for which proximity to the research and facilities on site may prove attractive."*[11]

B2.30 The Wellcome Trust has recently renewed the planning permission it obtained for the construction of research space to accommodate external research groups, including from industry, that wish to locate near to the Sanger Institute. It is unclear when this space will be constructed.

B2.31 A spin out from the Institute, Kymab, which will *" develop optimised monoclonal antibodies for the treatment of diseases with high unmet medical needs using its proprietary genomically engineered mouse, the Kymouse"* has recently announced a £20m Series A equity financing. As no commercial space has been constructed at Hinxton, Kymab is based in the Babraham incubator.

Botanical Garden/Plant Sciences – Sainsbury Laboratory (from the CU website)

B2.32 A new plant science laboratory, the Sainsbury Laboratory, will provide a state of the art research facility within the Botanical Garden. It will house 120 scientists (14 PIs), supported by more than 30 additional staff, studying plant development in world class laboratory facilities. The University Herbarium, which contains over one million pressed and dried plant specimens from all over the world, including those collected by Darwin on the Beagle will be in the building's basement. The project will also include associated glasshouses and plant growth rooms, extensive new landscaping and a new café and meeting room for visitors to the Botanical Garden.

B2.33 Construction works commenced on site in the middle of 2008 and the project is planned for completion by the end of 2010. The building will provide 11,000 sq m of floorspace and fulfills a long standing ambition to expand plant science research, which has been realised thanks to an £82 million grant from the Gatsby Charitable Foundation.

[10] The Sanger Institute, politely but firmly, declined to meet with us, so this section is based on hearsay.
[11] Hinxton website

Challenges and opportunities

Recruitment of researchers

B2.34 Most Cambridge research is of international standing, but recruitment is still a challenge. One of the major research groups made a written response to our question and they said as follows:

> *"We also face the continuing challenge of recruiting internationally renowned scientists to be group leaders, or of retaining the bright younger up and coming stars, who are very marketable internationally…… international competition is fierce and will get stronger with the emerging economies of China and India, and the continued dominance of the US, with its substantial public funding, and major philanthropic agencies…*
>
> *…. the recruitment of staff is a problem as we try to get the best, and we cannot offer good salaries (constraints of public sector pay). There are challenges in recruiting at all levels of staff, including in key support areas. However we benefit from the perception that Cambridge is an attractive area in which to make a scientific career (for example that it is easier to be reemployed in the area in academia or industry; or find employment for a partner) and this is helped by the proximity to London…..*

B2.35 Another leading research group expressed concern about the adverse impact that a poor outlook for research funding has on the ability of British Universities to retain top talent, especially that of younger scientists at the start of their careers (it is claimed that even a small reduction in the national research budget would have a highly adverse impact). They instanced the problem by reference to the "lost generation" of the 1980s, when many of the most able researchers went overseas; the impact of which is now being felt in the dearth of top-notch 50 year olds on shortlists for leadership positions.

B2.36 A number of consultees expressed concern about increasing difficulties in obtaining visas for students, staff and visiting scientists. Specific instances of difficulty included:

- academic visitors from the US planning a three month visit to a leading research lab
- two founders of high tech companies who sought permission to stay in the UK.

Quality of life and housing

B2.37 Quality of life has a number of facets and priorities include good quality schools and attractive neighbourhoods. However, housing was highlighted by many consultees as the major issue and they linked it to transport. One of them put it as follows:

> *"Housing is a serious issue, since it is expensive, and within Cambridge is beyond the range of even more senior academic staff. This is not helped by the relative paucity of public transport into other towns and villages…. very restrictive outside of normal working hours. Some of this may be alleviated by the proposed housing developments ….., but the impact of these developments will depend on the extent of affordable housing. The cost of housing is certainly impacting on recruitment, both from other parts of the UK where housing stock is less expensive, and from abroad.*

> *The juxtaposition of a vibrant technology sector, able to reward people appropriately suggests that the housing market in Cambridge is not likely to be impacted as much as elsewhere. This will exacerbate the current problems, since public sector salaries (together with those in the Universities) are not likely to keep pace with increases in the cost of housing."*

B2.38 The scale of the issue for Cambridge University is measured by the fact that 50% of its staff commute in from outside the City. Improvements to the A14 and around Cambridge station are seen as vitally important. For the Addenbrooke's site it is disappointing that a railway stop cannot be provided, but the view is that the Cambridgeshire Guided Busway will make a big difference and is urgently needed.

Land and property

B2.39 The development of the area around Addenbrooke's hospital has been discussed above. In central Cambridge the concentrations of University activity are:

- on the Sedgwick site, mainly occupied by Arts and Social Science departments, where new buildings include Divinity, English and Law
- the New Museums site along Pembroke Street (where there are plans to redevelop an area including the Material Sciences building) and linking along Tennis Court Road. (Biology) to Lensfield Road (Chemistry) and Trumpington Street (Engineering and Ftzwilliam Museum)
- along the Madingley Road to the West Cambridge site (see below)
- the North West Cambridge site where plans are being finalised for a mixed use development (see below).

B2.40 There are also large college landholdings in and around Cambridge. From a research perspective the most important are the Cambridge Science Park (CSP) where a number of University research groups have been housed, Peterhouse Technology Park - where ARM is located - and St John's Innovation Park (SJIP). CSP and, in particular, SJIP both offer innovation centre space on flexible lease terms.

B2.41 Within SJIP, MMI, a private firm seeking to develop new bio-firms, constructed, some 10 years ago, an incubator building with 12 or so small units offering wet lab facilities. This development has never flourished despite the neighbouring St John's Innovation Centre achieving consistently high occupancy levels. In view of the shortage of wet lab space for bio-firms mentioned above, it is not clear why this has been the case; though there have been criticisms of the design/layout of the building and it is believed that MMI sought to take an equity stake in tenant companies.

B2.42 The West Cambridge site has recently seen a substantial amount of new development with the new Institute for Manufacturing building, the Hauser Forum (providing innovation and entrepreneurship facilities) and the Broers Building. These provide important focal points for interaction between the research community on site and the wider business community. Whilst there has been considerable public criticism of the overall development this is

arguably premature given that the slow pace of development is an inevitable outcome of the University's stance on finance. It seems likely that the Material Sciences Department will receive assistance from the University Chest to re-locate to West Cambridge.

B2.43 The anticipated provision of space for smaller embedded laboratories on the site has taken a long time to eventuate but space is now available to let in the Broers Building and Nokia are a good name to have as an early tenant. Apart from Microsoft, other major corporate research groups have not yet been attracted to the site, partly because the marketing effort has been low key.

B2.44 The plan for the University's North West Cambridge site proposes between 2,000 and 3,000 homes, including 50% affordable housing for University and College key workers, accommodation for 2,000 students, new faculty buildings and research facilities, community facilities located in a new local centre and open space and recreation facilities. There is expected to be 1 million sq ft of research space – 50% for the University and 50% for the private sector. The provision of key worker housing on the site will enable CU to provide new staff with a short term rental property (e.g. two years) while they find something to buy. As with West Cambridge, the availability of finance from public budgets and private benefactions, together with demand conditions, will be key determinants of the pace with which the plans are realised, together with the timing of a solution to the current hiatus on improvements to the A14 (which are essential to enable the development to proceed).

B2.45 There has been considerable variation in the deals Cambridge University has concluded with specific organisations. The University's view is that it provides serviced plots of land and obtains as commercial a return as is reasonable – bearing in mind the academic benefits from the particular project. This approach is dictated by the University's charitable status. It does not have a financial preference as between a lump sum and a revenue stream linked to a strong covenant.

B2.46 There is a particular issue with the provision of incubator space. For a proportion of spin-outs based on University research an ideal solution is to incubate within, or proximate to the laboratory where their inventors work – this is especially the case when wet lab facilities are required. Early plans for some major new research buildings had provision for incubator space within them. In the event such provision was omitted because it would have invalidated the VAT exemption for which buildings developed by public sector qualify.

Spending cuts

B2.47 As might be expected, there was widespread general concern about the impact of reductions in research budgets and what the CSR outcome will be, though it was hoped that one response to any reductions would be to focus funding more closely on centres of excellence. Cambridge University would hope to suffer relatively less damage if that were so. There was, however, a worry that, despite the fact that inventions with the greatest potential come from "blue sky" research, the Research Councils may veer towards "instant gratification".[12]

[12] The CSR headlines have been announced since our consultations were undertaken and they look relatively favourable; nonetheless many of the concerns voiced still apply.

B2.48 The strongest research groups may well be able to attract overseas sponsorship for research that has long term commercial interest, but there is a danger of an "asset strip" by overseas firms. A further concern related to budgets for equipment. Allocations under the Research Councils' Joint Investment Fund (JIF) and Science Research Investment Fund (SRIF) initiatives had brought laboratory equipment up to a good standard. However, equipment can be very expensive – the Institute has spent £3m over the past three years – and over-restrictive budgets could damage the UK's relative standing. It was noted that both France and Germany (as well as the US) are increasing their research budgets.

B2.49 Cambridge Enterprise (CE), which manages and exploits IP owned by University and provides Knowledge Transfer related services to researchers, raised a number of funding issues relating to its remit:

- the Higher Education Innovation Fund (HEIF) is very important to CE. It accounts for 30% of the operating budget and enables greater involvement with smaller UK companies
- EEDA's proof of concept funding has been a helpful resource. CE has assisted with project preparation and on occasion matched funding. If the Proof of Concept funding goes, there may be less emphasis on strategic projects
- Challenge Funds have had a positive impact and freezing of central Government finance for seed funding is disappointing.

B2.50 Relating to this latter point, another consultee pointed out that many other top universities now have major seed and/or VC funds – Imperial College for instance. It was suggested that CU should have similar fund, *"but it has been resisted for philosophical reasons"*.

B2.51 One Nucleus, the membership organisation for Bioscience, will suffer directly as a result of EEDA's demise (loss of 70% funding for a post) and regrets the loss of EEDA funding in support of small new companies.

Entrepreneurship

B2.52 CU has made great strides in entrepreneurship over recent years including student organisations and competitions, teaching programmes and research into entrepreneurship. The new incubator "IdeaSpace" on the West Cambridge site is still evolving, but it is hoped that this will add further impetus to a new generation of new starts.

Intellectual Property

B2.53 There was a heated debate when CU introduced new policies for the protection and exploitation of IP and, whilst the initial "furore" has now reduced, views amongst our consultees remain divided: some believed that this is now a non-issue whilst others felt strongly that it is a barrier to the development of new companies and work with existing ones. Discussions with companies also produced some negative feedback.

B2.54 Cambridge Enterprise emphasised that it seeks not to interpose itself but, rather to verify that staff seeking to exploit IP have "clean" title; thereby avoiding potential future disputes.

Beyond this its role is that of an expert service provider. Others perceive CE to act as gatekeeper with combatative overtones. Its commercial activities sit uncomfortably with helping potential collaborators find their way round the University – a much needed role.

B2.55 With the new CU regulations for IP and the formation of CE, the number of companies in which the University has an equity stake had increased significantly:

- 1990-2000 25 companies
- 2000-2010 50 companies.

Research income from industry

B2.56 The figures in Table B2-1 show a pattern of decline in research funding from industry. Some point to an increasingly rugged attitude to industry in respect of IP as a key factor in this and others believe that the introduction of Full Economic Costing (FEC) has made the University look very expensive.

B2.57 It is very difficult to obtain a clear picture of what research work is being undertaken for industry and on what terms. Only the legal department has a University-wide view. There is a case for greater clarity and for the formulation of clear principles of engagement.

Unitary authority

B2.58 A number of people mentioned the desirability of Cambridge being the centre of a Unitary Authority, to better reflect the extent of the functional economy.

Links with London

B2.59 There was a broad consensus that good links with London are important. Much of the governance of the national scientific community is through meetings in London, the learned societies are in London, as are major research rich universities and Government. Cambridge academics fill many of the Chief Scientist posts in Government departments. The specific question we asked was *"How important to the future of the Cambridge cluster is the relationship with London? How might this develop in future and what, is anything, needs to be done to ensure Cambridge benefits from CMRI."*

B2.60 Prompted perhaps by the mention of the Centre for Medical Research and Innovation in the question's final phrase, one of our consultees responded as follows:

> *"This is likely to be very important in the long term, and everyday scientific contact (as well as social interactions) with London would be greatly facilitated if a railway station were located at Addenbrooke's. Certainly the development of a major focus in London, which UKCMRI will bring, could either threaten the Cambridge cluster, or provide opportunities for increased economies of scale, better able to compete internationally. Relationships with developments in London, at all levels, will depend not only on ease of transport, but tackling more fundamental issues of working across major universities and other organisations. This is likely to require creative solutions to such areas as the sharing of information, materials and intellectual property if these latter factors are*

not to impede scientific collaboration, and more generally to be willing to share risk.

Such interactions and collaborations should be assisted by both the University of Cambridge and UCL as well as Imperial College and Guys and Thomas' having Biomedical Research Centres (funded by NIHR), by Cambridge, UCL and Imperial being Academic Health Sciences Centres, and Cambridge, Imperial, Kings and UCL being part of GMEC (Global Medical Excellence Cluster) linking major Universities and NHS Trusts, with global companies GSK, GE Healthcares and Pfizer UK. Indeed the GMEC development specifically anticipated the benefits of working on a larger scale."

How well placed in Cambridge and what needs to be done to support it?

Funding for research etc.

B2.61 Earlier concerns about the implications of the Comprehensive Spending Review (CSR) – which resulted in a 'better than expected' freeze in real terms of the UK's core science budget for the next four years - have been replaced by questions about the extent to which research funding will be focused on genuine centres of research excellence. Britain's manufacturing sector has, arguably been hampered by compromises between industrial development objectives and regional policy directives. It would be disastrous if this happened in the research sphere.

B2.62 With the change in Government, criticism of the previous broadening of the university sector is being more openly voiced and the case is being put forward, by a number of leading academics, for significant changes along the lines of:

- we shouldn't try to push 42% of the current cohort through to an honours degree
- the "newer" universities should not be criticised if their students drop-out; rather it should be quite acceptable to give them qualifications (diploma?) after two years
- we should adopt a system more like that in the US with a small number of research universities and a larger number of teaching only institutions – whose reputation would be built on their teaching excellence (e.g. top US liberal arts colleges)
- PhD level teaching should be undertaken only in the research universities that undertake research across a wide range of disciplines.
- faculty with research excellence who work elsewhere should be able to supervise PhD students in a (nearby?) research university so their students would be exposed to a larger and more varied research community.

B2.63 These are clearly heavyweight national issues, but from a narrow local perspective ARU and CRC play roles in sustaining the competitiveness of the cluster which largely complement that of Cambridge University. It may we worth considering, perhaps through GCP, whether there are areas in which closer collaboration may be beneficial.

Technology and Innovation Centres

B2.64 The Hauser report *"The Current and Future Role of Technology and Innovation Centres in the UK"* addressed the vexed question of translational research and proposed:

> *"…sustained and substantive support for an elite group of Technology and Innovation Centres, branded 'Clerk Maxwell Centres', that aim to exploit the most promising new technologies, where there is genuine UK potential to gain competitive advantage."*

B2.65 This recommendation was adopted by the Coalition Government, which as part of the CSR announced that over £200m will be invested in a network of elite technology and innovation centres, to be established and overseen by the Technology Strategy Board (TSB). According to TSB, the centres "can create a critical mass for business and research innovation in a specific area and sector by focusing on a specific technology where there is a potentially large global market and a significant UK capability. These centres will be an important part of the UK's innovation system. They will allow businesses to access equipment and expertise that would otherwise be out of reach, as well as conducting their own in-house R&D. They will also help businesses access new funding streams and point them towards the potential of emerging technologies. The new investment will further bridge the gap between universities and businesses, helping to commercialise the outputs of Britain's world-class research base" (TSB website, www.innovateuk.org/deliveringinnovation/technology-and-innovation-centres.ashx). The TSB is expected to develop a strategy and implementation plan for the network of centres by April 2011.

B2.66 Two of our consultees, each of whom is responsible for a major group of researchers, expressed strong interest in bidding to develop a centre for translational research related to their activities. It was disappointing that Cambridge failed to attract the Energy Technologies Institute – located in Loughborough – and this disappointment underlines the fact that Cambridge cannot take its pre-eminence for granted when new projects are put out to competition.

Quality of life

B2.67 Whilst most of the decisions of greatest importance for research budgets will be taken at the national level, the recruitment and retention of internationally mobile research talent will also depend on the quality of life that Cambridge can offer. For many this has deteriorated over that past 20 or more years. Proposals for new infrastructure development and the management and maintenance of urban systems and supporting infrastructure (notably, housing transportation and roads) need to be pursued all the harder now that competition for funding is intensifying.

Visas

B2.68 This is an important issue for a place that gains much from international diversity. It is, however, a political hot potato and may be best pursued as a national issue rather than a local one.

Incubation space

B2.69 The issue of incubation space and grow-on space for firms requiring wet lab facilities has received several mentions. In view of the national importance of Cambridge life science research this needs to be kept under active review. The potential of the MMI building on SJIP should be part of this as should the issue of VAT on buildings.

Research commercialisation

B2.70 The researchers interviewed evinced exemplary commitment to their research being taken forward to practical application; whether for wealth creation or social benefit. A key to this is the availability of finance both for translational research and for seed finance to support start-up companies.

B2.71 It is crucially important that replacement solutions are developed to fill the gap that the demise of EEDA finance will produce (to support both seed finance and incubation space).

B2.72 A preparedness to respond strategically as and when the opportunity arises to bid for Clerk Maxwell centres emerges is also important for future competitiveness.

PR and Marketing

B2.73 Cambridge research generates good PR and provides essential underpinning for the Cambridge "brand". Marketing has, however, been far less pronounced. Both the University's West Cambridge development and, perhaps to a lesser extent, the Addenbrooke's Biomedical campus could have been pushed harder when market conditions were favourable.

B2.74 To sustain Cambridge's standing as a node of scientific and technological excellence, in the face of global competition and a harsh national economic environment, will call for renewed marketing efforts led by high profile individuals of international standing – such as, in previous years, Lord Broers and Sir Keith Peters. Over the next few years it is inevitable that a great deal of attention will need to be focused on managing short term challenges. It is, however, vital that momentum is not lost in competing for major new opportunities. In one sense Cambridge is fortunate that a number (though by no means all) of the new development plans reached implementation before the financial crisis. This good fortune should not be squandered.

Table B2-4: Research questions and responses

Question	Response
What are the main prospects for your institution, and the main concerns you have about its future development? What are the main ways it which it is likely to affect, and be affected by, the Cambridge economy in future?	• the key issue is the level of funding and the implication both of the CSR and the Research Councils' policies on funding distribution • a second important issue is that of visas for foreign researches and students.
Is the range of provision and location of incubator space and science parks sufficient to make the most of the strengths and attractions of the area's major research institutions, particularly in relation to the attraction of 'big pharma' R&D. Are there gaps in current supply that need to be addressed?	• there is an issue about the attractiveness and, therefore, the pace of development of both the University's West and Northwest Cambridge sites, and the Cambridge Biomedical campus, in the absence of funds for speculative development • the provision of incubator (and perhaps grow-on) space for companies requiring wet lab facilities is a live concern and will require resources from the public sector.

Question	Response
In planning for the medium-long term, is the "quality of life offer" (including the quality, location and type of housing) sufficient to attract and retain staff at the research institutes and the research teams of firms that have come to the area?	• there are serious problems arising from the dearth of housing which is affordable for university and research institute staff, and poor transport infrastructure – especially commuting into Cambridge from surrounding villages (where cheaper houses are available).
How important to the future of the Cambridge cluster is the relationship with London? How might this develop in future, and what if anything needs to be done to ensure Cambridge benefits from proposed developments such as CMRI	• good links to London are important for senior scientists with leadership roles in the scientific governance institutions and with posts within, or in support of, Government (including Ministry chief scientists) • they are also important to the flexibility of the labour market, as they provide opportunities for in and out-commuting which can help both spouses find good jobs • UKCMRI needs to be kept under review; it poses both a threat and an opportunity.

Source: SQW

Role 3: Cambridge as a city centre economy

Introduction

B3.1 This Role Report considers functions which are predominantly located in the central urban areas of Cambridge and the surrounding market towns. Cambridge provides a wide range of retail, leisure, and professional and personal service functions for both the sub-region's population and a large number of visitors. The city offers some highly specialist and nationally renowned functions (e.g. its bookshops) and events (e.g. the folk festival), as well as a growing range of retail and leisure facilities and a variety of professional services, some of which serve regional as well as local markets. The surrounding ring of market towns provide a narrower range of services mainly for a more localised catchment population.

B3.2 This Role Report considers briefly the historical development of these roles, the current situation, and their future prospects. It also identifies some challenges and opportunities looking ahead, and draws some conclusions relating in particular to the interface between the central area functions and other roles for Cambridge. The Role Report is based on a review of existing published documents and forecasts, and on a small number of consultations with key individuals and organisations involved in central area functions.

B3.3 As much of the analysis uses employment data which is based on the Standard Industrial Classification, we have focused on activities in two main areas: Retail (SIC 27), and Business, Financial and Professional Services (leisure activities are very difficult to identify using the SIC definitions). Business, Financial and Professional Services include two different definitions: one based on SICs used by Cambridge Econometrics in their forecasts, and covering Banking & Finance (SIC 33), Insurance (34), Professional services (36) Other Business Services (37) and Miscellaneous Services (41). The other is based on a different cut of the SIC data by Oxford Economics, which categorises employment into eight groups: Finance; Computer-related; Labour recruitment, security, industrial cleaning; Business services - call centres; Business services - R&D, technical testing; Business services - real estate, renting; Business services - other tradeable; Other personal services – miscellaneous.

B3.4 In both cases, the data include some activities which are as much part of the high tech cluster as a city service centre function (e.g. computing services, R&D and technical testing); the two roles – and the sectors within them – inevitably overlap. Equally the definition excludes some SICs which include activities relevant to a service centre function (e.g. hotels & catering - SIC 28).

B3.5 The Role Report also considers briefly to contribution that the English language schools make to the local economy, since most are in city centre locations and they are a distinctive feature of the sub-region.

Looking back

B3.6 Fifty years ago Cambridge was a relatively isolated university town, with a limited service centre function, and little economic activity which was unrelated to the university. The road

and rail links to London were poor (the M11 was built between 1975 and 1980, and the A14 did not exist (the port of Felixstowe did not start to grow significantly until the mid 1970s)). The population of the city and south Cambridgeshire combined was 169,500, almost 100,000 less than now. This means that the population of the area has increased over the last 50 years by more than the then-population of the city.

B3.7 The Holford report in 1950 set a framework for development of the city which lasted for the next 20 years, and some aspects (e.g. the Green Belt) are still current. The Plan's main objective was to retain Cambridge's character as a University town of international importance. To this end, it proposed halting the growth of the City and the immediately-surrounding villages in favour of the next ring of villages, and to encourage the growth of market towns to revitalise rural areas. It also recommended that industrial expansion in or near Cambridge be limited and that new large-scale production activity be discouraged throughout the county.

B3.8 In 1960 retail provision was very limited. The Holford Report proposed the redevelopment of the Lion Yard area for "modern shopping", but the University opposed the scheme, and proposed instead that the Lion Yard area be retained for civic facilities, such as a library and arts centre, and retail development should be located in the Fitzroy Street area of the Kite. After long delays the conflicting views were eventually resolved, with work starting on the Lion Yard development in 1970 and the Grafton Centre was built in the early 1980s.

B3.9 By 2001, the population of Cambridge and South Cambs combined had grown to 240,400. It increased by another 10% to an estimated 265,000 by 2009. Over the same period Cambridgeshire as a whole grew by 9.5% from 554,700 to 607,500[13].

B3.10 Tables B3-1 and B3-2 show the growth of employment in retail, and in business, financial and professional services, over the same period 2001-09, based on Cambridge Econometrics (CE) and Oxford Economics (OE) data. Unfortunately the CE and OE data differ significantly, which we assume results from different treatment of self employment; different adjustments for time series discontinuities over this period; and different assumptions about change from 2008-09[14]. These differences make it difficult to draw firm conclusions for change over the period 2001-09. For example, the CE figures show that retail employment in Cambridge and South Cambs grew by 18% over this period, whereas the OE figures suggest it grew by less than 2%. In Cambridgeshire as a whole, the CE figures show that retail employment grew by 13%, whereas the OE figures suggest it declined by over 5%. Do we have a view on which is likely to be more reflective of the actual growth?

Table B3-1: Retail and business, financial & professional services growth 2001-2009, Cambridge Econometrics figures

Sector	Cambridge & South Cambs		Cambridgeshire	
	2001	2009	2001	2009
Retail	11,500	13,700	24,600	27,800
Banking & finance	2,700	2,400	4,400	3,800

[13] Cambridge Econometrics forecasts produced for the County Council, November 2008
[14] 2008 is the latest year for which Annual Business Inquiry employment data are available

Sector	Cambridge & South Cambs		Cambridgeshire	
	2001	2009	2001	2009
Insurance	500	100	600	100
Computing services	8,600	8,300	11,000	11,000
Prof services	24,100	25,300	35,600	37,600
Other Bus services	8,200	10,600	14,400	21,800
Sub total Bus, finance & prof services	44,100	46,700	66,000	74,300

Source: Cambridge Econometrics forecasts, November 2008, produced for Cambridgeshire County Council

Table B3-2: Retail and business, financial & professional services growth 2001-2009, Oxford Economics figures

Sector	Cambridge & South Cambs		Cambridgeshire	
	2001	2009	2001	2009
Retail	12,300	12,500	26,900	25,500
Finance	3,200	2,500	4,800	4,000
Computer related	8,500	8,600	11,000	11,100
Labour recruitment, security industrial cleaning	5,900	7,500	10,100	14,300
Business services – call centres	2,400	3,100	4,800	7,200
Business services – R&D, technical testing	7,700	10,500	9,500	12,900
Business services – real estate, renting	2,500	3,300	6,000	7,200
Business services – other tradeable	10,900	12,600	16,100	18,600
Other personal services	6,100	7,100	13,200	14,100
Sub total Bus, finance & prof services	47,200	55,200	75,500	89,400

Source: Oxford Economics forecasts, Baseline projection March 2010

B3.11 The CE and OE figures for business, financial and professional services are not directly comparable because they cut the standard employment data in different ways. However, the growth rates they suggest are less divergent. For Cambridge and South Cambs they suggest that these services have grown by between 6% (CE) and 17% (OE), and in Cambridgeshire as a whole growth is estimated to be between 13% and 18%.

Characteristics of the Role currently

Retail

General trends

B3.12 Nationally, retail expenditure increased by about 3.9% pa in real terms over the 20 years up to the advent of the recent recession, with most of this growth in comparison goods (6% pa) rather than convenience goods (less than 1% pa). Pre-recession forecasts suggested continued growth over the next 5-10 years, but at a slower rate: comparison goods expenditure growth was expected to grow at 3.8-4.8% pa., with a very small increase in convenience good expenditure[15]. The slower growth was attributed to high levels of consumer debt, a low savings ratio and a weaker housing market. As a result of the recession prospects are likely to have weakened further.

B3.13 Retail employment has also increased over the last 20 years, but more slowly than expenditure. Total employees in retail employment increased by an average of 1.5% pa over this period, with virtually all of the growth being in part time employees: full time equivalent (FTE) employment increased by just 0.4% pa. National forecasts suggest there will be a marginal increase in FTE employment in the sector with a slightly higher increase in part time employment.

B3.14 Factors which are affecting the nature of retailing nationally and within the Greater Cambridge area include:

- increased car ownership, resulting in a greater propensity to travel longer distances for comparison shopping
- a rapid expansion of internet shopping particularly in certain sectors
- major foodstore operators have returned to the High Street with small convenience stores, and in their larger stores they are also extending their comparison goods offer. The latter could pose a threat to smaller town centres, where the large out-of-centre stores become one stop shopping destinations
- there has been a continued polarisation towards larger centres and the provision of larger stores in these larger centres. Where smaller centres have been unable to diversify their offer or create niche markets, they have suffered
- retailing is having to compete more for town centre space than previously as a result of urban renewal and in particular an increase in housing in central locations.

[15] The Cambridge Sub-Region Retail Study, October 2008, GVA Grimley for Cambridge City Council and South Cambridgeshire District Council

Cambridge City and South Cambs

B3.15 Data from the Annual Business Inquiry[16] suggest that in 2008 there were 40,000 employees in the retail sector in the whole GCP area, of which around 13,000 (20%) were in Cambridge, where it accounts for 9.4% of total employment. Elsewhere in the sub region retail as a proportion of total employment ranged from 6% in South Cambs to 11.7% in North Herts.

B3.16 The 2008 Cambridge Sub Region Retail Study[17] noted that "*Cambridge city centre is performing extremely well with a very high level of turnover which is forecast to grow over the LDF period. Retail warehousing in Cambridge is also performing strongly*." (paragraph 12.13). Zone A rental increases in 2007 and yields indicated retailer and investor confidence in the city.

B3.17 Completion of the Grand Arcade and Christ's Lane substantially increased the scale and quality of retail provision in the historic centre. The new John Lewis store has been particularly successful: it recorded a 13% increase in turnover in 2008/09 and has significantly improved its ranking among John Lewis stores nationally. The historic centre benefits from substantial spend by tourists as well as residents of the Cambridge catchment area, although consultees considered that tourism spend tends to be focused on particular retail outlets, not across the centre as a whole.

B3.18 The Grafton Centre area has suffered from the combined effects of the recession and the expansion of the historic centre, but new shops – notably Primark which moved into the temporary Robert Sayle (John Lewis) store on Burleigh Street and a 'flagship' store for New Look in the Grafton Centre itself – a planned refurbishment of the Centre, and public realm improvements to Burleigh and Fitzroy Streets are improving the attractions of this area. The new stores have also focused the Grafton Centre more specifically on a local, and distinctly different, catchment population from that for the historic centre.

B3.19 Retail warehousing has also grown in recent years in the city with the expansion of Cambridge Retail Park and the Beehive Centre in the Newmarket Road area (which in total is estimated to provide around 85,000 sq m of space). This area now includes various high street multiples (e.g. Boots, Marks & Spencer food) as well as the original bulky good retailers, caters for a resident rather than visitor market, and has the advantage of offering easier car access and free parking.

B3.20 As a result of these various improvements, Cambridge's ranking improved:

- It has risen from 22nd place to 16th in the National Retail Index of top places to shop (GCP Quarterly Economic review Oct – Dec 2009)
- On the CACI Retail Footprint, which compares the total value of retail expenditure in the main British centres, Cambridge was ranked 26th nationally in 2007, 21st in 2008, and 16th in 2009. (www.caci.co.uk)

[16] Annual Business Inquiry, employees in employment, 2008 – the latest year for which ABI figures are available. CE and OE also use ABI data but adjust for self employment and their figures are projections for 2009.
[17] The focus of the "Sub Region Study" is in fact Cambridge City and South Cambridgeshire District, although the study refers at times to a wider sub region including surrounding market towns and Peterborough.

- According to CoStar, Cambridge's retail ranking is 8th nationally in terms of multiple retailer requirements: according to CoStar there are currently 98 unsatisfied multiple retailer requirements for space in Cambridge, down from 182 two years ago. This decline in unsatisfied demand is due to a combination of the recession and the recent developments in the city centre. Demand is also down elsewhere – for example, CoStar ranked Edinburgh 16th nationally with 98 unsatisfied requirements down from 124, and Oxford was ranked 6th with 122 (196). CoStar also suggests that current availability of retail space in Cambridge is 14,000 sq m, which accounts for just 3.5% of the total stock of 400,000 sq m.

B3.21 In relation to convenience goods provision, the 2008 Sub Region Retail study found that the seven main out of centre foodstores in the Cambridge and South Cambs area provided good coverage and were performing well. Proposed additional provision at the East Cambridge District Centre and in Northstowe town centre, together with other incremental expansion, were considered likely to be sufficient to meet increased demand over the LDF period. However, subsequent assessment of convenience floorspace requirements in NW Cambridge - resulting from an increase in planned provision of 2,000 housing units – concluded that additional floorspace is needed to meet forecast demand. Options for how this provision is to be made (in the form of one superstore of two supermarkets, in different locations) are currently subject to consultation. In addition, the changed planning situation regarding East Cambridge and the delay over development of Northstowe may require the 2008 study conclusions to be revisited.

Market towns

B3.22 The strategy for the market towns within the Cambridge sub-region is to protect and enhance their character and setting. The District Councils' views, expressed in various policy documents, are broadly to maintain a sufficient range of retail outlets to meet people's needs for convenience shopping locally, to meet some comparison goods needs, and to protect and enhance the character of the towns and villages so that they continue to provide an attractive environment which encourages people to visit them.

B3.23 It is clear from planning and other documents that much effort has been focused on achieving these objectives, particularly to improve the public realm, and promote events and activities that generate additional footfall. Examples include Royston's improvements to its local market, and public realm improvements in Huntingdon, where an increase in footfall of +5% was reported in October 2009 compared to a decrease of -6% nationally.

B3.24 In St Neots, population growth of around one third is expected to support retention and expansion of town centre functions[18], which are under pressure – footfall was reported to have dropped 6.7 per cent in the year to October 2009. However, evidence from Ely suggests that housing growth does not necessarily significantly increase local retail spend: it is estimated that between 70% and 80% of comparison goods spending by East Cambridgeshire residents is outside the District, mainly in Cambridge.[19]

[18] Based on interview with Huntingdonshire officers
[19] Based on an interview with East Cambridgeshire officers

B3.25 Some of the market towns appear better placed than others to exploit their attractive built environment and develop specialist as well as convenience retail provision. For example, Huntingdonshire District Council is confident that St Ives town centre will continue to prosper, and that it will be boosted once the Cambridgeshire Guided Busway is fully operational. Saffron Waldon also has an attractive central area in which retailing appears to be relatively buoyant.

B3.26 There is continuing interest from the major supermarket groups in further developments, mainly edge of town. For example, in Saffron Walden, Tesco has applied for a 1,875m^2 (gross) extension at their existing edge of town store and Sainsbury has applied for a 6,322m^2 (gross) new edge of town store. In Chatteris, an application for a major supermarket has been submitted to Fenland District Council.

B3.27 The January 2010 GCP retail survey revealed a generally positive trend reflecting growing consumer confidence, and expectations were for 2010 to be "*about the same as 2009*". The major single effect of the recession for town centres was the loss of high street retailer, Woolworths. This further increased shop vacancy rates, with outlets remaining vacant for considerably longer than prior to the recession. The number of vacant outlets also contributed to a decline in the appearance of some town centres. A number of centres, however, have bucked this trend with only 3% of shops, the equivalent of five stores, in Ely vacant (although from observation, there appears to be a high proportion of charity shops and similar outlets in Ely).

Cultural and leisure facilities

B3.28 For a small city, Cambridge has an unusual diversity and richness of cultural and leisure facilities and events.

B3.29 The railings outside St Botolph's and Great St Mary's testify to the range and frequency of classical music and theatre events in the city, some but by no means all linked to Cambridge University. The city has a range of excellent museums, including the Fitzwilliam, Kettles Yard, the Folk Museum, and other specialist museums based in the University but open to the public. It also hosts nationally renowned events such as the annual Cambridge Folk Festival, the bi-annual Music Festival and the annual Cambridge Footlights which has launched the careers of many comedians.

B3.30 The city centre has a wide range of pubs and clubs, many of which cater mainly for young people. The recently developed Cambridge Leisure Park on the old Cattle Market site has significantly expanded this offer and provided an integrated set of attractions including a 9-screen cinema, bowling alley (previously missing from the Cambridge offer), bars and restaurants, a nightclub, a hotel and on-site parking.

B3.31 There are three cinema complexes (at the Grafton Centre, Cambridge Leisure Park and the Arts Picturehouse), three theatres (ADC, Cambridge Arts Theatre and the Mumford Theatre at Anglia Ruskin University) and many restaurants ranging from the standard national chains to high quality brands such as Jamie Oliver and Hotel du Vin (both relatively recently opened) and local establishments such as run Midsummer House and Cotto (on East Road).

B3.32 In the surrounding sub region there are additional major facilities and attractions such as the Imperial War Museum at Duxford; according to the Association of Leading Visitor Attractions[20] it received 387,000 visitors in 2009, which made it the 51st most visited attraction in Britain, and 25th among those that charge. Other attractions include Ely Cathedral, and National Trust properties at Anglesey Abbey and Wimpole Hall. The market towns also host numerous smaller events and leisure activities and facilities which cater mainly for a local catchment.

Business, financial and professional services

B3.33 Table B3-1 shows that, based on Cambridge Econometrics data, 74,300 people work in business, financial and professional services in Cambridgeshire, of which 46,700 (63%) are in Cambridge and South Cambs. The sector accounts for nearly 22% of jobs in the county and 27% in Cambridge and South Cambs.

B3.34 Table B3-3 provides figures for a different mix of business, financial and professional services; these were produced by Oxford Economics in March 2010. The table shows that 62% of employment in Cambridgeshire in these sectors is located in Cambridge and South Cambs, compared with 51% of total employment and 44% of the population. The CE and OE figures, although different, therefore both confirm the concentration of business financial and professional services in Cambridge and South Cambs.

B3.35 Table B3-3 also shows that the concentration in Cambridge and South Cambs is greatest in the two high tech sub sectors (overlapping with Role 1) – R&D and Technical Testing (81% in Cambridge and South Cambs) and Computer related services (77%). The concentration in Cambridge and South Cambs is least in the employment categories of Call Centres (43%), Real Estate and Renting services (46%), Other Personal Services (51%) and Labour Recruitment, Security and Industrial Cleaning (52%). This shows – unsurprisingly – that the more specialist services are more concentrated in Cambridge and South Cambs.

Table B3-3: 2009 employment in business, computer and financial services

Sector	Cambridge & South Cambs	Cambridgeshire
Finance	2,500	4,000
Computer related	8,600	11,100
Labour recruitment, security industrial cleaning	7,500	14,300
Business services – call centres	3,100	7,200
Business services – R&D, technical testing	10,500	12,900
Business services – real estate, renting	3,300	7,200
Business services – other tradeable	12,600	18,600
Other personal services	7,100	14,100
Total	55,200	89,400

Source: Oxford Economics Baseline projection March 2010

[20] www.alva.org.uk

Language schools

B3.36 Another specialist service that is highly concentrated in Cambridge and South Cambs is English language teaching, mainly by private language schools. They are a distinctive characteristic of Cambridge, and a significant contributor to the local economy. There are 23 members of English UK, the national association for accredited English language teaching centres, in the Cambridge area, including 22 in and around Cambridge and one in Ely. This increased from 21 in 2007, and amounts to 5% of the total number of language schools in the UK. The Cambridge figures include Anglia Ruskin University and two FE Colleges. In 2009, the 23 centres employed an average of 332 permanent staff, plus between 184 (winter) and 749 (summer) temporary staff.

B3.37 There were nearly 124,000 student weeks in 2009 (up from 122,000 in 2007). Fees average around £250 per week, and in addition there is a cost of around £150 per week for accommodation (in host families, college or bed & breakfast accommodation). Income from fees and accommodation therefore amounted to around £50m in 2009. In addition, student spending in local shops, pubs, clubs, etc. adds significantly to this total: the Eastern region spokesman for English UK recently estimated that the sector contributes £78m per year to the economy of the Cambridge area.

Spatial summary

B3.38 Retailing in Cambridge is concentrated in four main locations:

- the historic core, the traditional shopping centre and the main focus for visitors, which was expanded in the 1970s with the development of Lion Yard and recently revitalised by the new John Lewis store and the Grand Arcade
- the Grafton Centre, developed in phases since the 1980s, focusing primarily of retailing for the Cambridge catchment population
- the Newmarket Road area, including the Beehive and Cambridge Retail Park, originally focused on the sale of bulky goods and DIY stores, but more recently diversified to include a range of stores which are also found in the city centre
- major supermarkets in various, mainly peripheral locations around Cambridge, which increasingly offer a range of comparison as well as convenience goods.

B3.39 There are also significant amounts of retail floorspace in district and local centres in Cambridge suburbs and on some of the main radial routes out of Cambridge – most notably, along Mill Road.

B3.40 The main concentrations of leisure facilities are located in the city centre and at Cambridge Leisure Park on the old cattle market site.

B3.41 Business, financial and professional services are located in a mix of office developments in and around the city centre, and peripheral business parks. There are particular concentrations along Station Road and Hills Road, on the northern fringe (particularly Cambridge Business Park and Vision Park) and at the Westbrook Centre.

B3.42 For the market towns, the central areas are the main focus for retail, leisure and professional and business services, although some professional and business service firms are located on business parks such as Hinchingbrooke Business Park at Huntingdon and St Ives Business Park.

B3.43 These locations are well established and seem unlikely to change significantly in the future, although the two existing new settlements around Cambridge – Bar Hill and Cambourne – have added significantly to retail and office floorspace, and employment and retail facilities are also proposed at Northstowe. The future use of Alconbury is still to be determined, but it is possible that it could also provide a significant amount of floorspace for business, financial and professional services and leisure facilities, though probably not major retail.

Challenges and opportunities looking ahead

B3.44 This section includes analysis of employment forecasts produced by Cambridge Econometrics (CE) and Oxford Economics (OE) by sector and local authority area between 2009, 2021 and 2031. CE and OE have adopted different sectoral splits of employment for forecasting purposes, making comparisons difficult. They also use different underlying assumptions, resulting is different figures for 2021 and 2031. Both sets of forecasts are 'recession aware', but were produced before the General Election and subsequent public sector spending reductions. An annex to this Role Report provides detailed comparisons of the two sets of employment forecasts for sectors which tend to concentrate in Cambridge city centre.

Retail

B3.45 Based on the CE and OE forecasts, 2009 employment in retail in Cambridge and South Cambs combined was estimated to be between 12,500 and 13,700. Between 2009 and 2021, CE forecast growth of 3,200 retail jobs on the 2009 figure of 12,500. In comparison, OE forecast of growth of 4,100 jobs on a 2009 base of 13,700. These figures suggest growth of between 25% and 30% over the 12 year period. For Cambridgeshire as a whole (excluding Peterborough) the forecast growth rate is much more varied, but also lower: 5% projected by CE, and 21% by OE.

B3.46 Therefore the forecasts suggest an increasing focus of retail employment on Cambridge: in fact the CE forecasts imply a very small decline in retail employment in the county outside Cambridge and South Cambs; OE forecasts assume growth throughout the county, but at a slower rate outside Cambridge.

B3.47 Other information sources, including our consultations, confirm the likely increasing focus of retail growth on Cambridge, although expectations regarding the future growth of retail floorspace and employment vary considerably.

B3.48 The Sub Region Retail Study concluded that *"there will be a large residual capacity for additional comparison goods floorspace in the Cambridge sub region over the LDF period. We forecast that by 2011 based upon current market share there could be capacity to support a further 14,022 sq m net of comparison goods floorspace in the Cambridge sub region, this increases to 46,163 sq m net by 2016 and 83,932 sq m net by 2021"* (note that "the sub region" in this case means Cambridge and South Cambs.). In addition, the study identifies

capacity for a further 11,216 sq m of convenience floorspace over the same period. However, taking into account retail development in the pipeline (i.e. under construction, with planning permission or included in approved plans) the requirement for additional convenience floorspace reduces to zero, and the comparison goods requirement reduces by around half to 46,000 sq m, depending on assumptions about competing centres.

B3.49 Therefore the total additional retail floorspace requirement (i.e. including comparison and convenience space, whether already planned or not) for the period 2008-21 was estimated by the Sub Region Study to be around 95,000 sq m, a 24% increase on the existing floorspace of 400,000 sq m. This increase coincides broadly with the expectations for increases in retail employment of 25-30% 2009-21 projected by CE and OE, and appears also to be supported by the CoStar figures for multiple retailer demand (discussed above).

B3.50 However, the more recent supplementary retail study for NW Cambridge updated the convenience capacity assessment and concluded that a lower level of convenience floorspace will be needed than indicated in the Sub Region Retail Study (despite the same study finding a need for more convenience floorspace in NW Cambridge). Expectations of slower economic and population growth than previously forecast are also likely to affect future requirements for comparison goods floorspace.

B3.51 Our consultations also questioned the future rate of growth of retail employment and floorspace, for five main reasons:

- in practice, retail employment has been growing more slowly than floorspace due to increasing efficiency and changing retail practices, and this trend seems likely to continue. However, the forecast for Cambridge and South Cambs suggest that the rate of employment growth will outstrip the requirement for additional floorspace
- recent developments are perceived by a major developer of retail space in Cambridge to have satisfied demand for the time being
- the after effects of recession and slower future growth of population and the economy are thought likely to reduce the forecast increase in retail demand
- the future impact of the internet on traditional retail spending was considered by some consultees to be under-estimated in employment forecasts
- physical and ownership constraints in the city centre combined with policy constraints elsewhere make Cambridge a difficult place to deliver substantial increases in retail floorspace – as past experience has shown.

B3.52 Despite the questions about the scale of increase in retail demand in Cambridge and the difficulties of converting increasing demand into additional floorspace, there is no doubt that the city has a strong retail sector with good growth potential. However, consultees emphasised the need to maintain the quality of the city centre environment, and the clear policy stance against substantial edge or out of town development, particularly for comparison goods, in order to sustain the success of retailing in the city centre.

B3.53 In comparison to Cambridge, future prospects for retailing in the rest of the sub region appear relatively poor and quite mixed. At the more buoyant end of the spectrum, CoStar identifies multiple retailer requirements to be greatest in Bury St Edmunds, Huntingdon, Newmarket and Saffron Walden, and least in Haverhill, St Ives and Ely (Royston is not included in the data). This perspective is broadly supported by views expressed in consultations on the relative strengths of the retail sector in the different market towns, although it underplays the specialist function of some centres, notably Ely, Saffron Walden and St Ives, in all of which multiple retailers may account for a relatively small proportion of total demand.

B3.54 Nevertheless, general retail trends leading to concentration of activity and growth into already successful, major centres, plus the modest forecasts for retail employment growth outside Cambridge, and a lack of public funding to secure continual improvements in the public realm and support activities which animate town centres, suggest that some of the market towns may struggle in future to maintain their current retail functions.

Cultural and leisure facilities

B3.55 Cambridge is likely to continue to grow as a centre for cultural and leisure facilities and events, both in its own right and in combination with the growing retail function – which is increasingly seen as a leisure activity.

B3.56 Some consultees raised concerns about the limitations of the cultural and leisure offer in Cambridge, in most cases comparing it unfavourably with London. Clearly such comparisons are 'unfair' - Cambridge will never offer the range and depth of facilities provided by London. However, the concerns do point to the need to continue to improve cultural and leisure facilities in Cambridge over time, particularly as the catchment population grows, in order to maintain and enhance the area's attractiveness as a place to live and work

B3.57 However, there are funding and management issues to be addressed. Some of the arts and cultural facilities and events are likely to suffer from the effects of public sector funding cuts[21]. Public realm improvements in the city are also likely to be constrained by a lack of public funding – consultees were concerned that the city centre will require a lot of investment to update or replace 'tired' infrastructure in the next ten years.

B3.58 In addition, the consultations also revealed concerns about increasing drunkenness and antisocial behaviour in the city centre which detracts from its attractions, and which is (possibly unfairly) blamed on the pubs and clubs.

Business, financial and professional services

B3.59 Tables B3-4 and B3-5 provide an overview of Oxford Economics' projections for the main sub sectors in business, financial and professional services for Cambridge and South Cambs, and for Cambridgeshire as a whole. The projections were produced in March 2010 and

[21] For example, an article in the Guardian on-line dated 26 September, 2010, stated that the collapse of Film East due to funding cuts may threaten the future of the 30-year-old Cambridge Film Festival. Bill Thompson, chair of trustees for the Cambridge Film Trust was quoted as saying "We receive £20,000 each year for the festival which is a substantial chunk of money and enables us to make the festival as unique as it is. Our money for this year's festival has not arrived yet and we are now chasing it."

therefore are post recession, but they do not incorporate actual employment data for the recession period, which are still to be published.

B3.60 They suggest an increase of 34,600 employees, or 39% in business, financial and professional services in the county as a whole between 2009 and 2021, and a further increase of 19,400 (16%) between 2021 and 2031. This accounts for around two thirds of the total employment growth expected in the county over both periods.

Table B3-4: Business, financial & professional services employment projections, Cambridge City & South Cambridgeshire, 2009 to 2021 and 2031

Sector '000s	2009	Increase 2009/21	% change	Increase 2021/31	% change	2031
Finance	2.5	0.6	24%	0.6	19%	3.7
Computer-related	8.6	3.1	36%	2.0	17%	13.7
Labour recruitment, security, industrial cleaning	7.5	3.9	52%	1.9	17%	13.3
Business services - call centres	3.1	1.3	42%	0.9	20%	5.3
Business services - R&D, technical testing	10.5	5.8	55%	3.4	21%	19.7
Business services - real estate, renting	3.3	1.6	48%	1.0	20%	5.9
Business services - other tradeable	12.6	6.5	52%	4.4	23%	23.5
Other personal services – miscellaneous	7.1	2.1	30%	1.3	14%	10.5
Total	55.2	24.9	45%	15.5	19%	206.2

Source: Oxford Economics, Baseline projection, March 2010

Table B3-5: Business, financial & professional services employment projections, Cambridgeshire, 2009 to 2021 and 2031

Sector '000s	2009	Increase 2009/21	% change	Increase 2021/31	% change	2031
Finance	4.0	0.7	18%	0.8	17%	5.5
Computer-related	11.1	3.7	33%	2.2	15%	17
Labour recruitment, security, industrial cleaning	14.3	8.2	57%	4.3	19%	26.8
Business services – call centres	7.2	2.2	31%	1.1	12%	10.5
Business services – R&D, technical testing	12.9	7.0	54%	4.1	21%	24
Business services – real estate, renting	7.2	3.0	42%	1.6	16%	11.8
Business services – other tradeable	18.6	7.5	40%	4.3	16%	30.4
Other personal services – miscellaneous	14.1	2.3	16%	1.0	6%	17.4
Total	89.4	34.6	39%	19.4	16%	356.8

Source: Oxford Economics Baseline projection, March 2010.

B3.61 Cambridge and South Cambs account for 72% of the forecast county increase to 2021, and 80% between 2021 and 2031. In comparison, in 2009, 62% of employment in Cambridgeshire

in these sectors was estimated to be located in Cambridge and South Cambs. The forecasts therefore assume an increasing concentration of the county's business, financial and professional services in Cambridge and surrounds over the next 20 years.

B3.62 Within the broad spread of business, financial and professional services, the expected performance of different sub sectors is markedly different. In both the county as a whole, and in Cambridge and South Cambs, the strongest employment growth of over 50% 2009-21 is expected in R&D and technical testing – which are more appropriately classified as part of the high tech cluster – and labour recruitment, security & industrial cleaning. The weakest growth is forecast in finance and other personal services.

B3.63 Overall, the forecasts suggest very strong performance in business and professional services, and weaker growth in financial services, throughout the period to 2021 and beyond to 2031.

B3.64 Our consultations with business and professional services – excluding R&D and technical services which are covered in the report on Role 1 – suggest the forecasts may be over-optimistic in relation to the next five years when firms are cautious about prospects. This caution results from a combination of concerns about the impact of public sector spending cuts and the continuing after effects of recession.

B3.65 The report on Role 4 (Cambridge as a regional centre for public sector services) includes analysis of the potential knock-on impacts of public spending reductions on private sector jobs. In Cambridge in particular, the effect of reduced public sector spending on some business and professional service firms could be significant. For example, some professional services firms based in Cambridge are quite dependent on Cambridge University and the Colleges for business, while others derive significant revenues (including from outsourced services and consultancy) from the regional and local public authorities in the city.

B3.66 In contrast, there are some important initiatives which could stimulate the growth of financial and professional services, in particular the proposed Cambridge Bank which is in the process of being set up by local entrepreneurs to provide finance for firms within the sub region.

Language schools

B3.67 Cambridge residents have mixed views on the language schools. In the height of summer, language students add significantly to perceived overcrowding in the city centre. However, unlike the majority of visitors to Cambridge, who are day trippers, language students typically stay for several weeks, often in host families, and therefore spend much more per head, with a high proportion of their spend going direct to local businesses and residents.

B3.68 Planning policy in Cambridge currently constrains the growth of new teaching space at language schools to reduce housing pressures. In the light of expected decline in public sector employment and concerns about the ability of the private sector to compensate, it is difficult to justify such constraints on sectors with growth potential.

B3.69 English language teaching centres will also be affected by Government proposals to raise the level of English required for prospective students from outside the EU, as part of a broader set of measures to reduce illegal immigration and tighten visa requirements. Currently a high proportion of non EU students attending centres in the Cambridge area would not qualify for

visas under the tighter restrictions announced by the new Government. The impact of the proposed legislation is difficult to assess, but it could significantly reduce income and undermine the viability of some centres. It could also reduce the flow of non EU students into UK universities, because English language teaching centres are often used by overseas students to improve their English for university entry.

Spatial considerations

B3.70 The forecast growth of employment in retail and business, financial and professional services, and the expected increasing concentration of these services in Cambridge over the next 10 years, suggest that there will be pressure during this period for substantial further expansion of retail and office floorspace in the city centre. However, there are physical, ownership and other practical constraints on expansion.

B3.71 For retail, the development of Grand Arcade and expansion of retailing in the Newmarket Road area appear to have largely satisfied demand in the short term. The Sub Region Retail Study recommended that the city centre go through a 'settling down period' following the opening of Grand Arcade and Christ's Lane and that for the foreseeable future the focus should be on infill development and replacement of poor quality existing floorspace.

B3.72 However, development in the Newmarket Road area has further emphasised the physical fragmentation of retailing in central Cambridge. It would be highly desirable, given access constraints and the increasing importance of public transport, if future development could lead to some physical consolidation rather than further dispersal of retail facilities.

B3.73 For business, financial and professional services, there is very little high quality space in the city centre and the delays in developing CB1, combined with the decision by Microsoft to relocate from West Cambridge, have limited options for office firms. Compared with many small cities, the location of office space is fragmented for the same reasons as for retail, but there appears to be scope for some consolidation and intensification of office uses along Station Road and Hills Road to the south of the city centre, and around Castle Park and Mount Pleasant to the north.

B3.74 If the Cambridge sub region does grow substantially, the city centre will need to be significantly bigger and demand will grow from retail, leisure, professional and business services and high tech firms (see Role 1 report) to locate there. A long term masterplan is needed – taking account of the ownership constraints, and the need to maintain the quality of the built environment as well as the open spaces which characterise central Cambridge – to ensure the city centre is fit for purpose in 20 years time and that the competing demands for space are appropriately managed and met.

B3.75 There is also a need to make other places within the city more attractive, to take some pressure off the city centre. For example, the West Cambridge site was criticised by some consultees as "*lacking buzz*", and the decision of Microsoft to relocate to CB1 is reported to be partly due to the desire of staff to be in a livelier environment. The limitations of West Cambridge result partly from the fact that it is relatively new and only partly developed, and the recent completion of the Hauser Forum should provide more of a focal point for social interaction in future. However, here and elsewhere in Cambridge there is a need to consider

what more can be done to improve the attractions of the place to a workforce which is increasingly discriminating and demanding about the amenities surrounding their place of work.

Other opportunities and constraints

B3.76 Our consultations identified a number of broader opportunities and constraints which are not specific to the retail or business, financial, and professional services sectors, but which could nevertheless have significant impacts on these sectors. These include:

- the potential for increased tourism and visitor spend, particularly if the £ stays relatively weak against major foreign currencies. This is likely to be focused primarily in the historic core of Cambridge
- there is a proposal to establish a Business Improvement District (BID) in Cambridge city centre, which could attract significant ERDF funding for public realm improvements. This will be led by 'Love Cambridge' the trading name of Cambridge City Centre Partnership Ltd. £45,000 of funding has been secured through contributions from both the City and County Council, and the Love Cambridge Partnership has committed to match this through in-kind support. The ERDF funding for the project should be confirmed by the end of 2010
- there are concerns about access constraints and the cost of parking in central Cambridge. To a large extent, this is a perennial problem which cannot be resolved, but there is a worry that eventually the cost and inconvenience of shopping in Cambridge will take its toll on retail demand and the willingness of office firms to locate there
- difficulties in the recruitment and retention of key staff was a common theme among consultees in retail, financial, business and professional services, as in other sectors. SQW's own experience provides an example: over the last five years we have found it considerably easier to both recruit and retain staff in London and Manchester than in Cambridge, partly because of the attractions of the largest cities to young people, and partly because of high house prices (to purchase or rent) in Cambridge relative to expectations
- if – as seems likely in the short term at least – housing growth in the sub region is slower than assumed by the regional and local plans, this will affect services dependent on household expenditure – particularly personal services and retail
- a squeeze on household disposable incomes resulting from increased saving/slowing of credit expansion, reduced real incomes, slower than expected economic growth or public spending cuts will also affect demand for services locally.

Conclusions

Research questions

B3.77 Three main research questions were posed at the end of Phase 1 of the project in relation to the city centre functions role. These are shown in Table B3-6, together with the answers based on the analysis and results of consultations reported above.

Table B3-6: Research questions and responses

Question	Response
Can Cambridge maintain or enhance its position in the retail hierarchy, and will this be at the expense of, or irrespective of the market towns?	Yes, Cambridge appears to be well placed to enhance its position in the retail hierarchy, provided the constraints to further improvements and expansion of city centre retailing can be overcome. It does appear likely that growth of retailing (and business, financial and professional services) will be increasingly focused on Cambridge, and that some of the market towns may struggle to retain their retail functions. But these are national trends: there is no evidence that the expansion of retailing in Cambridge will cause the decline of some market towns.
To what extent is retail spend in Cambridge dependent on visitors rather than people from the immediate catchment, and what are the implications of this for future growth of the sector?	Retail spend in the historic core is significantly boosted by tourists, but their spend is focused on particular shops and locations. There is no evidence that central area retailing as a whole is dependent on tourism spend, and therefore it seems unlikely that either growth of decline of tourism and related spending will substantially affect the future of retailing in central Cambridge.
Will the market towns be able to retain the scale and quality of retail provision over the next 5-10 years, in the face of an improved offer from Cambridge and less public sector resources to spend on enhancing the quality of town centres?	It seems unlikely that the market towns will retain their current scale of retailing over the next 5-10 years, but the situation is expected to vary between market towns. Those that offer an attractive town centre environment and which provide a distinctive, niche retail offer are likely to maintain or even grow the scale and quality of retailing. Those that do not, will not. The public sector is likely to have fewer resources in future to provide public realm improvements and to fund animation/events, which have been important in recent years to the health of the market towns' centres.

Source: SQW

Interface issues

B3.78 The main issues concerning the interface with other roles appear to be as follows:

- the scope for further development of offices in the central area of Cambridge is a key concern for high tech firms as well as business, financial and professional services. The Microsoft decision demonstrates that although the planning system can keep general office uses away from sites reserved for R&D, it is not possible to prevent R&D uses exercising their preference for a location in the city centre. In particular, our consultations show that many small and young high tech firms want a city centre location. The delays in securing planning permission and developing CB1, and the absence of other options, are clearly a concern for office users, whether high tech or business, financial and professional services
- the concerns about house prices/affordability are common to other Roles, and have been expressed by many consultees

- the interface between retailing in the historic centre and tourism is significant, but does not appear to be problematic
- there are concerns about the impact of drunkenness and antisocial behaviour on the quality of the city centre experience, but these problems appear to be no different from similar concerns elsewhere in UK – though Cambridge receives a large number of visitors to UK, so the impact on their perceptions may be significant
- the new visa rules being introduced to tighten control on entry to UK to work or study are a major issue for the language schools in Cambridge, but also for the universities, 6th Form colleges, and high tech firms. So far the lobbying in response to these concerns may have been more fragmented than would best serve the interests of the whole Cambridge economy and sub region.

"Crunch" issues for the future of the city centre

B3.79 The quality and capacity of the city centre are critical factors for the future prosperity of the Cambridge sub region. The city centre is crucial both because many people are employed there, and because it is the focus for retail, leisure and other activities for residents throughout the Greater Cambridge area, and for many visitors.

B3.80 The configuration of the city centre and its capacity to grow is constrained by the established uses – particularly the university and colleges - the open spaces, the urban fabric and land ownerships. These constraints give Cambridge its unique character and attractions, so the challenge is to work with them rather than remove them. However, capacity is a big issue for the future, since the functions which cluster in the city centre – retail, leisure, and business, financial and professional services – are all expected to grow substantially over the next 20 years – and their growth is essential to maintain Cambridge's attractions as a service centre for a growing catchment population and an increasing number of visitors.

B3.81 There is a pressing need to plan creatively and carefully for the future of the city centre. The growth areas on the periphery of the city are the subject of Action Areas Plans, and plans are being developed for the Eastern Gate area, around Newmarket Road and East Road, but there is no vision or plan for the city centre as a whole other than the relevant section of the emerging Core Strategy, despite the scale of employment growth that is forecast for the functions it accommodates, and expectations that there will be a continual and substantial increase in the number of people using the city centre for shopping, leisure and other activities. This seems illogical to us: for most people, by far the most important part of the city, other than the immediate locality in which they live, is the city centre. A different sort of plan may be required, but it is vital that a vision for the future city centre, and a plan for its implementation are developed with the support of all the key players.

B3.82 There is also a need to review the planning constraints which affect the growth of some city centre functions in Cambridge. There are long established planning restrictions on headquarter functions and on office uses which do not provide a local or sub-regional function (exceptionally, "*office style employment serving a regional function*" is also allowed). The Plan states explicitly that "*It would not be desirable for general office*

development, such as national headquarter offices, call centres or similar, to develop in Cambridge[22]" because it would exacerbate labour shortages and long distance commuting.

B3.83 A more detailed review of current planning policies is provided separately (see Theme 2 Report (Part C)). Suffice it to say here that:

- Cambridge is already, *de facto*, providing a regional service centre role so to restrict firms providing such a function from using offices in the Cambridge area seems perverse
- As the economy of the sub region develops and the high tech sector matures, headquarter functions will increasingly want to locate in Cambridge. Retaining and attracting headquarter functions in Cambridge will enable the local economy to capture a significant proportion of the value generated by these businesses, and provide a high proportion of high value jobs. High value growth is exactly what Cambridge wants, but current planning policies discourage functions which will provide this kind of growth
- Business, financial and professional services are expected to be a major contributor to jobs growth in Cambridge over the next 20 years, but over the past 10, much of the office space built within and close to the urban area has been restricted to R&D (B1(b)) uses. The proportion that is developed with open B1 permissions needs to increase in future, particularly if R&D activities like Microsoft are going to occupy open B1 space in city centre locations.

B3.84 The other key issue for the city centre is access and transport improvements. Most consultees were more worried about congestion and access issues within the city than those in the broader sub region (which is not to imply issues such as the A14 don't need addressing, simply that transport within the city is a major issue for people who live or work there). Cambridge's transport problems are extremely difficult to solve, so they need to be addressed with imagination, creativity and boldness. Measures such as Park & Ride have been very successful, but provide only part of a solution. Transport solutions need to be combined with work solutions which minimise the need for travel (e.g. through easy access to very high speed broadband everywhere in the sub region) and create focal points for social and business interaction elsewhere in the city, which are linked to each other by high capacity, fast and reliable public transport (the Cambridgeshire Guided Busway is desperately needed in this context, because it links the three main foci for jobs in the city – the city centre, the northern fringe including the Science Park and St John's Innovation Park, and Addenbrooke's Hospital.

[22] In this context, Cambridge includes the whole of the City and South Cambridgeshire

Role Report 3 Annex 1: City centre employment

This annex looks at the potential implications of employment forecasts for Cambridge city centre. It draws on two forecasts: (i) Oxford Economics (OE) baseline projection, produced in March 2010 and (ii) Cambridge Econometrics (CE) 'policy-led' projection, which assumes house building and population growth in line with Cambridgeshire County Council's projections. This was produced in January 2009.

It is important to note that although 'recession aware', both projections were produced before the General Election and before the Coalition government announced its budget deficit policies and significant cuts in public expenditure.

The two consultancies have adopted different sectoral splits of employment for forecasting purposes. There is a particular problem in comparing elements of the large 'financial and business services' sector, which accounts for a significant share of jobs in Cambridge City.

Oxford Economics

The following table provides an overview of employment in key 'city centre' industry sectors for the period 2001 to 2031. It should be noted that the employment is for Cambridge as a whole; clearly some of the forecast growth will be linked to new developments on the edge of the city. It is also important to note the exclusion of education from the table. Although both universities have significant employment in the city centre it is the policy of Cambridge University to develop new facilities in West and North West Cambridge. These will provide space for a further tranche of city centre activities to move.

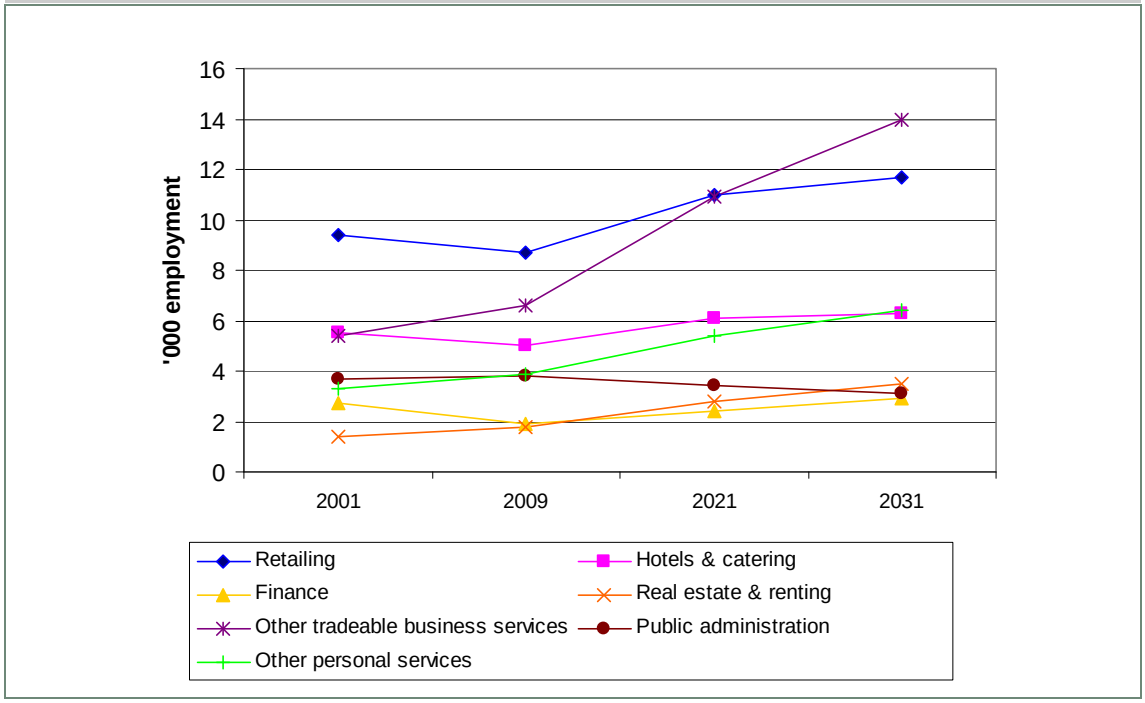
Table B3-7: Forecast employment in Cambridge City 2001 to 2031: selected industries with a strong city centre locus, '000: Oxford Economics baseline, March 2010

City centre activities	2001	2009	2021	2031	2009/31
Retailing	9.4	8.7	11.0	11.7	+3.0
Hotels & catering	5.5	5.0	6.1	6.3	+1.3
Finance	2.7	1.9	2.4	2.9	+1.0
Real estate & renting	1.4	1.8	2.8	3.5	+1.7
Other tradeable business services	5.4	6.6	10.9	14.0	+7.4
Public administration	3.7	3.8	3.4	3.1	-0.7
Other personal services	3.3	3.9	5.4	6.4	+2.5
Sub total	31.4	31.7	42.0	47.9	+ 16.2
Total employment	94.8	96.4	117.9	131.4	+35.0
sub total % of all	33.1%	32.9%	35.6%	36.5%	

Source: Oxford Economics March 2010

The following figure clearly shows the significant growth in employment forecast for 'other tradeable business services'. This includes professional services such as legal and accountancy, as well as advertising, management consultancy and marketing. It excludes call centres, research & development, technical testing, employment agencies, security and industrial cleaning – all activities which do not require a central city location.

Figure B3-1: Employment in selected industry sectors, Cambridge City, 2001 to 2031: Oxford Economics baseline forecast



Source: Oxford Economics March 2010

The 'other personal services' sector includes arts and entertainment, other cultural activities, sports and hairdressing. Not all require a city centre location and a share of new jobs is likely to be located close to new housing development.

It is important to note that the forecast increase in employment in Cambridge City between 2009/31, 35,000, is equivalent to 36% of the 2009 total and appears very high in the light of the current economic situation.

Cambridge Econometrics

Cambridge Econometrics do not provide as detailed a breakdown of the key 'business services' sector as Oxford Economics and it is consequently not possible to provide an exact match in terms of industry employment. The main difference relates to employment in research & development and technical testing; the CE forecasts for 'professional services' include this, (as well as real estate & renting), whereas OE identify the sector separately. Consequently we would expect the CE forecasts for 'city centre' employment to be higher than the OE forecasts.

Table B3-8: Forecast employment by selected industry sectors, Cambridge City, 2001 to 2031; Cambridge Econometrics 2009

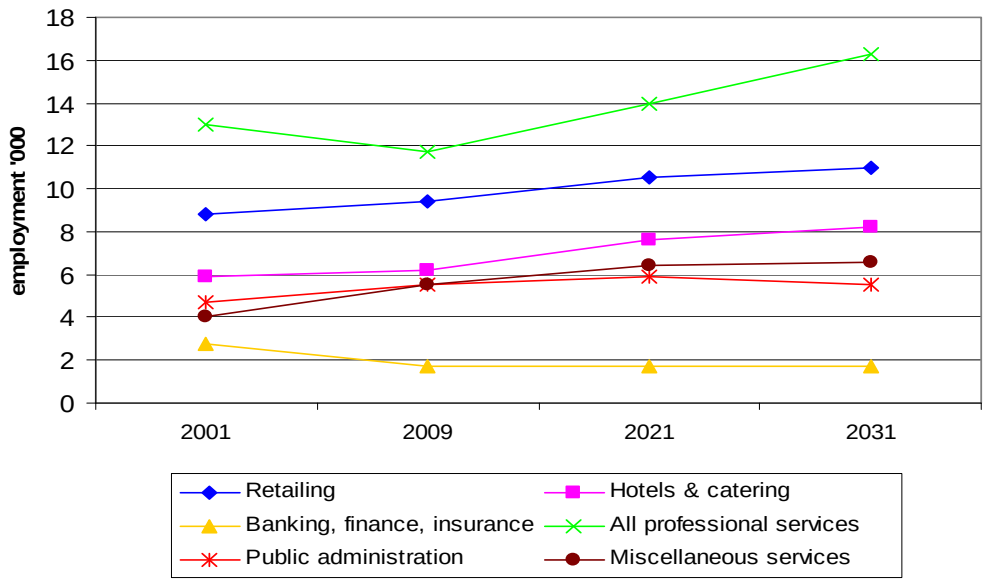
City centre employment sectors	2001	2009	2021	2031	2009/31
Retailing	8.8	9.4	10.5	11.0	1.5
Hotels & catering	5.9	6.2	7.6	8.2	2.0
Banking, finance, insurance	2.8	1.7	1.7	1.7	0
All professional services	13.0	11.7	14.0	16.3	4.6
Public administration	4.7	5.5	5.9	5.5	0

City centre employment sectors	2001	2009	2021	2031	2009/31
Miscellaneous services	4.0	5.5	6.4	6.6	1.1
sub-total	39.2	40.0	46.1	49.3	9.2
Total employment	98.5	100.3	114.0	121.1	20.8
sub-total as % of all	39.8%	39.9%	40.4%	40.7%	44.2%

Source: Cambridge Econometrics 2009 Note: Professional services include R&D, technical testing

The table and following figure shows that employment growth is forecast to be particularly high in professional services, including R&D.

Figure B3-2: Forecast employment in selected 'city centre' industry sectors, Cambridge City, 2001 to 2031: Cambridge Econometrics, 2009



Source: Cambridge Econometrics 2009

Comparing the forecasts

Overall CE forecasts significantly lower employment growth in Cambridge City than OE: an additional 20,800 jobs net between 2009 and 2031 as compared with 35,000 net according to the OE baseline projection. The 'city centre' industries are expected to increase by 9,200 according to CE – including R&D – whereas OE forecast a similar bundle of industries to increase by over 16,000 jobs. The forecasts differ significantly when broken down by individual sectors as the following table and figure indicate:

Table B3-9: Comparison of employment forecasts 2009 to 2031, Cambridge Econometrics & Oxford Economics by selected industry sectors

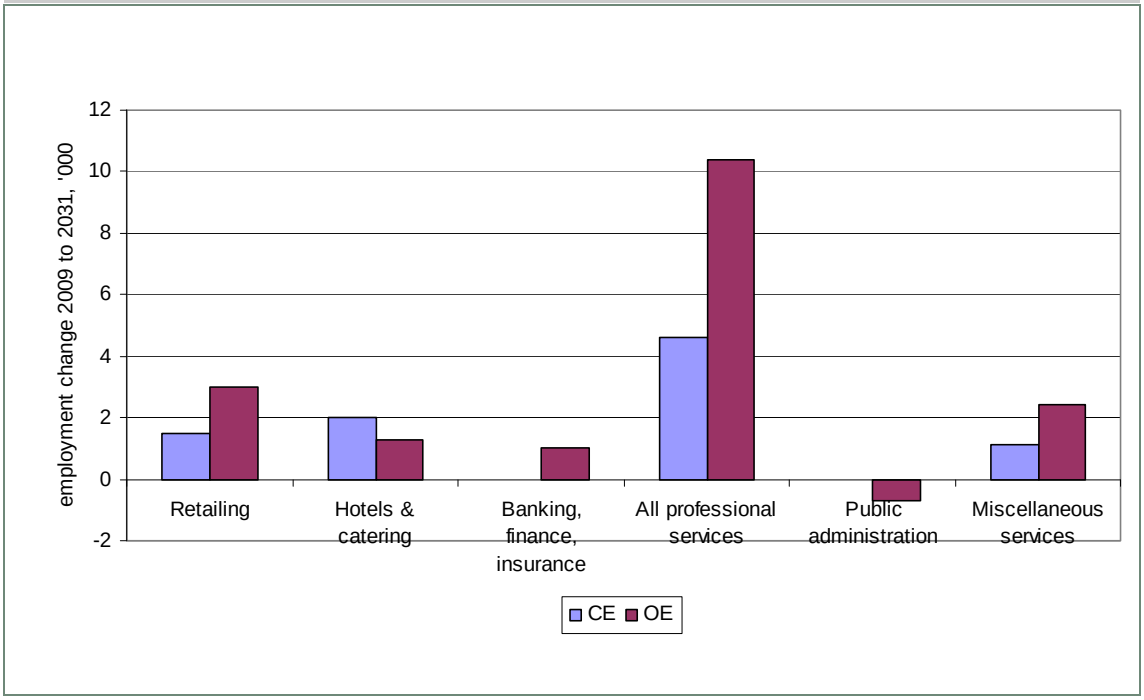
City centre employment sectors	Cambridge Econometrics	Oxford Economics
Retailing	1.5	3
Hotels & catering	2	1.3
Banking, finance, insurance	0	1

City centre employment sectors	Cambridge Econometrics	Oxford Economics
All professional services	4.6	10.4
Public administration	0	-0.7
Miscellaneous services	1.1	2.4
Sub-total	9.2	17.4
Total employment in Cambridge	20.8	35.0

Source: Cambridge Econometrics 2009; Oxford Economics 2010

For this comparison the OE industry sectors have been broadened to match, as closely as is possible, the CE sectors. The OE forecast indicates job growth of 17,400 in the selected sectors between 2009 and 2031 as compared with 9,200 according to CE. The biggest difference relates to professional services.

Figure B3-3: Comparison of employment forecasts in selected industry sectors for 2009/31, Cambridge City: Oxford Economics 'baseline' and Cambridge Econometrics 'RSS policy-led'



Source: CE & OE

Oxford Economics noted, when producing their March 2010 baseline forecasts, that the economic recession had had a more significant impact on GVA and productivity than on employment. Overall, unemployment had not increased as much as anticipated as many workers reduced hours, pay or both.

Role 4: Cambridge as a regional centre for the public sector

Introduction

B4.1 This Role Report looks at the role of Cambridge as a regional centre for the public sector, including how this has developed, the current situation and prospects for the future.

B4.2 In light of the Coalition government's plans for public sector expenditure cuts, the Role Report also provides a summary analysis of the potential impact on employment both within Cambridge and the wider sub-area. This outlook is compared with the most recent employment forecasts.

B4.3 The Role Report concludes with an assessment of the challenges ahead and how these might be met.

Looking back

The role of Cambridge as a regional centre

B4.4 Until 1994 Cambridge was one of the four cities of the former East Anglia 'standard statistical region' (SSR), comprising the whole counties of Suffolk, Norfolk and Cambridgeshire. Regional administration and government functions were relatively low key and shared between Peterborough, Norwich, Ipswich and Cambridge. Cambridge had a large government-owned low density office campus close to the centre of the city and functions discharged from there included environment, agriculture, inland revenue and customs. The campus also included an underground 'regional seat of government' constructed at the height of the cold war. However, for many years the Department of the Environment's main East Anglian office was located in Kensington High Street in London.

B4.5 Other public sector or publicly-funded bodies with a relatively long-term regional administrative base in Cambridge include the Open University.

Evolution of Government Office regions

B4.6 In 1994 new Government Office (GO) regions were formed, with boundaries remaining relatively unchanged until 2010. The intention was to bring together the offices of central government departments in each region to provide an integrated and more efficient service. An 'East of England' region was formed, merging the relatively small East Anglia with the much larger area covered by Essex, Bedfordshire and Hertfordshire, formerly part of the South East SSR. The population increased threefold and both the economic profile and focus changed significantly, especially as the relationships with London and the wider South East became very much more important. The East of England region constitutes around 11% of the England population (2009) and contributes 10.3% of England's workplace GVA (2007). Measures of wealth and productivity show the region is a significant contributor to the

national economy[23], although the per capita contribution is below that of London and the South East.

B4.7 The functions of the regional arm of central government have, however, changed a number of times since 1994. When GOs were first created they brought together the four regional offices of the Departments of Environment, Transport, Trade & Industry and Education & Employment. Their remit covered housing and transport investment programmes, European structural funds, contracting with Training & Enterprise Councils and Business Links.

B4.8 In 1998/9, with the creation of Regional Development Agencies (RDAs), responsibilities were transferred for the Single Regeneration Budget. At the same time, Training & Enterprise Councils were abolished and some of their functions were taken over by newly created Learning & Skills Councils.

B4.9 In 2000, the GOs were recast as the key representatives of central government in the regions, with an enhanced policy-making role and the establishment of Regional Co-ordination Units as a unified head office for each GO. Over the years 2001 to 2006, more government departments co-located staff and programme teams, including the Department for Environment, Food & Rural Affairs, the Home Office, the Department for Culture Media & Sport, Sure Start and Children's Fund teams, Public Health and the then Department for Education & Skills. At the same time, the RDAs enhanced their role with new responsibilities for business support.

B4.10 The Government Office for the East of England (Go-East) initially operated from a number of locations, using the offices it inherited from regional operations of central government departments. As well as in Cambridge and Histon, there were offices in Bedford. Cambridge was particularly well situated geographically at the centre of the East of England region and had relatively good road and rail transport links; its connectivity played an important part in attracting regional-level functions to locate there. So, when the decision was taken to establish new offices for all Go-East functions in the late 1990s, Cambridge was the front-runner; many staff were already based in the area, and government-owned land in Cambridge was available; the development could be funded in part by the sale of much of the land holding[24].

B4.11 The Treasury carried out a review of GOs which reported in March 2006. In a nutshell, the review aimed to achieve a 'strategic shift' to a focus on resource priorities, streamlining or devolving administration. With the transfer of functions to RDAs and new partnership arrangements operating at local authority level[25], GOs were expected to become more efficient and significantly reduce staff. The target set was a reduction of the 2004/05 staffing levels by 33% by 2007/08. Thus it is reasonable to conclude that Go-East's employment was at a maximum in 2004/05 at around 300. By August 2010 the headcount had reduced to 168.

Other regional agencies in the Cambridge area

B4.12 A number of office developments have been built in or close to Cambridge since the 1980s and some of the newly-established regional organisations in the fields of economic

[23] Cambridgeshire county accounted for 12% of regional workplace-based GVA in 2007. Percapita GVA was £21,815 in 2007, above both regional (£19,083) and national England (£20,458) levels
[24] The office opened in 2003
[25] Local Area Agreements and Local Strategic Partnerships

development and health have become established there, including the East of England Development Agency (EEDA). Created in 1998, EEDA was based at Histon. 'NHS East of England', the regional strategic health authority, was based at Fulbourn since its establishment in 2006. Both organisations operated across the six-county region[26]. The Housing Corporation (subsequently merged with English Partnerships to form the Homes and Communities Agency) opened a regional office in Cambridge.

B4.13 By 2010 Histon was also home to the East of England Health Protection Agency (HPA). The Cambridge Research Park, located at Landbeach to the north of the City, is home of the new East of England regional control centre for the Fire & Rescue service, although the centre is not yet operational and it may never be commissioned as originally planned.

B4.14 Outside of Cambridge, but within the wider sub-region, the East of England Regional Assembly (which was re-organised to become the East of England Local Government Association in April 2010) is based at Flempton, just west of Bury St Edmunds. Bury is also home to the East of England Tourist Board and has regional offices of Defra and the National Trust.

B4.15 Not all publicly-funded bodies with a regional structure have offices in Cambridge. Sport England, for example, has a regional office in Bedford. Business Link East is based in Hatfield, Hertfordshire. Some agencies have a number of offices within the East of England, such as Natural England. And not all government and non-governmental agencies adopted the administrative six counties' regional operating area and a single office. In particular the Environment Agency has adopted boundaries based on physical geography.

Employment in the public sector – an historic perspective

B4.16 It is not easy to measure the public sector at a local level in terms of employment opportunities and how these have changed over time. There are a number of reasons for this:

- the classification of businesses and their employment relates to industry sectors, not to ownership. For example the sector 'primary education' will include private and State owned schools
- the methodology for collecting information on businesses and their employment has changed many times over the last 50 years. An 'annual census' has been replaced by an 'annual survey' since 1991. The month of survey has changed (most recently in 2006, with a switch from December to September). Many methodological changes have been made to the modelling and grossing of survey returns, most notably in 1998 and again in 2006
- the industry classification systems 'Standard Industrial Classifications' have changed five times in the last 50 years, reflecting changes in outputs and a greater emphasis on differentiating services
- only limited local area data are publicly available (through Nomis) for years between 1971 and 1984 and up to 1995 data are not available for every year. No specific

[26] The 9 English strategic regional health authorities cover coterminous areas to government offices and RDAs as from 1st July 2006, when they were formed from mergers of 28 smaller bodies.

information on employment in education, health, social care, defence, justice, etc. is available prior to 1981 and the 1981 data are not published below county level

- the quality of local authority level data has improved in recent years, particularly since 2006, as the methodology has changed. It should be noted that in earlier years some large employers, such as county and district councils, would record just one employment figure for all schools or libraries in their area – and this would be attributed to the HQ council office

- the issue of how to record the workplace of peripatetic staff persists. Care workers may travel across district boundaries, for example. In practice they will usually be allocated to their employer's paypoint

- since the 1980s, major changes have occurred in the way that many services funded by the public sector are organised. Few local authorities nowadays employ their own dedicated teams of architects or quantity surveyors, for example. Many have sold off their residential care homes and others contract out care services. This has generally resulted in a reduction in directly employed staff.

B4.17 The following tables and figures provide a broad assessment of employment in the three core 'public sector' industries of public administration & civilian defence[27], education and health & social care in the combined area of Cambridge City and South Cambridgeshire over the period 1991 to 2008, at five-year intervals[28]. The data are recorded as numbers of employee jobs and as a percentage share of total recorded employee jobs. It has not been possible to create a robust data series looking back to earlier years. These sectors include some privately-owned businesses as well as directly publicly-owned establishments. However, the majority of services are dependent on public funding such as contracts or grants if not direct employment.

Table B4-1: Employee jobs in core 'public sector' industries, Cambridge City & South Cambridgeshire, 1991 to 2008

Industry sector	1991	1996	2001	2006	2008	1991-2008	% change
Public administration, defence etc	5,000	4,500	4,500	6,100	5,600	+600	12.0%
Education	18,400	21,400	25,300	29,400	27,700	+9,300	50.5%
Health & social care	11,600	15,400	16,900	17,400	17,900	+6,300	54.3%
Total public sector employees	35,000	41,300	46,700	52,900	51,200	+16,200	46.3%
Total employees	108,000	122,900	142,500	155,900#	155,900#	+47,900#	44.4%#

Source: ONS from Nomis; SQW. Note: All figures have been rounded to the nearest 100 independently # these totals have been adjusted from the published estimates to take account of a change in survey month, i.e. increased by 2%.

[27] Armed forces personnel are excluded. This affects South Cambridgeshire as Waterbeach and Bassingbourn personnel will be excluded.
[28] The combined area has been selected in order to improve the quality of data. There have been problems when businesses on the fringe of Cambridge, but located in South Cambridgeshire, have been erroneously attributed to the City. 2008 is the most up-to-date information available from the Annual Business Inquiry.

B4.18 The table shows steady growth in jobs in education and in health & social care from 1991 to 2006. It should not necessarily be inferred that employee jobs in education decreased between 2006 and 2008 as the 2006 estimate appears unreasonably high; there is significant sampling error at the level of individual industry sectors. Similarly the year-on-year variation in employment in the 'public administration & defence etc' sector is well within the bounds of sampling error. At first sight, it appears that employment in this sector has changed only marginally over the period. However, with the 'contracting out' of services such as transport engineering and architects, this may be a false interpretation. Employment in an engineering consultancy will be counted as a 'professional service' and not included in the 'public sector' list.

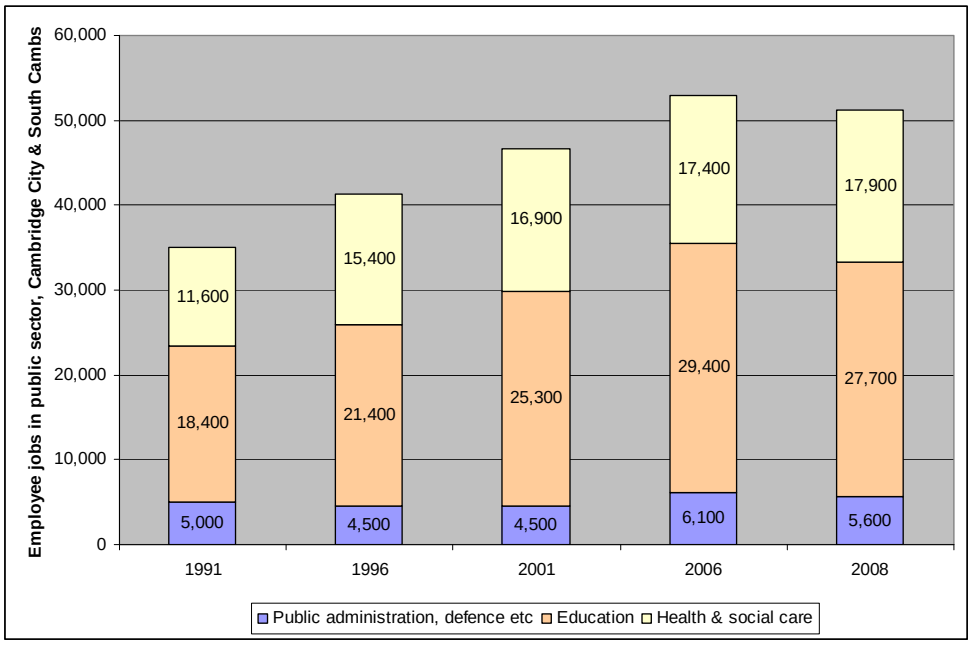
Table B4-2: Percentage of employee jobs provided by core 'public sector' industries, Cambridge City & South Cambridgeshire, 1991 to 2008

Industry sector	1991	1996	2001	2006	2008
Public administration, defence etc	4.6%	3.7%	3.2%	4.0%	3.7%
Education	17.0%	17.4%	17.7%	19.2%	18.1%
Health & social care	10.7%	12.5%	11.9%	11.4%	11.7%
Total public sector employees	32.4%	33.6%	32.8%	34.6%	33.5%
Total employees	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Nomis from ONS

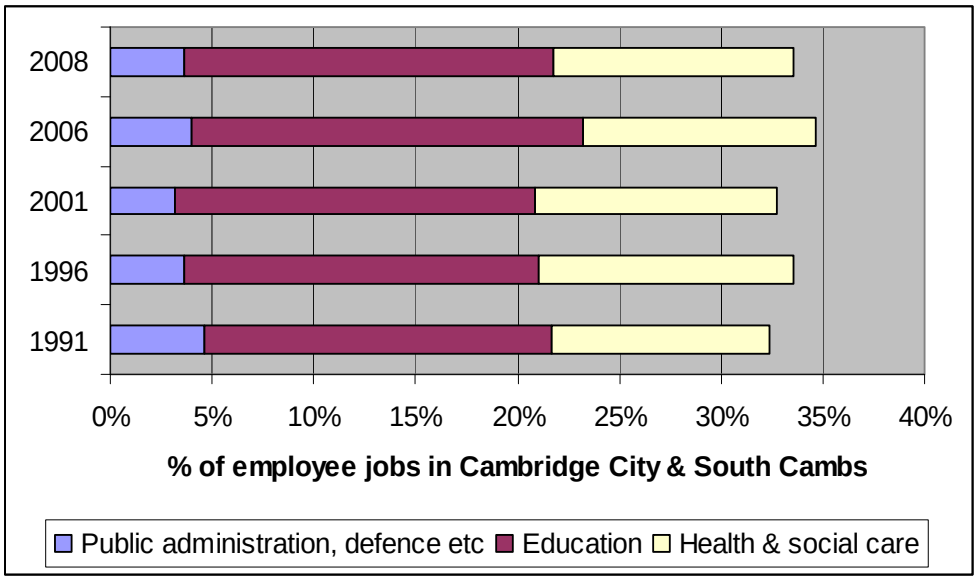
B4.19 Table B4-2 shows that the three core public sector industries contribute around one-third of total employee jobs in the combined Cambridge/South Cambs area and that this share has changed very little over the past 17 years. (The percentage share of Cambridge City jobs has increased slightly from 39% to 43% whereas the share of South Cambridgeshire jobs has remained around 20%).

Figure B4-1: Employee jobs in core 'public sector' industries in Cambridge City & South Cambridgeshire, 1991 to 2008



Source: Nomis from ONS. All figures rounded to nearest 100 independently

Figure B4-2: Percentage shares of employee jobs provided by 'public sector' industries, Cambridge City & South Cambridgeshire, 1991 to 2008



Source: Nomis from ONS

B4.20 It is not at all clear from this analysis that the development of regional agencies has resulted in a significant net increase in employment in 'public administration' in the Cambridge area. The data indicate that alongside job growth in organisations such as EEDA and Go-East there may have been reductions elsewhere – reflecting outsourced and contracted services, for example. It is also important to note that some job losses had already occurred by 2008, such as at Go-East.

Characteristics of the Role currently

B4.21 The previous section summarised the total number of employees in the core public sector industries in Cambridge City and South Cambridgeshire in 2008. The following table and figure provide a more detailed analysis in order to identify the key employment areas.

Table B4-3: Employee jobs in 'public sector' industries, Cambridge City & South Cambridgeshire, 2008

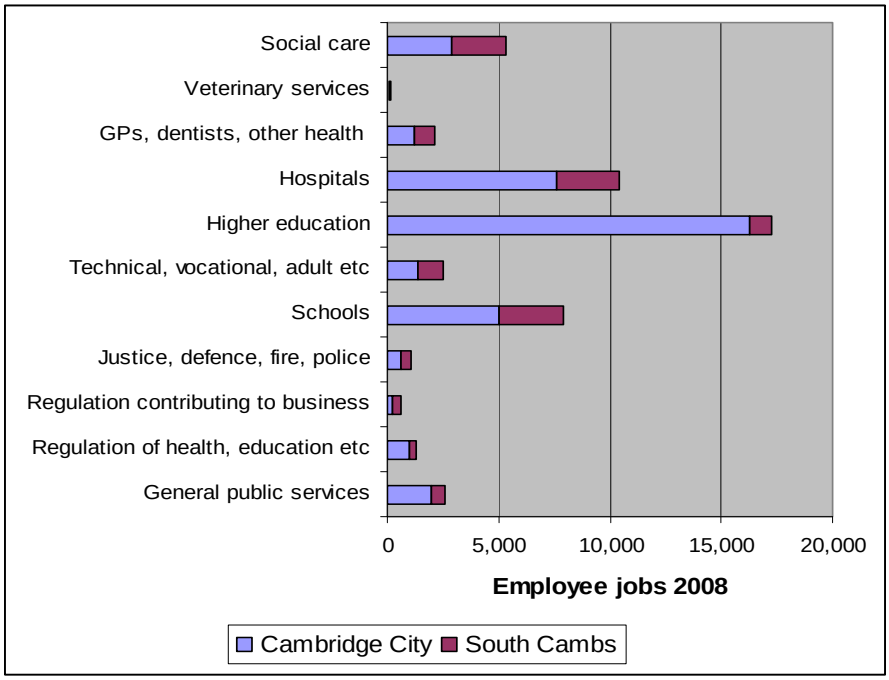
Public sector industries	Cambridge City	South Cambs	Cambridge sub-area	% all
General public services	2,000	600	2,600	1.7%
Regulation of health, education etc	1,000	300	1,300	0.9%
Regulation contributing to business	200	400	600	0.4%
Justice, defence, fire, police	600	500	1,100	0.7%
Public administration etc TOTAL	**3,800**	**1,800**	**5,600**	**3.7%**
Schools	5,000	2,900	7,900	5.2%
Technical, vocational, adult etc	1,400	1,100	2,500	1.6%
Higher education	16,300	1,000	17,300	11.3%

Public sector industries	Cambridge City	South Cambs	Cambridge sub-area	% all
Education TOTAL	**22,800**	**5,000**	**27,700**	**18.1%**
Hospitals	7,600	2,800	10,400	6.8%
GPs, dentists, other health	1,200	900	2,100	1.4%
Veterinary services	<100	100	200	0.1%
Social care	2,900	2,400	5,300	3.5%
Health & social care TOTAL	**11,700**	**6,200**	**17,900**	**11.7%**
Total public sector	38,300 (43.5%)	13,000 (20%)	51,300 (33.6%)	33.6%
Total employee jobs	88,100	64,700	152,800	100.0%

Source: Annual Business Inquiry 2008 SIC 2003 Note: All figures rounded independently to nearest 100

B4.22 The table shows that higher education alone accounts for more than 11% of all employee jobs in the Cambridge sub-area (and 18.5% of all jobs in Cambridge City). Hospitals accounted for 6.8% of the total and schools for a further 5.2%. The activities constituting 'public administration, defence etc' account for 5,600 jobs in total, 3.7% of the sub-area's employees; the sub-set associated with 'regulation' activities amount to 1,900 jobs, or 1.3% of the total.

Figure B4-3: Employee jobs in key 'public sector' industries in Cambridge City & South Cambridgeshire, 2008



Source: ABI 2008 SIC 2003

B4.23 As already discussed, by early 2010 Cambridge had developed into the primary base for regional administration in the East of England. However, total employment in 2008 in these regulatory agencies was less than 2,000. The agencies located in or close to the city included:

- EEDA
- Invest East

- Go-East
- NHS East of England
- East of England Health Protection Agency
- Arts Council England – East office
- Homes & Communities Agency regional office
- Tenant Services Authority regional office
- Open University regional office
- East of England Health Observatory
- East of England Central Control Centre (Fire & Rescue) - planned
- within the broader sub region (at Flempton): the East of England Local Government Association.

B4.24 Beyond the immediate Cambridge sub-area, but within Cambridgeshire county, there are County and District local authority offices and facilities in a number of market towns, including March, Huntingdon and Ely as well as in Cambourne. Huntingdon is also home to both county Fire & Rescue and police headquarters. Close to Huntingdon, Brampton and Alconbury bases are both home to armed forces and civilian support staff. Houghton & Wyton, close to St Ives, is another armed forces base with a significant number of civilian personnel. Other key 'public sector' employers in the wider Cambridge area include major hospitals in Huntingdon, Papworth, Ely and Bury St Edmunds and further education colleges in Huntingdon, Bury and Wisbech.

B4.25 This regional role is now set to change significantly. The Coalition government established in May 2010 has announced a major change of approach which has important implications for the whole concept of the English region and regional administration and government. This is due to two factors:

- the Coalition government's focus on 'localism' for government and other public sector functions emphasises 'bottom up' decision-making rather than 'top down'. A new 'Decentralisation & Localism' Bill was announced in the Queen's Speech at the opening of Parliament which will sweep away a raft of regional organisations
- the intention to cut public sector spending drastically, with an emphasis on reductions in 'bureaucracy' in order to protect front-line staff in a limited number of areas such as health and schools. Central government departments have been advised to assess the impact of cuts of between 25% and 40%.

B4.26 The government has already announced the demise of many regional functions and agencies as independent bodies. These include the RDAs, regional government and the regional NHS and Health Protection Agencies. The Tenant Services Authority (TSA) is to be scrapped. However, in a number of cases the organisations will hand certain functions over to either new agencies or existing bodies, including central government. For example, laboratory staff

from the HPA are expected to be relocated to public health laboratories; the TSA's duties relating to the financial regulation of social landlords transferred to the Homes & Communities Agency. Many of the RDAs' functions (but not budgets) are expected to switch to new Local Enterprise Partnerships (LEPs) which are to be established in the next 12 months or so.

B4.27 At the time of writing, government has just accepted a proposal for a Local Enterprise Partnership focused on Cambridgeshire, Peterborough and Rutland. The 'core' members will be Peterborough, Rutland and all Cambridgeshire local authorities, together with a number of associate members. These include Forest Heath and St Edmundsbury councils from Suffolk, North Hertfordshire and Uttlesford. A number of authorities in Lincolnshire and Kings Lynn & West Norfolk BC are also included. The inclusion of associate members is considered important as it reflects the existing and planned economic and labour market connectivity of the area[29].

Public sector dependency – vulnerability of employment

B4.28 The Office for Budget Responsibility (OBR) has forecast in its Budget Report (June 2010) that the Coalition government's cuts in public sector spending required to reduced the PSBR substantially by 2014/15 could result in a net loss of 1 million jobs over 4 years. This employment loss would constitute both direct public sector jobs and indirect jobs lost through reductions in contracted services etc. A separate leaked Treasury paper put the cuts higher, at 1.3 million jobs, (600,000 directly and 700,000 indirectly employed). Expressed as a percentage of total UK employment the cuts range from 3.5% (OBR report) to 4.5% (Treasury paper). 'Direct' jobs principally comprise public administration, education and health & social care. 'Indirect' jobs range widely, including arts and sports, construction, architects and civil engineers, advertising, bus operators and computer software development.

B4.29 As an input to this study we have carried out a detailed analysis of the employment structure by industry for both Cambridge City and South Cambridgeshire, making use of the Annual Business Inquiry (ABI) survey. The latest published data are for September 2008, prior to the recession, at a time when public sector employment was approaching or at its highest. We have attempted to estimate both direct public sector-funded jobs and also jobs which are dependent on public sector funding and contracts (indirect). The second step has been to 'score' each industry according to potential vulnerability to public sector spending cuts. So, for example, government administrative jobs are judged to be very vulnerable whereas hospital employees are considered to be likely to be protected by and large.

B4.30 The third step has been to fashion two policy scenarios. The first we have termed 'government sees it through'. Under this scenario the government maintains its resolve to cut spending significantly despite pressure from public sector unions etc. The second scenario is termed 'government pulls back'. Pressure from within the civil service and potentially from backbenchers unable to support unpalatable cuts means the government retrenches somewhat.

[29] The associate member authorities have also been included as 'core' members of other proposed LEPs. North Hertfordshire is included in a bid for a Hertfordshire LEP. Suffolk County Council is putting forward plans for a proposed East Anglian LEP – but does not have buy-in from Cambridgeshire or Norfolk authorities.

B4.31 Each scenario adopts specific assumptions about likely job losses for different industry sectors. So, for example, Scenario 1 assumes that 'highly vulnerable' sectors could lose 25% of directly employed workers; a sector with low vulnerability could still lose 5% of directly employed staff. Highly vulnerable staff in indirect, contracted services could lose up to 35% of their workforce, such as in some arts organisations.

B4.32 The following tables illustrate the potential jobs lost under each scenario.

Table B4-4: Modelled outcomes from Scenario 1: Coalition government 'sees it through', compared with 2008 baseline, employee jobs lost 2010/11 to 2014/15

	Cambridge City	**South Cambridgeshire**	**Cambridge & South Cambs combined**
Direct jobs lost	4,090 (11.8%)	900 (8.8%)	4,980 (11.1%)
Indirect jobs lost	940 (13.8%)	830 (12.4%)	1,770 (13.2%)
Total jobs lost	**5,030 (12.1%)**	**1,730 (10.2%)**	**6,750 (11.6%)**
Direct jobs remaining	30,490	9,300	39,800
Indirect jobs remaining	6,250	5,820	11,680
Total jobs remaining	36,750	15,130	51,470
Total jobs lost as % all jobs	**5.7%**	**2.7%**	**4.4%**

Source: SQW, ABI. Note: All figures rounded independently

B4.33 The table indicates a potential loss of 6,750 jobs, or 4.4%, in the combined Cambridge South Cambs area, with most reductions in Cambridge itself. Overall Cambridge City could lose 5.7% of total employee jobs (88,100 as recorded in 2008) and South Cambridgeshire could lose 2.7% of total employee jobs, (64,650). The majority of losses are in 'direct' jobs.[30]

Table B4-5: Modelled outcomes from Scenario 2: Coalition government 'pulls back'; comparison with 2008 baseline, employee jobs lost 2010/11 to 2014/15

	Cambridge City	**South Cambridgeshire**	**Cambridge & South Cambs combined**
Direct jobs lost	2,120 (6.1%)	480 (4.7%)	2,600 (5.8%)
Indirect jobs lost	540 (7.9%)	470 (7.1%)	1,010 (7.5%)
Total jobs lost	**2,660 (6.4%)**	**950 (5.6%)**	**3,610 (6.2%)**
Direct jobs remaining	32,460	9,720	42,180
Indirect jobs remaining	6,260	6,180	12,440
Total jobs remaining	38,710	15,900	54,610
Total jobs lost as % all jobs	**3%**	**1.5%**	**2.4%**

Source: SQW, ABI Note: All figures rounded independently

B4.34 The outturn from Scenario 2 shows an overall loss of just over 3,600 employee jobs in four years. This is equivalent to 2.4% of all employees in the combined Cambridge South Cambs

[30] For the purposes of this exercise we have assumed that university and college employment is predominantly direct public sector.

area. Once again Cambridge City accounts for the lion's share with just under 2,700 employee jobs lost. South Cambridgeshire contributes less than 1,000 jobs, split evenly between direct and indirect industry sectors.

B4.35 The analysis appears to support the general conclusions of the OBR and Treasury regarding the likely scale of jobs lost.

B4.36 It is important to note that no allowance has been made for any change in employment which might arise from demographic factors, such as changes in the numbers of children of school age. These would need to be factored in as a separate exercise.

The wider sub-area

B4.37 The same exercise has been carried out for all local authorities in the Greater Cambridge Partnership area. Generally job losses are likely to be lower in percentage terms than in Cambridge City, reflecting the sectoral composition of jobs across the area. Under Scenario 1 employee job losses range from 2.3% in both North Hertfordshire and Uttlesford to a high of 2.9% in Huntingdonshire. Under Scenario 2 the percentage employee job losses range from 1.2% in Uttlesford to 1.6% in Huntingdonshire.

Comparison with employment forecasts: Cambridge Econometrics

B4.38 In early 2009 Cambridge Econometrics (CE) was commissioned to produce a suite of employment forecasts for the five Cambridgeshire districts as an input to a review of long-term development. This section compares the CE forecasts with the output from the modelled scenarios of public sector spending cuts described above. The comparison is necessarily limited to the three core 'direct public sector' industries because the CE forecasts do not match the 'indirect' industries.

B4.39 The time period of the comparison is from 2010 to 2015 – the span covered by the OBR review. However, as the base year for both the scenario modelling exercise and the CE forecasts was 2008, this is also included.

B4.40 The following table shows the detailed employment forecasts[31] for the combined Cambridge City/South Cambridgeshire area. It indicates that overall public sector jobs could increase by 1,700 (3%) between 2008 and 2015, (or by 1,500 between 2010 and 2015). However, public administration was forecast to decline by 4%, with most growth occurring in health employment, rising by 7%. The education sector was forecast to grow by 2%.

Table B4-6: Forecast employment, Cambridge City & South Cambridgeshire, 2008, 2010, 2015, '000

Sector	2008	2010	2015	2008-2015 (%)
Public administration etc	7.4	7.2	7.1	-0.3 (-4%)
Education	29	29	29.5	0.5 (+2%)
Health	20.4	20.8	21.9	1.5 (+7%)
Total employment	179	176.3	184.2	5.2 (+3%)

[31] CE forecasts are for total employment, both employees and self-employed. They include armed forces personnel.

Sector	2008	2010	2015	2008-2015 (%)
Total public sector	56.8	57	58.5	1.7 (+3%)
% of all employment	31.7%	32.3%	31.8%	

Source: Cambridge Econometrics January 2009

B4.41 Tables B4-4 and B4-5 above show that under Scenario 1, direct public sector jobs look set to lose almost 5,000 employee jobs in the Cambridge sub-area, around 11% of the 2008 total. Under Scenario 2 the loss is projected to be around 2,600 jobs, or 5.8%.

B4.42 Table B4-6 indicates that public sector job growth contributes one-third of the net increase in employment CE forecast for the Cambridge sub-area between 2008 and 2015, (1,700 of 5,200 total). If, however, the public sector actually loses between 2,600 and 5,000 jobs, the outlook is very different. Overall employment could fall by 1,500 (under Scenario 1) or might increase by a modest 900 jobs (under Scenario 2).

B4.43 Looking at Cambridgeshire county as a whole, CE forecast a net increase of 3,400 'public sector' jobs between 2008 and 2015 out of a total increase in employment of 7,000, just under 50% of the total. The 'Scenario 1' analysis, however, indicates a potential loss of around 7,200 direct public sector jobs; 'Scenario 2' identifies a loss of around 3,800 direct public sector jobs. Consequently at the county level it looks as if the possible loss of public sector jobs could result in a significant net loss of employment overall.

Comparison with RSS targets[32]

B4.44 The employment target for Cambridgeshire, as set down in the East of England Plan, was just over 70,000, 2001 to 2021. Between 2001 and 2008 Cambridge Econometrics estimate that just under 43,000 jobs had been created (net). However, net job losses between 2008 and 2010 were forecast to be over 5,000. Taking this into account, the resulting target for the period 2010 to 2021 is just over 32,000 jobs.

B4.45 The Scenario testing exercise carried out to explore potential losses in both direct and indirect public sector jobs over the period 2010 to 2015 shows, at a county level:

- Scenario 1: 'direct' job losses 7,200; 'indirect' job losses 3,100: total 10,200 (rounded)
- Scenario 2: 'direct' job losses 3,800; 'indirect' job losses 1,800: total 5,500 (rounded).

B4.46 Consequently, in order to meet the RSS target the Cambridgeshire economy would have to create around 42,000 'private/voluntary' sector jobs (net) under Scenario 1 or 26,500 jobs (net) under Scenario 2. This now appears to be a major challenge.

[32] The coalition government is abolishing regional spatial strategies. However the targets contained therein remain a useful reference point. However they have no status beyond that

Challenges and opportunities looking ahead

B4.47 Cambridge has the highest dependency on public services employment in the East of England but as much of this is related to the health sector and the University of Cambridge it is arguably less vulnerable. The challenges facing the Cambridge area in the light of the Coalition government's agenda for localism and public sector spending cuts are considerable. They include:

- *responding to a loss of jobs – both direct public sector employment and indirectly, through the loss of contracted services*. As a major location for regional administration in the East of England, Cambridge looks set to lose disproportionately. It is also vulnerable on account of its large health and education sectors; although likely to be relatively protected, a small percentage reduction in jobs can still amount to a significant number. The job targets to 2021 set by the East of England Plan for Cambridgeshire now appear extremely challenging in the light of potential reductions in publicly-funded employment

- *creating an effective Local Enterprise Partnership (LEP)*. This will need to take forward much of the work of EEDA and continue to attract EU funding; a major problem is likely to be providing match funding to lever EU funds. However the geographic coverage of new LEPs in the region is of concern to those industry clusters which cross local authority (and potentially LEP) boundaries. For example, bio-technology and bio-science companies and research institutes in the region form a critical cluster in terms of the national economy. What arrangements can there be to ensure the cluster continues to be supported?

- *responding to a potential vacuum regarding land-use planning priorities*. The scrapping of the East of England Plan and its associated targets and policies has important implications for scheduling development programmes. How are regional priorities for investment to be agreed? Will there be any programme to replace, even if only in part, the former Government's Growth fund? Local Plans and Local Development Frameworks are still, in general terms, working to the targets in the adopted East of England Plan, (apart from Forest Heath, where development looks set to be reduced in scale). However, these plans have assumed that the A14 will be comprehensively redeveloped; following the Spending Review, A14 improvements will be significantly delayed. The targets have also made implicit assumptions about availability of 'social housing grant' to support the provision of new affordable housing. The investment provided through the government's 'housing growth fund' pot looks set to end. Without the A14 improvements, infrastructure investment and affordable housing, the future plans for Northstowe must be under review

- *Cambridge looks set to lose its role as a regional capital – but not at the expense of another local city*. The loss of regional government and administration should not impact significantly on the 'Cambridge' brand. What could be more critical is any potential reduction in Research Council funding; the MRC, BBSRC EPSRC and NERC all contribute substantially to world-leading research in the Cambridge area. Reductions in government research funding to the University of Cambridge and

ARU, along with reductions in investment at Addenbrooke's and Papworth hospitals, would also have an impact on business perceptions; i.e. a reduced 'offer' for inward investors, especially from outside the UK. The government has already announced that assistance to businesses in the form of tax breaks will not be on offer in the south-east, London or the east of England. This could have further implications for the local economy.

Conclusions

B4.48 The specific research questions posed in the Phase 1 report in relation to this role as shown in Table B4-7, with a response based on the preceding analysis.

Table B4-7: Research questions and responses

Question	Response
Given the particular mix of public sector activities in Cambridge and the surrounding sub region, what is the possible scale and distribution of decline in public sector employment in Cambridge over the next five years and what impacts – particularly in terms of supply chain effects – might this have? Which parts of the sub region appear most vulnerable, and why?	Based on high (current Government intentions) and low (Government pulls back somewhat) impact assumptions, and considering the stated intentions regarding different parts of the public sector, we estimate that between 2,500 and 5,000 direct public sector jobs will be lost in Cambridge and South Cambs over the next five years, and a further 1,000 to 1,800 jobs in the private sector but dependent on public sector funding (e.g. providing outsourced services). This amounts to between 2.4% and 4.4% of all jobs in the area, and is broadly consistent with the Government's estimate that the planned cuts will reduce total UK employment by between 3.5% (official OBR figure) and 4.5% (leaked Treasury figure). Within Cambridge & South Cambs, the impacts are disproportionately greater on the city. In the wider sub region the impacts are expected to be somewhat less, because there are fewer public sector functions and employees located there. Our analysis suggests reductions in total employment which range between 1.6% and 2.9% in Huntingdonshire to between 1.2% and 2..3% in the two Hertfordshire districts within the sub region.
What opportunities might arise with regard to the wider cluster, particularly in terms of sites and premises that might become available?	There is little doubt that public spending cuts will lead to the release of some office space in the sub region which is suitable for use by private sector firms, but the scale of such releases is unknown, and they seem unlikely to be substantial relative to the scale of demand expected over the next 10 years. Nevertheless, there may be one or two significant opportunities – for example, the GO East office, which has an excellent central location. At present, there is still a great deal of uncertainty about the scale and nature of spending cuts and their implications (e.g. will they lead to more, or less, outsourcing?), so it is impossible to identify other opportunities at present.

Source: SQW

B4.49 Cambridge has high ambitions for growth and these were spelt out and supported by local authorities in both the Cambridgeshire & Peterborough Structure Plan in 2003 and in the East of England Plan 2008. The plans both involved a major step change in the rate of housing development in the immediate Cambridge area – and also spelt out the infrastructure investment required to achieve this.

B4.50 The major cut-backs in public sector spending already announced and under review look set to challenge this growth programme. In order to minimise the impact it is critical that the

Cambridge area's 'offer' remains clear and that there is co-operation and co-ordination of delivery across all partners.

B4.51 Winning new business from inward investors and building on the potential offered to spin out new companies and to expand existing ones requires not only joined-up planning and agreed priorities for infrastructure investment but a maximising of funds such as the EU can provide. It is crucial that the new LEP acts strategically, because increasingly Cambridge firms operate within a much broader geography than the sub region (for example, 'One Nucleus' was formed in April 2010 by the merger of Eastern Region Biotechnology Initiative and the London Biotechnology Network to support the 'super cluster' of biotechnology businesses across the whole of the East of England and London). It is also crucial that public sector organisations can gain access to match funding which will be required in order to secure EU funding opportunities.

Role 5: Cambridge as an international visitor destination

Introduction

B5.1 A significant proportion of tourism activity relates to three of the other four roles. Business tourism, which includes academic and business conferences, relates to Roles 1 and 2 and a proportion of staying visitors who come on holiday probably derives from spouses who accompany business trips or business people/delegates who extend their stay. Visits to friends and relatives relate to Role 3 and more generally visitor expenditure adds to retail revenues. In the main part, however, tourism can be seen as an exogenous activity in its own right. It can be expanded through the provision of facilities and by marketing them to increase market share.

B5.2 Local attitudes towards tourism are ambivalent and have been so for many years; visitors generally being seen as adding to city centre congestion and noise. Day visitors in particular, have been criticised as imposing costs that outweigh the benefits they bring and certain categories of staying visitors, notably young language students, have aroused considerable ire from time to time.[33]

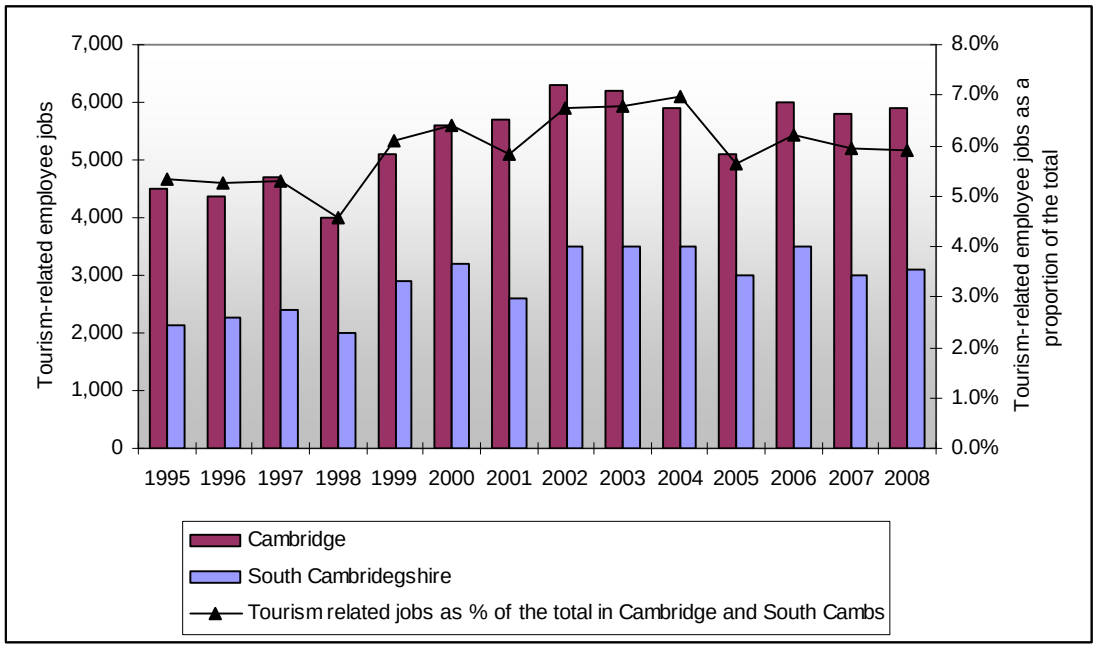
B5.3 Tourism does, however, have spill-over benefits for local residents, through: enhancing the range of places to eat; supporting specialist retailers; and underpinning popular events such as the Cambridge Folk Festival. It also provides welcome income to most colleges, helping them to increase the utilisation of their accommodation and to sustain year-round employment. As a whole tourism businesses increase the range of employment opportunities; albeit few posts are highly paid and a significant proportion are filled by non- local staff – often from overseas.

Data

B5.4 Data on tourism are broadly indicative rather than definitively accurate. Two factors contribute to substantial margins of error in the ABI employment numbers: first the definition of what constitutes a tourism business (e.g. should some part of college employment be included?) and second the prevalence of part time and seasonal working[34].

[33] It is a moot point whether language school student should be counted as tourists or educational visitors.
[34] Additionally the ABI survey shifted from December in 2005 to September in 2006 which affects both the numerator and the denominator (probably to different degrees) when calculating the % of total employment.

Figure B5-1: Tourism-related employee jobs in Cambridge and South Cambridgeshire, 1995-2008



Source: ABI

B5.5 The ABI data in Figure B5-1 show limited growth between 1995 and 2008 and a relatively stable share of total employment for Cambridge and South Cambridgeshire.

B5.6 An alternative, and the most widely followed, approach to estimating tourism's contribution to a local economy is to calculate total tourist expenditure from numbers of trips and the application of expenditure profiles. This method, "the Cambridge Economic Impact Model", is used by East of England Tourism. For Cambridge City in 2007 the "snapshot" headlines were:

- total staying trips 1,035,300 producing £216,816,000 expenditure
- total day trips 3,091,000 producing £130, 425,000 expenditure.

B5.7 The implied expenditure per day visit (£42) looks too high and the data do not distinguish between UK and overseas visitors. For staying visitors, however, the distinction is made and it shows some interesting differences:

- the average length of stay by a UK visitor is 2.4 days (for Cambridgeshire as a whole in 2009 it was 2.7)
- the average length of stay by an overseas visitor is 8.3 days (for Cambridgeshire as a whole in 2009 it was 8.1)
- for serviced accommodation the figures are 2.1 days (UK) and 3.6 (overseas)
- for group/campus accommodation the figures are 1.1 days (UK) and 18 (overseas)
- for visits to friends and relations the figures are 2.9 days (UK) and 8.6 (overseas)
- these three categories account for 87% of visitor expenditure

- on average UK visitors spend £56 per night and overseas visitors £50 – the difference is mainly explained by overseas visitors having a greater propensity to stay in group/campus accommodation and to spend less while there (£44 cf £74 for UK)
- in total overseas visitors account for 54% of total staying visitor expenditure.

B5.8 When expenditure is analysed by purpose of trip, UK visitors again are shown to spend more per night than visitors from overseas. However, this difference may well be attributable to travel costs and significant differences in length of stay. Travel costs will account typically for a higher proportion of expenditure for short trips.

Table B5-1: Data analysed by purpose of visit

Purpose of visit	UK visitors length of stay	Overseas visitors length of stay	UK visitors £ per day	Overseas visitors £ per day
Holiday	2.6 days	7 days	£47	£39
Business	2.3 days	5 days	£100	£85
VFR	1.7 days	9.7 days	£42	£28
Study	n.a	21.2	n.a.	£55

Source: East of England Tourism: Economic Impact of Tourism, Cambridge City -2007

B5.9 A rough indication of the types of business that benefit from tourism expenditure can be gained from an analysis of expenditure per person per day (again the expenditures of day visitors are perplexingly high).

Table B5-2: Expenditure per visitor per night £

	Accommodation	Shopping	Food and drink	Attractions/ entertainment	Travel	Total[35]
UK staying visitor	£18.50	£6.80	£14.00	£5.60	£10.90	£55.80 (£42)
Overseas staying visitor	£17.30	£12.30	£9.70	£6.00	£4.40	£50.00 (£53.3)
Day visitor		£18.60	£15.70	£4.10	£3.90	£42.30 (£38.5)

Source: East of England Tourism: Economic Impact of Tourism, Cambridge City -2007

B5.10 Data on expenditure at the UK level are given in the GCP tourism strategy report[36].

Table B5-3: Index of comparative value of market sectors

	Comparative expenditure per head per night
Domestic conferences	10
Overseas business (including conferences)	8.7
Domestic business – general	6.7
Domestic short breaks (1-3 nights)	5.3
Overseas holidays (all types)	5.0

[35] The totals in brackets in the table give the 2009 estimates for Cambridgeshire as a whole.
[36] Greater Cambridge and Peterborough Tourism Strategy and Action Plan. May 2007

	Comparative expenditure per head per night
Domestic long holidays (all 4 + nights)	2.6
Visits to friends and relatives (overseas or domestic)	2.6
Day trips	2.4

Source: UKTS and IPS

B5.11 These figures broadly confirm that staying visitors from overseas, particularly those coming for business and study, make worthwhile contributions to Cambridge City's economy.[37] The further questions that arise are whether their number is likely to increase in future in view of what is currently afoot and whether initiatives could and should (i.e. are more staying visitors wanted) be pursued to increase them further.

Are more international visitors wanted?

B5.12 The answers to this question are tentative as they derive from a limited number of consultations undertaken for this assignment, together with impressions gained from SQW's involvement with previous tourism studies. By and large, language schools being the exception, views did not differentiate between UK visitors and international visitors.

Views of the local authorities

B5.13 So far as Cambridge City is concerned, the emphasis is on managing visitors rather than attracting greater numbers. It would be desirable if a higher proportion of visitor days were accounted for by staying visitors. For both day and staying visitors the objective is to help them to explore more of the city (spreading the pain) and a co-ordinated system of pedestrian signage, with interpretation, is being introduced to help achieve this (co-funded by the private sector).

B5.14 Surrounding Districts would welcome more tourism activity to support both accommodation providers and visitor attractions and the GCP tourism strategy[38] emphasises this objective.

Views of the colleges

B5.15 Conferences and day meetings are, for most colleges, important sources of income and a number of them have specifically considered the needs of visitors when expanding their accommodation and meetings facilities. A few colleges host well-established summer schools for young people that provide welcome business especially in August which is a quiet month for conference business. There are also summer schools which seek to familiarise students with Cambridge University life e.g. as part of the Sutton Trust's access programme.

B5.16 The city centre colleges suffer from visitor pressure and the noise they generate - especially during exam periods. Most have restricted the number of hours when visits are allowed and several have introduced charges – in most cases with the aim of controlling numbers rather than generating net income (King's College Chapel is the obvious exception to this).

[37] They also underline the questionablity of the day visitor expenditures shown in the table above
[38] Greater Cambridge and Peterborough Tourism Strategy and Action Plan. May 2007

B5.17 Reflecting their primary educational purpose, colleges welcome academic conferences, in particular those which involve college Fellows. These will often have an international coverage. By way of example one of the interviewed colleges indicated that only 20% of its conference income is liable to VAT; 80% being for educational purposes.

B5.18 Colleges and the University, including pension funds, are major owners of retail property in the city centre (one suggestion was that this may be as high as 60%). Consequently they have a material interest in the retail sector and it was wondered whether the day tripper pressures on the city centre detract from the performance of higher end retail.

Views of hotels

B5.19 Hotels are concerned to maximise their revenue which, principally, is achieved through securing high room occupancy by juggling together a variety of demands that have requirements which dovetail (e.g. business visitors during the week, functions and leisure at weekends, etc.). International visitors, both leisure and business are a valued part of the demand mix.

Views of academics and business community

B5.20 There is a shared antipathy to noisy visitors and their congregation at tourism hot spots. For many Cambridge residents, language school students are a particular bête noir (but equally a good many are happy to take income from language students by acting as host families).[39] However both academics and high tech businesses welcome conferences relevant to their professional/technical interests, not least for the international networking they offer.

What potential demand is there and how is it changing?

B5.21 The demand from overseas tourism for leisure visits involving an overnight stay will depend in part on fluctuations in the exchange rate (in the first 9 months of 2009, holiday visits from Germany grew by 23%). It can, however, be influenced by the product/packages on offer and the effectiveness with which they are promoted. Whilst not addressing the demand question precisely, a survey conducted for the GCP Tourism Strategy sought views on what markets would be important in future.

Table B5-4: Perceived importance in the future (% indicating very important)

	All	Hotels	Guest house / B&B	Self catering	Attractions
Domestic short breaks (1-3 nights)	51%	55%	54%	27%	61%
Domestic holidays (4+ nights)	46%	45%	47%	65%	38%
Domestic business / conference	50%	87%	52%	36%	24%
Overseas breaks / holidays	36%	19%	43%	57%	31%
Overseas business / conference	27%	55%	26%	31%	4%
Local functions or VFR	56%	45%	49%	59%	79%
Day visitors	42%	18%	19%	0%	94%

Source: Greater Cambridge and Peterborough Tourism Strategy and Action Plan May 2007

[39] In some places, that is not trivial. A back of the envelope estimate suggestions that Girton households receive between £0.25m and £0.5m per year from the language school in the village for hosting students.

B5.22 Day visitors are notably important for attractions many of which, such as the Imperial War Museum at Duxford and the National Trust properties, are outside Cambridge City. Moreover, for them day visitors will probably include local residents as well as tourists.

Conference market

B5.23 An analysis of data from college accounts undertaken by Conference Cambridge shows growth in college turnover from conferences (residential and non-residential and including summer schools over the past four years:

- 2005/06 £22.7m
- 2006/07 £24.8m
- 2007/2008 £26.7m
- 2008/09 £28.1m.[40]

B5.24 This growth reflects, in part, more colleges actively bidding for conference business and, in some cases, building new facilities. Some long-established venues saw a fall in revenue in 2008/09; though there are now signs of recovery.

B5.25 More specifically in relation to the conference market as seen by colleges, the following observations were made:

- companies used to bring large numbers of staff (say 200ish) for 1.5 to 2.5 days; now smaller meetings of 20-30 key people are becoming a feature
- in 2009, 54% of enquiries for day meetings were for 1-50 delegates and 14% for 51-80 delegates (as recorded by one college)
- for residential conferences at the same college, 51% of enquiries were for 1-50 delegates and 10% were for 51-80 delegates[41]
- there is increasing demand for boardroom or cabaret layouts (especially from firms) and these require rooms that can provide flat, as against tiered, space
- the demand for day meetings is growing and many colleges can accommodate these in term time as well as the vacations
- *"Cambridge is hugely attractive in the academic market – though organisers do have an aversion to high rates, so we try to fit them in to non-prime months e.g. not September*"
- indications from IMEX (Frankfurt) are that there may be growing future interest from major BRIC companies to hold some of their meetings in Cambridge

[40] The distribution of this income across the 31 colleges varied widely in 2008/09 with 24 reporting income in the range £0.5 to £2m, but some colleges recording very low income and a very few showing income in excess of £2m
[41] This indicates more demand at the lower end of the scale than the 2007 national data given in the "large scale facility study" undertaken for Cambridgeshire Horizons which reported: 19% for up to 50, 25% for 50 to 100, 22% for 101 to 250, and 16% for 251 to 500

- **so far the usual pattern has been to sell a package of conference facilities and accommodation. However, in the US it is quite common for delegates to be free to make their own accommodation arrangements and this may become more prevalent in the UK.**

B5.26 This last point has been emboldened because of its potential significance for both colleges and hotels. A number of colleges have already geared up to provide B&B accommodation which they sell through "University Rooms". This is reported to have worked well; generating substantial business at good margins from not-too-demanding visitors (who may provide future references for conference business). If the US pattern grows in importance there may be scope for hotels to benefit directly by providing accommodation for delegates to conferences held in colleges. To some extent this already happens in the other direction, with hotel-based business conferences holding gala dinners in historic college halls.[42]

Supply-side factors

Hotels

B5.27 The quality of hotels in Cambridge was mentioned adversely by one or two consultees but good quality new hotels have been developed in recent years (Felix, Hotel du Vin and, most recently, Varsity) and there are plans for hotels in the CB1 development and at Addenbrookes. A budget hotel is now open in the Orchard Park development and planning permission is being sought for a second one there. Recently announced plans for developing a 296 room Radisson Blu hotel on the Cambridge Science Park specifically mention extensive conference facilities and the intention is to make full use of the facilities already developed in the Trinity Forum.

Colleges and the University

B5.28 The announcement of the Radisson plan claimed that "*Cambridge is curiously thin when it comes to conference facilities*". In response to this assertion Conference Cambridge stated that the colleges and the University offer:

- 7,500 bedrooms (3,000 en-suite)
- 50 lecture theatres
- 400 function rooms.

B5.29 Within these totals there are facilities developed specifically for the conference market; notably the Moller Centre at Churchill College. Other Colleges have undertaken dual purpose development which have taken account of conference needs including: Clare; Downing; Fitzwilliam; Homerton; Magdalen; Murray Edwards; Pembroke; and Wolfson.

B5.30 New University buildings, notably on the Sedgwick site, have good capacities and are well located for conference use (e.g. Law and English). Further out, the Mathematics Centre is

[42] There is a future possibility that a few colleges with appropriate facilities may seek to compete against hotels in the pure business market

used for the University's "Horizon" events and new buildings at West Cambridge offer further potential. On the Addenbrooke's site the new CRC building's lecture theatre has been used for events open to the public and the LMB has the Perutz lecture theatre. More distant from Cambridge *"Scientific conferences (up to 300 delegates) are held at the Wellcome Trust Conference Centre."* The Imperial War Museum at Duxford also has facilities for 200 delegates and offers a unique drinks/reception venue within its aircraft displays.

What realistic possibilities are there to improve Cambridge's performance?

A large scale concert/conference venue

B5.31 Cambridge has a very distinctive tourism offer. Comparable destinations are Oxford and, to a lesser extent, York and Edinburgh. Of these only Edinburgh has a major, purpose built, conference centre. A project to develop a combined entertainment and conference facility in York has been controversial.

B5.32 Research was commissioned by Cambridgeshire Horizons to assess *"the feasibility and viability of a large scale facility that can include a concert hall, convention centre and or other facilities that could complement the viability of the facility in the Cambridge sub-region"*.[43] The report of this research contained some misunderstandings – e.g. that college accommodation is unavailable in September and April – and it only considered as relevant hotels within one mile or less of the Corn Exchange (identified as the main conference venue). It appeared to suggest that a further 500-1,000 hotel bedrooms would be required if a 600 delegate conference/concert venue were to be developed. Whilst development plans since the report was written suggest that at least 500 new rooms may be developed over the next 5-10 years, it is not certain that these will be within one mile of possible sites for a new facility.

B5.33 Perhaps more importantly the research appeared to indicate that, whilst there is local enthusiasm for a new concert hall, the viability of this element of demand for a combined concert/convention centre is problematic given the catchment area's current population. Mention was also made of such developments in other cities being supported through "*subventions*" – either *"the donation of a publically owned venue or a large sponsorship donation by the public sector"*. However, the possibility of a major music venue (1,000 plus capacity) which would also provide facilities for conferences, is being explored currently. It would be part of a mixed use development that would cross subsidise the venue. Unsurprisingly, there are likely to be contentious planning issues involved if this is to be achieved.

Accommodating more modest conferences

B5.34 It is hard to gauge the prospects for achieving such a large scale facility in the near future and the Horizons' consultants were not asked to consider the competiveness of Cambridge as conference destination and how this might be improved. From our discussions, it appears to

[43] "A feasibility study on a large scale arts and cultural facility for the Cambridgeshire sub-region", a report to Cambridgeshire Horizons by Tourism UK, March 2008

be difficult for Cambridge to accommodate conferences with 300-500 delegates that require a lecture theatre, break out rooms and restaurant facilities in an easy to use environment. Whilst many are smaller and can be accommodated, a significant number of academic conferences attract 300 plus delegates.

B5.35 It is perhaps worth reviewing what the benefits would be from attracting such business and what possible approaches might make it possible to do so. Clearly construction of a new facility in the current economic climate may be problematic (depending on the scale of the Radisson project's conference component), but it was suggested that Cambridge University (as against the colleges) might be able to make some of its facilities more flexibly available.

Providing accommodation for staying visitors

B5.36 As already mentioned, many colleges are very alert to the possibilities of generating income from tourism and they are likely to maintain an entrepreneurial stance. There is probably potential to increase numbers of visitors using college B&B.

B5.37 Hotel viability depends on securing a both high occupancy and a mix of different visitor types. There are several hotel schemes in the pipeline and we heard of no serious impediments to an effective private sector response to business opportunities; though a more positive PR and marketing stance by the public sector might provide encouragement at the margin.

Maintaining the attractiveness of Cambridge to visitors

B5.38 Issues of visitor pressure have already been mentioned, as have the steps to encourage them to broaden the area of the city that tourists explore. The attractiveness of the city centre, in general (shopping, eating, noise, air quality, public realm) are considered more fully in the discussion of Role 4. These are all important for a positive visitor experience but facets of access and transport are particularly crucial for both individual visitors and conference delegates.

B5.39 In addition to the vexed issue of the A14, the following specific issues were noted in our consultations:

- car parking cost and availability near to the centre
- conference delegates' need overnight parking at the park and ride sites
- the desirability of developing the Chesterton sidings railway station to keep traffic out of town and provide fast links into the city centre.

The Olympic Games as a showcasing opportunity

B5.40 London 2012 presents a major opportunity to showcase Cambridge and the surrounding attractions to international visitors – both staying visitors and day-trippers. The opportunity merits a co-ordinated effort involving both public and private sectors to develop and market an imaginative offer.

Public relations. Marketing and Selling

B5.41 Mention has already been made of the City Council's disinclination to allocate resources to marketing tourism and the decision to downgrade support for Destination Cambridge was regretted. It was suggested that priority should be given to celebrate Cambridge's success in a strong PR campaign. The conference market is becoming more competitive and cannot be taken for granted. Feedback from a conference in 2008 organised by the University of Cambridge Catering Managers was that bookers and agents perceive Cambridge as suffering from a lack of "*working together*" and that there is a need to show a greater "*hunger for business"* when sales opportunities have been generated.

Table B5-5: Research questions and responses

Question	Response
How important is it for Cambridge to attract international business/academic conferences, etc. What more needs to be done to ensure that Cambridge is genuinely "on the map" in these terms? What might this mean in terms of further growth?	• the first part of this question addresses policy but the evidence presented above suggests that a good case can be made for seeking to attract more conference business • a major new facility would widen the scope of the potential market, but even if this cannot be delivered there should be scope to grow business from medium size conferences. New hotel capacity is coming on stream but, in many instances, it will need to be packaged with elements of the Colleges' heritage appeal. Further improving collaboration between hotels, colleges and the University can help improve Cambridge's competitive standing in a quite tough market.
To what extent is Cambridge's tourism offer inherently bound up with its city centre functionality? What are the implications in terms of services, etc., for local people and wider quality of life considerations? How does all of this relate to what the younger generations of high tech business leaders want from Cambridge?	• congestion in the city centre and car parking are important issues for the tourism offer • tourism supports the viability of restaurants and, to a lesser extent, shops from which local residents benefit • it also adds to congestion, though this issue is being tackled through signage etc. • there was little feedback from consultations on the last part of the question.

Source: SQW

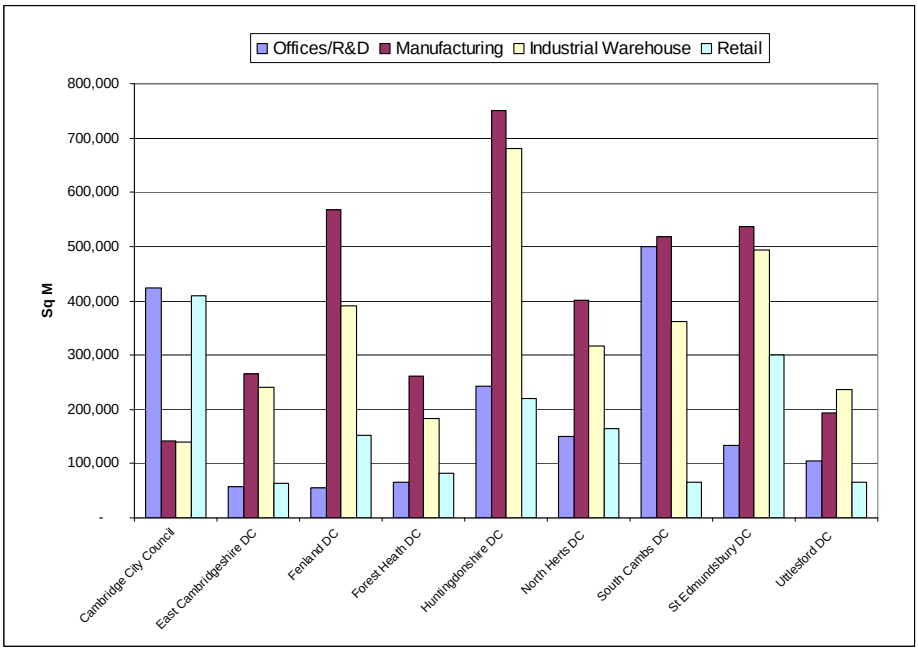
PART C: THEMATIC REPORTS

Theme 1: Assessment of the availability and suitability of different types of land and premises

Overall stock

C1.1 The figure below, taken from information provided by the Valuation Office used for rating purposes, provides an insight into the total floor space in the study area.

Figure C1-1: Overall Stock



Source: Valuation Office Agency, August 2010

C1.2 Total floor space in the study area is 1,733,000 m^2 of Office/R&D and 3,700,000 m^2 of industrial/warehouse. The quality of this space will vary enormously from small run down offices and workshops in secondary locations to modern Grade A office premises in central Cambridge or on a Science or Business Park. Of this space 924,000 m^2 of offices are in Cambridge City and South Cambridgeshire and 1,159,000 m^2 of industrial/warehouse space representing 53.32% & 17.37% of the total stock in the study area. The figures identified in the Cambridge City and South Cambridgeshire Employment Land Review 2008 are 797,000 m^2 and 1,216,00 m^2 respectively. Recent developments will account for some but not all the discrepancy between the two office figures but the figures nevertheless provide a context for consideration of the supply and demand data in the region.

C1.3 Figure C1-1 also demonstrates that the Industrial supply of space is split in broad terms equally between manufacturing and distribution & warehousing.

C1.4 Retail provision is unsurprisingly concentrated in Cambridge given that it forms the major retail centre in the area although Bury St Edmunds (St Edmundsbury DC) and Huntingdon are also notable for their retail offerings.

C1.5 The figures have been provided in Local Authority areas and it is necessary to bear in mind the authority boundaries. South Cambridgeshire includes most of Cambridge Science Park for instance which many might think of as being part of the City.

Supply and demand

Office/R&D

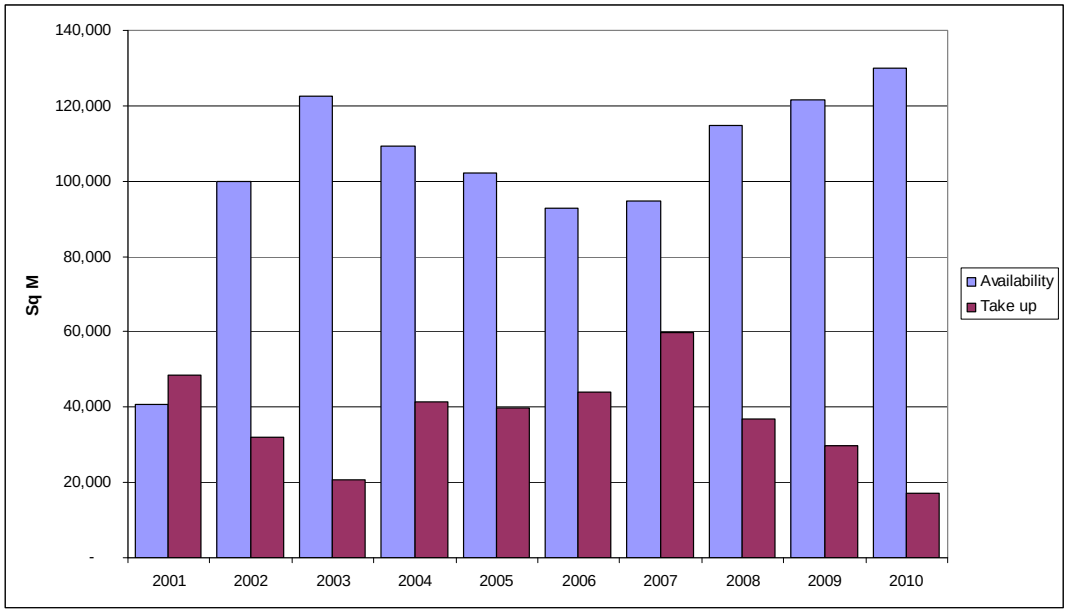
Cambridge and South Cambridgeshire

C1.6 Figure C1-2 below shows that current availability of Office and Research and Development space in the City and South Cambridgeshire area is around 140,000 m^2 representing some 15% of the total stock of floor space. The level of vacant space rose significantly following the dot-com crash in the early 2000s and has remained fairly consistent since then.

C1.7 A large proportion of R&D requirements will easily be accommodated in a standard office specification building or only require minor adjustment. Laboratories associated with electronics can usually be accommodated but laboratories for chemistry, biology and pharmaceutical uses can be very specialised. The fit out is expensive and can be specific to a particular requirement and is then not easily adapted to alternative uses. There is less information available on the extent and take up of laboratory space, as distinct from the more general office market. Large units on the Science Parks tend to be built, or fitted out, in response to specific requirements but can be difficult to re-let.

C1.8 Demand for smaller units is much greater, and potential tenants more willing to compromise their requirements. According to Bidwells[1] 25,515 sq ft of laboratory space was let in the first six months of 2010 resulting in a reduction in total supply to 259,140 sq ft (24,074 m^2).

Figure C1-2: Cambridge City & South Cambs Office/R&D space – take up and availability



Source: Carter Jonas LLP, August 2010

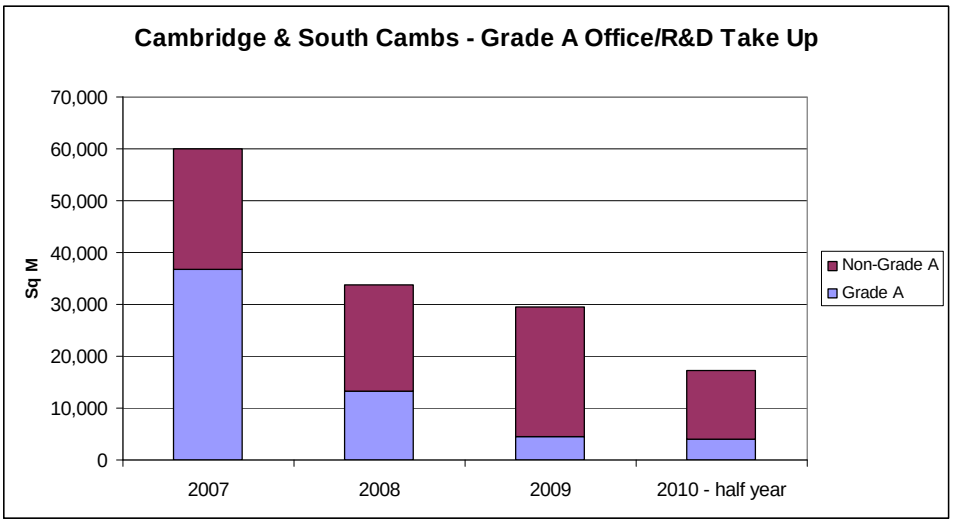
NB: 2010 Take Up is YTD figure only

C1.9 Take up of space over the last ten years has averaged about 40,000 m^2 per annum, or nearly 4.5% of the total space and 35% of average availability over the past 10 years.

C1.10 Demand in the same period, which is primarily focused on Cambridge, has been fairly consistent over the last few years at just over 150,000 m^2 per annum. Demand in this context is an expression of interest in property registered by us (or others) either for a specific property or a general requirement but it is not usually possible to determine initially whether an enquiry is serious. The figures cover all available office space in the area but the best quality space or 'Grade A' currently represents about 25% of the available space and comprises either new, nearly new or recently refurbished accommodation.

C1.11 Figure C1-3 demonstrates the quantity of total take up which is attributed to Grade A space. In recent years the low level of available Grade A space and the lack of space being developed has resulted in Landlords 'holding out' for high rent levels while second hand space has been much more competitively priced. This has accordingly reduced the proportion of total take up formed of Grade A.

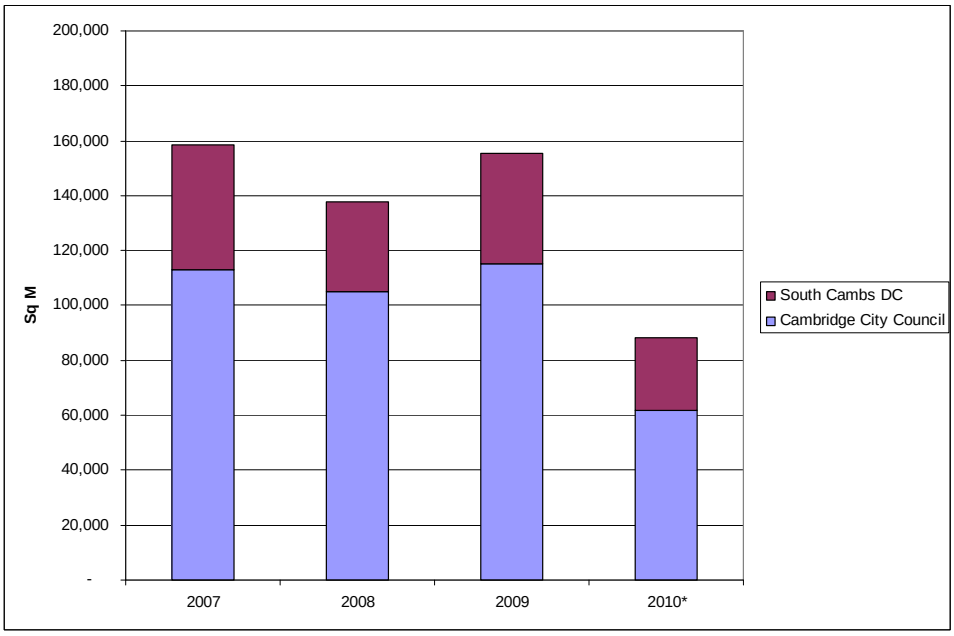
Figure C1-3: Cambridge & South Cambs - Grade A Office/R&D Take Up



Source: Carter Jonas LLP, August 2010

C1.12 Demand has not dropped significantly since 2007 and the start of the recession but take up halved from 60,000 m^2 in 2007 to 30,000 m^2 in 2009. We believe that one explanation for the high demand has been companies exploring the possibility of moving when their existing lease is due for renewal and then using the evidence from offers received for alternative premises to reduce the rent on their existing accommodation.

Figure C1-4: Office/R&D Demand Analysis



Source: Carter Jonas LLP

NB: 2010 YTD

C1.13 Demand at present is primarily focused on Central Cambridge where there is a distinct shortage of good quality office space. The most recent modern office development in Central Cambridge was Terrington House in 2004 though much is promised in the CB1 development. The only recently completed office buildings have been the Broers Building in West Cambridge and Napp *Phase II* on the Science Park, both buildings targeted at specific sectors and neither being central Cambridge.

C1.14 It is interesting to note the number of Grade A developments over the past few years, their locations and success in being let as set out below in Table C1-1.

Table C1-1: Office/R&D Space completed since 2007 (net floor space)

Building	Local Authority Area	sq m	PC date	% Let
101 Cambridge Science Park	Cambridge City Council	7,453	2007	41%
Lothbury House, Newmarket Rd	Cambridge City Council	4,010	2007	0%
Napp Buildings, Cambridge Science Pk	South Cambs DC	10,080	2008	100%
Pembroke Building, Cambridge Bus Pk	Cambridge City Council	1,026	2008	100%
Broers Building, West Cambridge	Cambridge City Council	2,080	2009	44%
Tennyson House, Cambridge Bus Pk.	Cambridge City Council	2,268	2009	50%
Jeffreys Building, St John's Innovation Pk	Cambridge City Council	2,276	2010	26%
		29,192		
Outside				
Emmanuel, Chesterford Research Park	Uttlesford DC	5,574	2007	100%
Trinity Court, Buckingway Business Park	South Cambs DC	3,855	2008	64%
Riverside, Granta Park	South Cambs DC	3,851	2009	20%
Gonville Laboratory, Chesterford Research Park	Uttlesford DC	3,662	2009	100%
St Ives Business Park Si 1 and Si 2	Huntingdonshire DC	2,632	2009	19%
		19,574		
		48,766		

Source: Carter Jonas LLP

C1.15 In terms of future supply, according to the City Council there is 56,000 m^2 of existing planning consents in the City and a further 211,000 m^2 of allocations without planning permission. The corresponding figures for South Cambridgeshire District are 165,000 m^2 and 162,000 m^2 respectively.

Table C1-2: Cambridge City & South Cambs Land Supply for B1(gross floor space)

Local Authority	Use	Existing Planning Permissions	Allocations Without Planning Permission	Total
Cambridge City	B1a	17,793	64,045	81,838
Cambridge City	B1b	36,842	149,561	186,403
Cambridge City	B1 unspecified	1,133	-3,019	-1,886
		55,768	**210,587**	**266,355**
South Cambs	B1a	60,869	46,500	107,369
South Cambs	B1b	72,921	30,173	103,094
South Cambs	B1 unspecified	31,591	86,083	117,674
		165,381	**162,756**	**328,137**
Overall Total		**221,149**	**373,343**	**594,492**

Source: Cambridgeshire County Council - Strategic Planning Research and Monitoring; Net Employment Floor space Committed (as at Sep 2009)

Figures in sq m

NB: B1 unspecified figures will include some industrial B1c allocations

C1.16 With an average take up of 40,000 m^2 this implies that there is availability for another 15 years once the existing supply has been taken up, but this does not take into consideration the recycling of existing space. Much of the existing stock will become redundant over this period and will either find alternative uses or require major refurbishment.

C1.17 However within these figures will be the allocations at Cambridge Biomedical Campus (Addenbrookes), North West Cambridge (University) and West Cambridge (University) which together amount to 232,000 m^2. Part of the North West Cambridge site is within South Cambridgeshire but these three sites comprise a major part of the Cambridge allocation and are of major significance to Cambridge in providing such a sizeable proportion of the availability. Their connection with centres of excellence in the University and Addenbrooke's are also important but does mean that potentially occupation is restricted in terms of use implying that they are not available for more general office use, or possibly even for some technology uses in a different sector. The other major allocation in Cambridge is CB1 at about 70,000 m^2, though Brookgate the developer has more recently indicated a total space of 46,000 m^2. At 70,000 m^2 this would account for practically all the remaining City allocation.

C1.18 It seems unlikely that the sewage treatment works off Cowley Road will be relocated releasing this site of some 54 ha in the northern fringe for housing. Some element of the site should therefore become available for employment use, though the nature of the use may be slightly constrained by the adjacent uses.

C1.19 It should be noted that there are no buildings in Cambridge to meet the needs of a large company. City House was one of the first buildings over 10,000 m^2 in Cambridge but was ultimately let in suites. One of the more recent buildings on Cambridge Science Park, Building 101 while only 7,453 m^2 has also been let in suites. However if a company such as ARM who have grown into a FTSE top 100 company over the last decade wish to occupy a

single building, as opposed to the three they currently occupy on the Peterhouse Technology Park, they have very limited options.

Office/R&D space in the wider study area

C1.20 Within the larger Cambridge region (including Cambridge and South Cambridgeshire) Business and Science Parks provide a total of some 465,000 m^2 of space or some 27% of the total stock.

Table C1-3: Office/R&D Business & Science Parks

Restricted Use Class Parks	**Local Authority Area**	**Existing Space**	**Current Availability**	**Remaining Capacity**
Babraham Institute	South Cambs DC	28,428	929	13,935
Cambridge Biomedical Campus	Cambridge City Council	34,374	-	111,484
Cambridge Science Park	South Cambs DC	138,426	17,930	13,935
Chesterford Research Park	Uttlesford DC	23,226	2,694	37,161
Granta Park	South Cambs DC	44,965	12,821	32,516
North West Cambridge	Cambridge City/South Cambs DC	-	-	69,677
Peterhouse Technology Park	Cambridge City Council	15,329	2,787	-
Wellcome Trust	South Cambs DC	30,379	-	-
West Cambridge	Cambridge City Council	3,995	3,159	51,097
St Johns Innovation Park	Cambridge City/South Cambs DC	20,439	4,413	2,323
		339,561	**44,733**	**332,128**
Non Restricted Use Class Parks	**Local Authority Area**	**Existing Space**	**Current Availability**	**Remaining Capacity**
Cambourne Business Park	South Cambs DC	26,570	3,159	37,161
Cambridge Business Park	Cambridge City Council	28,243	4,924	-
Capital Park, Fulbourn	South Cambs DC	13,935	1,254	3,716
Castle Park	Cambridge City Council	12,077	3,345	-
CB1	Cambridge City Council	-	-	69,677
Haverhill Research Park	St Edmundsbury DC	-	-	8 ha
IQ Cambridge	South Cambs DC	21,368	8,361	10 ha
Melbourn Science Park	South Cambs DC	16,444	4,181	-
St Ives Business Park	Huntingdonshire DC	6,503	3,716	13,935
		125,140	**28,939**	**124,490**
		464,701	**73,672**	**456,618***

Source: Carter Jonas LLP

Figures in sq m

** excludes the ha figures above*

C1.21 Since the majority of the Parks are within the Cambridge and South Cambridgeshire area the percentage will be very much higher within the City and South Cambridgeshire area. Available space on the business parks is about 74,000 m^2 or 16% of the total space. Business and Science Parks play an important role in the provision of offices and research and development space in the region but particularly in Cambridge and South Cambridgeshire.

C1.22 It is notable that remaining capacity on the Business & Science Parks set out in Table C1-3 exceeds existing stock on these Parks when you take into account the land allocations at IQ Cambridge and Haverhill Research Park. This would suggest that there is ample supply of Office/R&D space to accommodate future growth however over two thirds of this capacity are on parks with restricted uses/user clauses. Science parks do receive enquiries which are turned away because they do not meet the user requirements and of the 464,701 m^2 in the table above only 125,140 m^2 (27%) is available for open B1 use.

C1.23 The promotion of Science Parks will be fairly targeted and associated with their particular specialism and will not necessarily be reflected in demand statistics. Likewise smaller requirements in the market towns may be directed to particular properties and again not reflected in the figures.

C1.24 There are small pockets of office supply in St Ives and Huntingdon, for instance, but these have tended to struggle to find reasonable tenants at rents to provide an economic return to the developer.

Laboratories

C1.25 Biotechnology companies are an important part of the Cambridge technology sector with two significant research centres at Hinxton (Welcome Institute) and Babraham, and three privately funded science parks, Chesterford Research Park, Granta Park and the new Biomedical campus at Addenbrookes. Together they have the capacity for a total of some 340,000 m^2 of floor space but the privately funded parks are primarily focused on providing larger laboratory buildings for existing well funded companies. There are also laboratory buildings on the Cambridge Science Park again built on a pre-let basis.

C1.26 Laboratories are expensive to provide with the laboratory fit out usually costing more than the basic building and being specific to the type of work being undertaken. The requirement for large volumes of air handling can add to the costs of the basic building as well. An expensive fit out for company A will be inappropriate for company B without major, and expensive, change. Consequently the developers will invest in a 'shell & core' leaving the tenant to fit out the building or they will under take the fit out for companies with strong finances and able to take a long lease of 15 years or more since once a tenant no longer requires a particular facility the building can remain empty for some time until a new tenant is identified.

C1.27 GP15 (now renamed the Aaron Klug building) a 8,360 m^2 building on Granta Park constructed on a pre-let basis for Millennium was put on the market within three months of completion of the fit out in 2004 without ever being fully occupied. After 2.5 years of marketing a surrender was agreed back to the landlord who granted a new lease to the adjacent occupier, MedImmune, who re-fitted the space.

C1.28 The 9,475 m^2 UCB building on Granta Park was vacated in 2007 and only in the last year have the agents successfully been able to let a significant amount of space on a serviced basis, including 1,765 m^2 to Pfizer, but at a rent which does not reflect a economic return on the value of the building and fit out. The former Acambis Building on the Peterhouse Technology Park has been vacant for some years.

C1.29 Granta Park speculatively built their new Riverside development in 2008 to provide some 6,300 m^2 of research and development space but while one of these buildings could accommodate small scale labs it is not fitted out. Aviva Investors at Chesterford have announced their intention of speculatively building a new 2,600 m^2 laboratory building designed to be let suites from 150 m^2 which will be fitted out to a generic specification.

C1.30 Both Granta Park and Chesterford have speculatively commenced development of laboratory buildings to shell & core capable of multi-occupation and they have succeeded in letting them to single occupiers prior to completion. Babraham was previously the only organisation to speculatively build fitted out laboratories, albeit to a fairly low specification, and has been successful in letting them. However this is a fairly high risk strategy and they may not be able to continue doing so in the current economic climate.

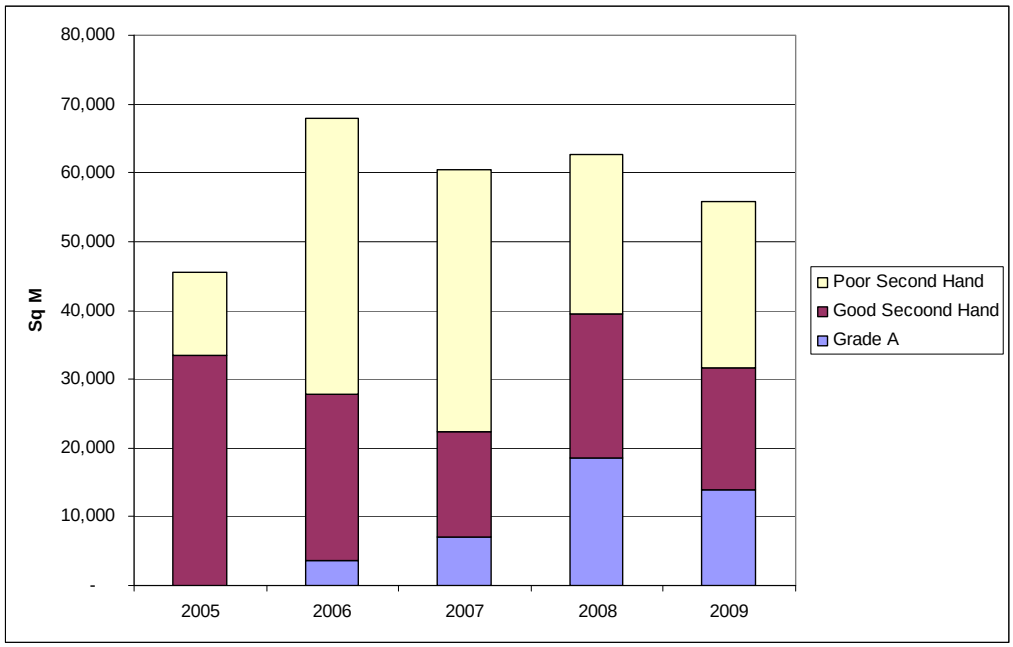
Industrial

Cambridge & 10 mile radius

C1.31 The stock of industrial floor space in Cambridge City is the smallest within the study area but this is unsurprising given the historic University status of the City. With a total stock of 281,000 m^2 and an availability rate of 6.67%, the necklace towns of Cambridge City play an important role in the supply of this type of accommodation. Cambridge has never had a large industrial base but many of the more central sites have been redeveloped for alternative retail, leisure or residential use. The area around the railway station in particular has seen major change with redevelopment of sites off Tenison Road, Station Road, Cherry Hinton Road, Homerton Street and Brooklands Avenue taking place over the last 10 years or so. Further space has been lost on Coral Park/Newmarket Road primarily to retail uses. The Council's 2008 Employment Land Review estimated 18 ha or 19% of land had been lost to other uses.

C1.32 Bidwells Data Book, which covers Cambridge and a 10 mile radius area, broadly confirms the same ratio of availability against overall stock, but further provides an understanding of the quality of this supply.

Figure C1-5: Industrial Availability - Cambridge & 10 mile radius



Source: Bidwells, March 2010 Databook

C1.33 Figure C1-5 demonstrates that the delivery of Grade A (brand new or refurbished) space has broadly increased in the 5 years since 2005 and the fact that this space is being developed, especially during this timeframe, suggests there is demand for this type of accommodation.

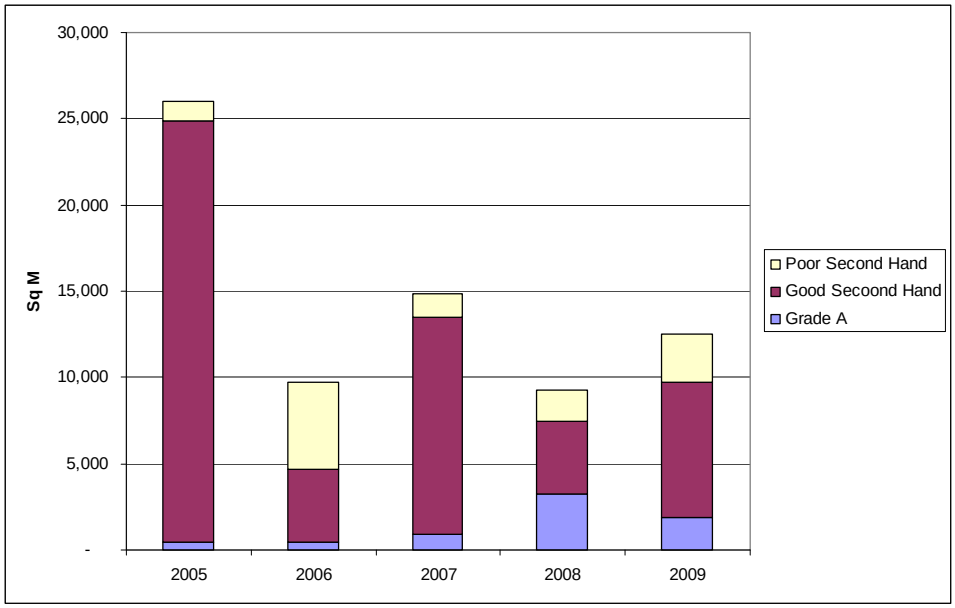
C1.34 Development of Grade A space in and around Cambridge has tended to focus on the delivery of smaller industrial buildings of sub 500 m^2, but with some examples of buildings offering between 500 – 2,000 m^2, such as a Papworth Business Park and Buckingway Business Park. This probably reflects the fact that larger occupiers may be attracted to the rental discounts that can be secured away from Cambridge and will be further encouraged by the planning policies of both the City Council and South Cambridgeshire District restricting new industrial use to units of less than 1,850 m^2.

C1.35 An occupier wanting a new Unit in excess of 5,000 m^2 would have to engage in a pre-let discussion with a developer in order to secure this type of facility.

C1.36 Bidwells reported average demand for industrial space in the Cambridge & 10 mile radius area as at the end 2009 of 76,000 m^2. Carter Jonas registered some 264,000 m^2 of demand at the same time point, although much of this demand is regional in nature, or even national, a normal characteristic of the industrial market. It is likely that Bidwells figures are expressing demand more specifically targeted on Cambridge but nonetheless both figures are notable.

C1.37 Figure C1-6 below highlights industrial floor space take up since 2005 and show modest levels of take up averaging over the 5 years at 14,493 m^2 per annum, just below 25% of average availability.

Figure C1-6: Industrial Take Up – Cambridge & 10 mile radius



Source: Bidwells Databook, March 2010

C1.38 Land supply figures for Cambridge as set out below demonstrate a loss of allocations for industrial use and the trend of industrial floor space being converted to alternative higher use values will undoubtedly continue, placing more emphasis on the wider area.

Table C1-4: Cambridge City Industrial Land Supply

Use	Existing Planning Permissions	Allocations Without Planning Permission	Total
B1c	-15,370	560	-14,810
B2	-8,115	-4,645	-12,760
B8	-8,224	118	-8,106
	-31,709	**-3,967**	**-35,676**

Wider Study Area – Industrial

C1.39 There is a good degree of stock in the surrounding areas of Cambridge with concentrations in Bury St Edmunds and Huntingdon reflecting strategic positions on the A14 as well as other factors.

C1.40 Industrial supply in the wider study area is much greater with a concentration of stock in Huntingdonshire.

Table C1-5: Industrial Stock & Availability

	Industrial Stock	Availability	
Cambridge City Council	280,657	18,717	6.67%
East Cambridgeshire DC	505,287	24,469	4.84%
Fenland DC	957,929	20,225	2.11%
Forest Heath DC	442,990	25,977	5.86%
Huntingdonshire DC	1,431,331	97,261	6.80%
North Herts DC	717,492	77,321	10.78%
South Cambs DC	878,715	58,442	6.65%
St Edmundsbury DC	1,030,523	49,786	4.83%
Uttlesford DC	429,300	80,634	18.78%
	6,674,224	**452,830**	**6.48%**

Source: Valuation Office Agency (stock) and Co-Star (availability)

C1.41 The Table above demonstrates that availability rates for industrial space are relatively low across the study area.

C1.42 Demand for industrial space across the wider area is relatively good and has remained relatively strong throughout the past few years despite economic turmoil.

C1.43 There is probably a shortage of good quality space and our experience suggests there is a significant level of demand for modern space but with larger yard areas than tend to be provided by modern industrial developments.

C1.44 For a company wishing to secure industrial space within Cambridge City, it is very probable that having identified an amount of space they require, availability meeting that criteria will be extremely limited. Rental costs and variety of options elsewhere are normally superior and unless there is a pre-requisite requirement for Cambridge space, companies will move away.

C1.45 Future industrial land allocations will continue the trend of providing supply in the necklace Towns of Cambridge and further afield as shown in Table C1-6 below.

Table C1-6: Industrial Land Supply

Local Authority	Existing Planning Permissions	Allocations Without Planning Permission	Total
Cambridge City	-31,709	-3,967	-35,676
East Cambs DC	22,183	62,726	84,909
Fenland DC	116,931	188,846	305,777
Huntingdonshire DC*	745,172	45,275	790,447
South Cambs DC	78,380	64,821	143,201

Source: Cambridgeshire County Council - Strategic Planning Research and Monitoring; Net Employment Floor space Committed (as at Sep 2009)

Figures in sq m

** Includes 603,865 sq m allocated for Distribution and Warehousing at Alconbury Airfield*

Retail

Cambridge

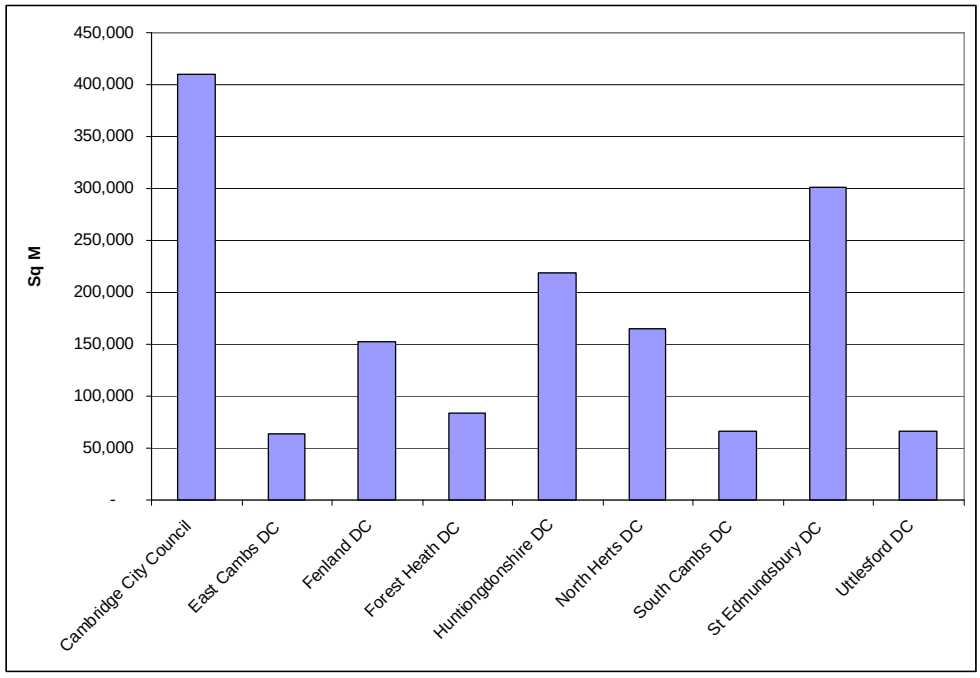
C1.46 Over 400,000 sq m of retail stock exists in Cambridge and it remains one of the UK's highest ranking locations (12th according to CoStar) in terms of multiple retailer requirements. This is in part due to multiple retail requirements for modern, well configured retail accommodation not being particularly well catered for. Recent developments, such as the Grand Arcade and Christs Walk have addressed this in part. There remain some 98 unsatisfied multiple retailer requirements for Cambridge City, significantly less an two years ago when it was recorded as 182. This is similar to Edinburgh ranked 16th with 98 unsatisfied requirements down from 124 and Oxford ranked 6th with 122 (196). Unsatisfied demand is well down across the Country and the combination of the recession and the recent developments in the city centre appear to have satisfied some of the previous demand in Cambridge.

C1.47 It is important to note that the stock of retail space is bolstered by extensive neighbourhood shopping facilities and accommodation alongside main arterial routes in the City.

C1.48 CoStar Availability figures suggest just below 14,000 sq m of retail space is currently available, or less than 3.5% of stock.

Wider study area

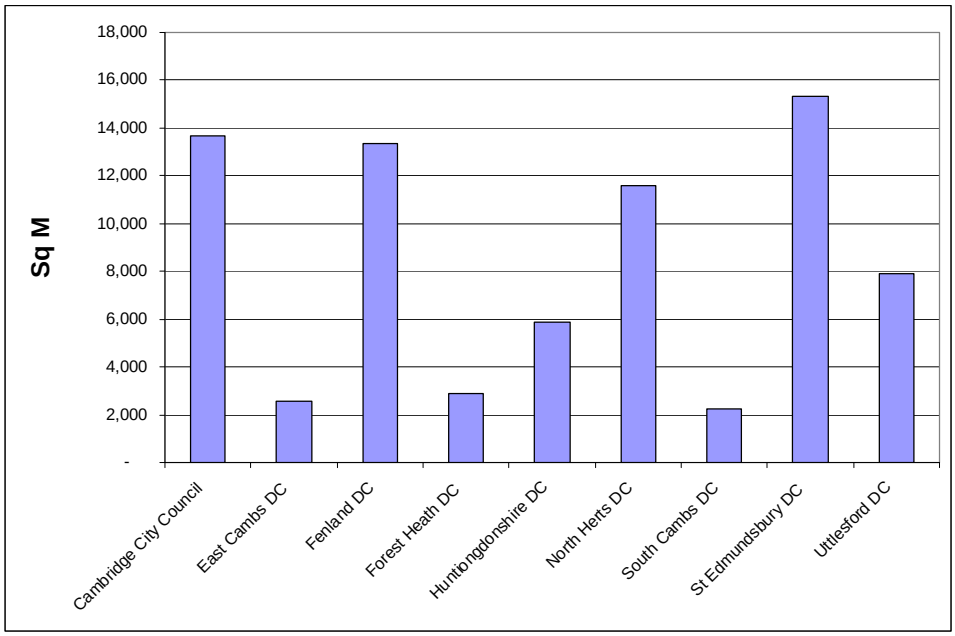
Figure C1-7: Total Stock of Retail Space



Source: Valuation Office Agency, August 2010

C1.49 Retail space across the study area, with the exception of Bury St Edmunds, tends to cater for immediate catchment areas as distinct from being a retail offering which generates demand from further afield.

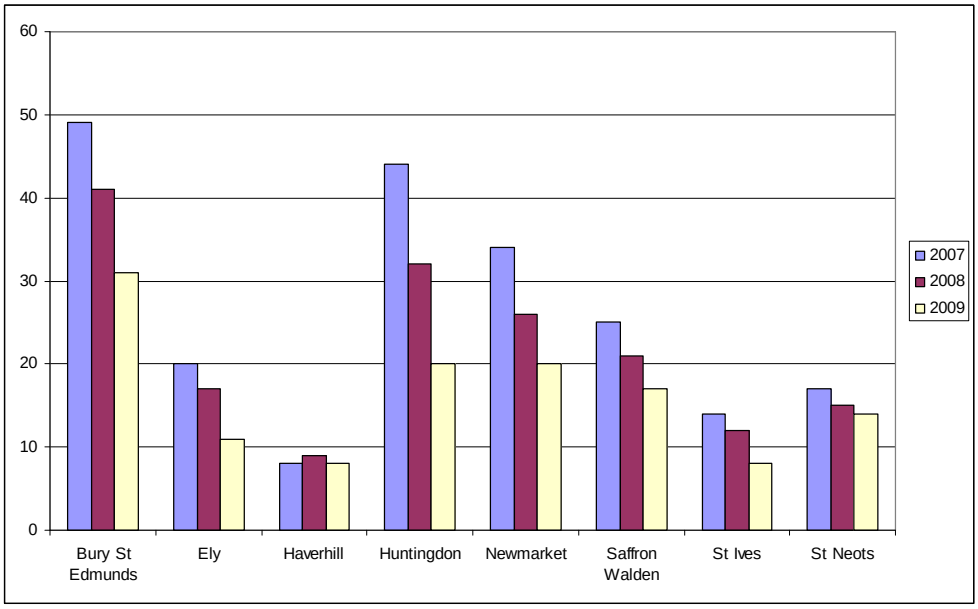
Figure C1-8: Retail Space Availability



Source: CoStar August 2010

C1.50 Multiple retail requirements registered on CoStar are a good barometer for the level of demand for any given City/Town in the UK. The Figure below shows the scale of multiple retailer interest in some of the most significant Towns within the study area over the past 3 years.

Figure C1-9: Multiple Retail Requirements



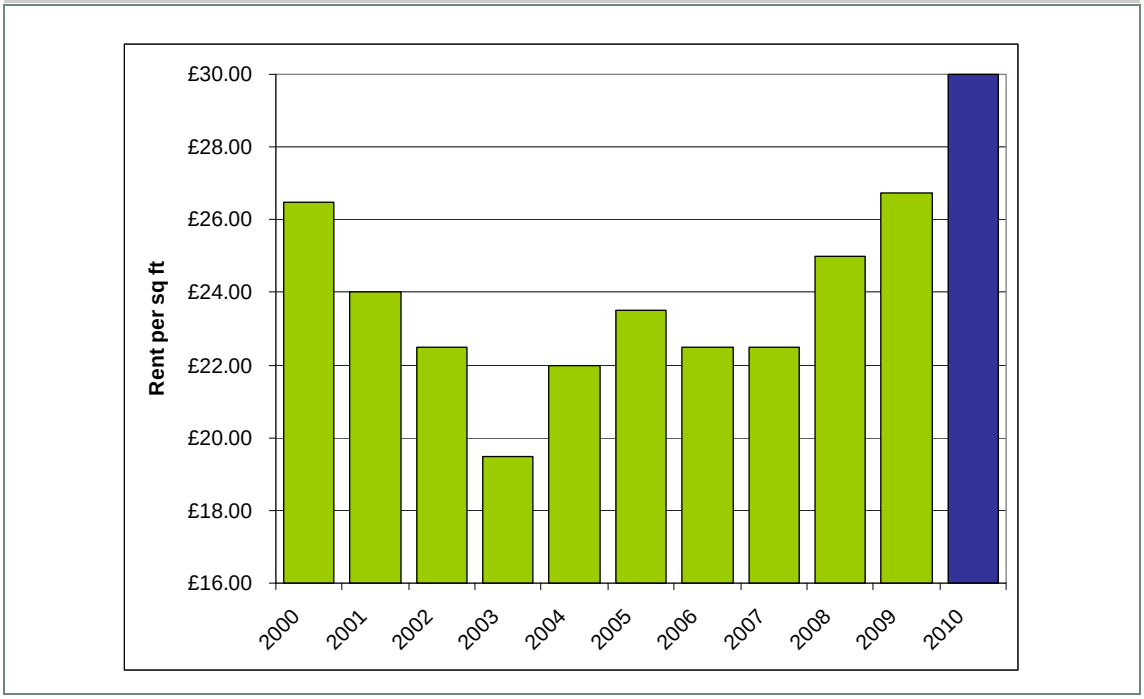
Source: CoStar, August 2010

Costs

Offices

C1.51 Prime rent achieved in Cambridge over the past decade has been influenced by the level of supply of space, with a dramatic increase in Grade A availability in 2003 corresponding with depressed prime rental levels. A shortage in Grade A space over the past few years may therefore be contributing to the apparent growth since 2007.

Figure C1-10: Cambridge & South Cambs Prime Rent Achieved



Source: Carter Jonas LLP

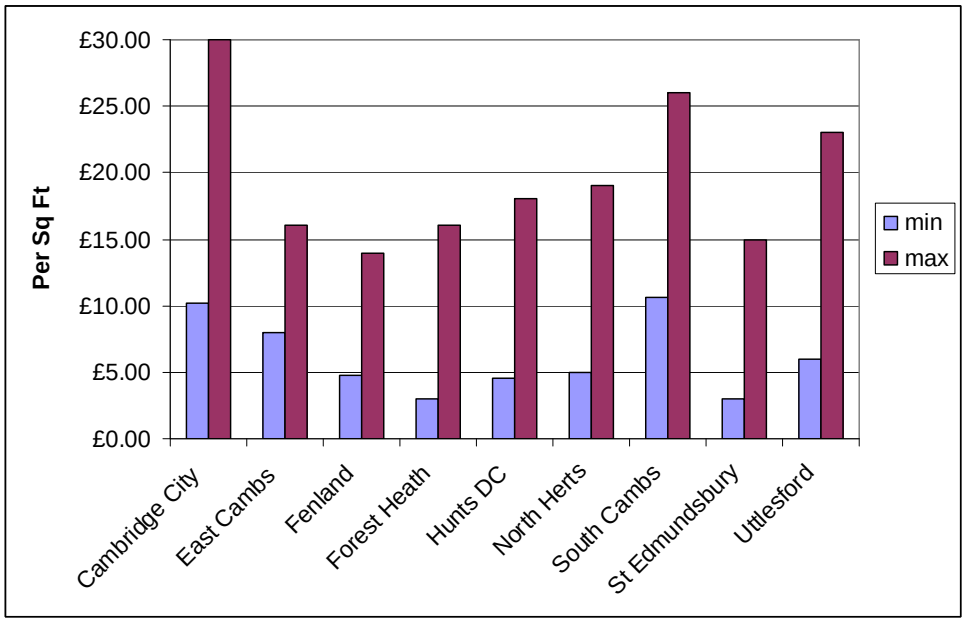
C1.52 The shortage of space in the central Cambridge area has resulted in headline figures of £30 per sq ft being discussed but yet to be achieved, though small suites in the Broers Building have achieved this level. However more generally rental levels for good quality offices in the wider area, such as the Science or Business Park are at a headline figure of perhaps £25 per sq ft and reflecting a more general level of £21 - £23 per sq ft once a rent free period or other incentives are taken into account. Reasonable secondary space will be let at about £15-£18 per sq ft.

C1.53 Outside of Cambridge, the rental tone on Business Parks does vary from site to site but broadly the rental tone can be summarised at between £16.50 - £20 per sq ft.

C1.54 While City Centre locations will often be more expensive these general office rents are not dissimilar to the levels found in other major technology centres in the UK; thus taking equivalent space in Edinburgh, Oxford or Birmingham will not reflect significantly different occupation costs. Clearly space can be cheaper in more industrial locations which tend to be away from the centres of excellence.

C1.55 We have drawn from the Availability figures the ranges of rent quoted across the wider area and set these out in the Figure below.

Figure C1-11: Office/R&D Space Quoting Rent Ranges



Source: CoStar, August 2010

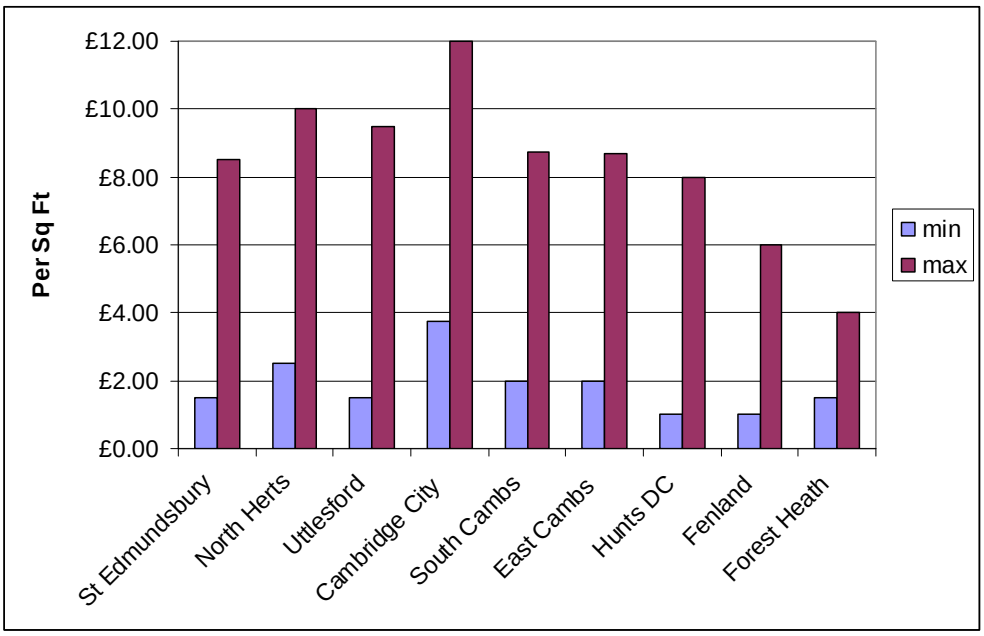
C1.56 The Figure clearly demonstrates the range of space that is available and suggest that if cost is a primary factor, then relative low cost options exist across the study area. However, with the exception of a few pockets of good quality Grade A Office/R&D space, it may prove difficult to find the best space away from Cambridge and its immediate environs.

Industrial

C1.57 Rental costs for industrial floor space range greatly dependant on the amount of space considered. For example, small units of less than 200 sq m in and around Cambridge will achieve between £8 - £11 per sq ft dependant on location and specification.

C1.58 A 1,000 sq m unit is the same area would secure £6.50 - £7.50 per sq ft, again dependant on precise specification and location. Further afield, in locations such as Haverhill or St Neots the same building may command only £5 - £6 per sq ft, with smaller units fetching between £7 – £8 per sq ft.

Figure C1-12: Industrial Space Quoting Rent Ranges



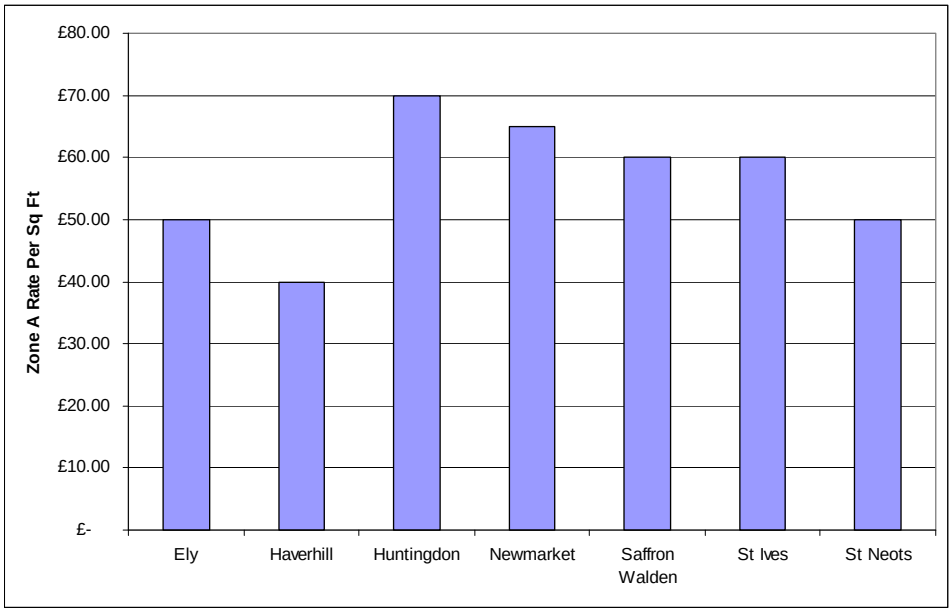
Source: CoStar, August 2010

C1.59 The low levels of minimum quoting rent across the wider area and including Cambridge indicate the supply of older stock but will also be quoting rents for larger units. The headline quoting levels reflect the prevailing market for small Grade A/new business units.

Retail

C1.60 In the prime retail district in Cambridge, up to £300 per sq ft Zone A has been achieved while in the wider area the prime rental levels of the most significant retail centres are summarised in Figure C1-13 below.

Figure C1-13: Office/R&D Space Quoting Rent Ranges



Source: CoStar, August 2010

Innovation and enterprise centres

C1.61 The definition of an Innovation Centre or Enterprise Centre can differ considerably but at its simplest could be considered to be where there is additional business support compared to a more conventional business centre. As a major cluster of technology Cambridge might be expected to have a good supply of Innovation Centres supporting the creation and development of new business. This is not the case with only two properties offering business support in the City; St John's Innovation Centre, a private initiative by St John's College, and the Hauser Forum, a new initiative by the University supported by Herman Hauser with additional support from EEDA.

C1.62 Active business support and true innovation is generally not cost effective for a commercial developer/investor unless paid for as part of a much larger business model, and seen as a 'loss leader' as part of the marketing strategy of a Science Park or similar initiative. This might occur for a more isolated development where the park needs to generate its own 'market', but the strength of the cluster in Cambridge means that they will prefer to rely on the cluster for generating new businesses rather than invest directly themselves. In other regions Innovation Centres are often supported by the public sector through the local authorities or regional development agencies but this has not applied to Cambridge which is generally seen as 'successful'.

C1.63 However Cambridge is fairly well supplied with serviced office accommodation with eight centres offering some 17,000 m^2 of space, including St John's and the Hauser Forum. Occupancy rates are high, with some centres reporting effective 100% occupancy. Costs of occupation can be fairly high at £45 per sq ft inclusive, but the flexibility of the offer and the ability to take the minimum amount of space required at any time, is clearly attractive to small business users in the Cambridge area. The space is generally of office quality and there is

arguably a shortage of cheaper 'incubation' space for companies in the initial stages of their development. They are left to use upper floor offices in the city centre or small suites in the villages and may not fully benefit from the effects of the cluster.

C1.64 There are fewer opportunities for small biotechnology companies to find economical laboratories suitable for an emerging technology business. In other cities such as Boots in Nottingham or Roche in Welwyn a major plc has made a large laboratory building available to the public sector at a nominal price enabling the creation of a small biotechnology cluster of small businesses. While the UCB building on Granta Park is currently being offered in smaller suites as serviced laboratories on a commercial basis to recover outgoings, this is not being offered with support services. The Bioscience Innovation Centre on St John's Innovation Park did not succeed but that may have been because of the operational model. Babraham has historically provided incubation and grow on space for emerging businesses, successfully building and letting buildings with some public subsidy.

Figure C1-14: Serviced Offices and Innovation Centres

Source: compiled by Carter Jonas LLP

Provider	Address	Occupancy Rate	Facility Size (sq m)	Flexible leases	Reception Services	Meeting Rooms	Business Coaching	R&D/Science Environment
Cambridge Science Park Innovation Centre	Cambridge Science Park	87%	600	Yes	Yes	Yes	No	Yes
Citib@se	Castle Park, Cambridge	100%	1,719	Yes	Yes	Yes	No	No
Executive Offices - Palladia	Cambridge Business Park	80%	1,579	Yes	Yes	Yes	No	Yes
Hauser Forum	West Cambridge		2,323	Yes	Yes	Yes	Yes	Yes
MWB Business Exchange	East Road, Cambridge	97%	1,301	Yes	Yes	Yes	No	No
Newton Hall	Newton, South Cambs	58%	1,152	Yes	Yes	Yes	No	No
Regus	Vision Park, Histon	100%	1,672	Yes	Yes	Yes	No	No
Regus	Cambourne Business Park	92%	1,858	Yes	Yes	Yes	No	No
St John's Innovation Centre	Cowley Road, Cambridge	89%	5,365	Yes	Yes	Yes	Yes	Yes
			17,569					

NB: due to the flexibility of serviced offices, occupancy rates change on a monthly basis

Conclusions

Offices/R&D

C1.65 Cambridge seems to have come through the recession, so far, relatively well but the city does have a significant proportion of public sector employment through the Universities, Addenbrooke's and local government. The full implications of cut backs in public sector are as yet unknown.

C1.66 Unlike many previous recessions the quantity of available speculative office space in Cambridge in 2007 was small and while there is still some availability of Grade A space on the Science Park or West Cambridge, there is essentially no space in the City Centre. This

shortage has led to what might be considered a surprising increase in office rents in the City over the last year.

C1.67 The City Centre demand is predominantly from the professional business market requiring good quality space close to the Centre and the railway station for access to London. Microsoft, while an R&D occupier, is said to be keen to move close to the station for better access to London despite the likely significant increase in occupation costs should they do so. This shortage of Grade A space, and the delays in delivery of the CB1 development, has encouraged Pace to start their scheme in Hills Road with the demolition of Botanic House underway.

C1.68 The delivery of the CB1 scheme will address the shortage of Grade A space in the City centre but will at the same time require the relocation of tenants in some of the existing buildings amounting to some 10,000 m^2. These tenants are themselves likely to take up much of the new space created.

C1.69 Once the new space in CB1 becomes available other office buildings in the City will come under greater pressure; at present they can find tenants simply due to the lack of alternatives available but much of the stock in the Westbrook Centre, Castle Park etc. is now tired and will soon need major refurbishment if it is to provide a viable alternative to new Grade A space in Station Road/Hills Road area.

C1.70 Once CB1 is complete there will be little new open B1 office development in the City Centre unless new proposals come forward.

C1.71 Most of the remaining allocations are at Addenbrooke's or the University land in west or north west Cambridge. Addenbrooke's is restricted to medical uses and West Cambridge is primarily a research park, not even including the wider development element. If North West Cambridge is similarly restricted there will be limited scope for general business use within the City and this could become a serious problem in the five/ten year time frame.

C1.72 In the wider study area the availability of office/R&D space will be less of a problem in terms of supply with space available on the Science Parks and in the new towns of Cambourne and in due course Northstowe. However these out of town locations are generally not seen as attractive to businesses with some perception that businesses move there from necessity rather than preference. This is not necessarily true of Science Parks where the proximity of similar businesses, an attractive environment and the provision of support services by the Park developer are seen as offsetting any disadvantages of the location.

C1.73 Future laboratory development in the City is likely to be concentrated on the existing parks catering for such uses where the specialist knowledge exists to serve tenant requirements. The new Addenbrooke's campus will provide a major increase in the potential provision in the City but the risks for developers in speculative development may reduce the provision of space except in response to real demand, whether at Addenbrooke's or the other biotechnology parks.

C1.74 The shortage of true Innovation space should be a concern for the City and the relative success of serviced office providers is possibly an indication that the needs of early stage businesses in the region are not being adequately considered. Serviced offices can often

spring up when older office buildings are difficult to let and meet the short term needs of such businesses, though at present most of the serviced offices available are of good quality. The lack of small scale laboratories could impact on the development of the biotechnology sector in the Cambridge area but in one sense the letting of the UCB building on Granta Park in suites could be considered a positive.

C1.75 In summary the short term shortage of supply of offices in the City Centre is maintaining rental levels and stimulating developers to start new projects. This will probably satisfy demand until CB1 is completed but there are likely to be serious problems in the longer term. Shortage of supply in the City will drive occupiers to the new towns and outlying market towns and villages but may also drive them away from the region altogether.

Industrial/Warehousing

C1.76 Cambridge itself is unlikely to provide significant industrial/warehouse space because of the shortage of land available. Few sites are capable of accommodating large buildings and will then tend to have more profitable uses. Nevertheless there will always be a requirement for smaller industrial/warehouse units for the service businesses in the city. Small workshop units are sometimes also the initial home for new businesses unable to afford the higher rents of proper office space.

C1.77 The loss of land for such uses within the city is not yet a problem but further loss of space could become an issue in the future.

C1.78 While there has been very little new industrial/warehouse development in the City there have been developments in the surrounding towns and villages. These appear to be meeting demand but demand has tended to be to meet local needs rather attracting businesses to the area. Culina Logistics took a pre-let on a 191,000 sq ft distribution centre in Haverhill in 2007, but it is necessary to go further afield and generally towards Kettering to find lettings of equivalent size. Such companies are as influenced by the road network and travel times as by workforce availability.

Retail

C1.79 Cambridge is the focus of the retail provision for the study area. It appears on the ‘wish list’ of many retailers as a ‘trophy’ town with its renowned reputation as a tourist attraction. The recent developments in the City Centre coupled with the recession appear to have reduced demand considerably in the last three years.

C1.80 Retailing is changing to accommodate needs of customers and the influence of the internet. Cambridge will need to change and remain a ‘destination’ for its customer base and as a regional retail centre will be competing with other major centres, not the smaller market towns. Peterborough, Milton Keynes and Lakeside are direct competition.

C1.81 The ‘out of town’ retail space in Newmarket Road provides a suitable focus for these retailers in a central location.

C1.82 In conclusion the study area has survived the current downturn well and is potentially well placed to meet the needs of the next few years but the longer term provision of B1 space in the City Centre is a concern as without the supply of central offices with good communications to support the high tech business community the City could be thrown back on itself as a quaint medieval city with a highly regarded University. If Cambridge declines the supporting role of the necklace villages and market towns will also suffer.

Theme 2: Planning policies

Introduction

C2.1 This Theme Report examines the planning policies relating to employment in both Cambridge City and South Cambridgeshire and assesses whether there are any conflicts with economic development objectives. It also considers how successful policies have been in the recent past in terms of developing and retaining land in employment uses and summarises commitments by Use Class.

C2.2 The review draws on the following policy documents:

- The Cambridge Local Plan 2006 – particularly 'working & studying in Cambridge' (Cambridge City)
- Core Strategy DPD – adopted January 2007 (South Cambridgeshire DC)
- Development Control Policies DPD – adopted July 2007 (South Cambridgeshire DC)
- Area Action Plans for North West Cambridge and East Cambridge.

C2.3 It also draws on the most recent Annual Monitoring Reports for both districts, the County Council's development land monitoring and the review of Employment Land carried out on behalf of both LAs and published in 2008.

C2.4 The employment policies and their monitoring (and therefore this analysis) focuses on changes in the 'B' Use Class and its sub categories:

- B1 Offices and light industrial, which may be unrestricted or may be sub divided between B1(a) (offices), B1(b) (R&D) and B1(c) (light industrial)
- B2 General manufacturing
- B8 Storage.

C2.5 Other Use Classes are not covered, although they account for a considerable proportion of total employment.

C2.6 The analysis does not review additional restrictions on use imposed through planning conditions or planning agreements relating to individual planning permissions.

C2.7 The detailed planning policies of the two local authorities are listed at the end of this Theme Report. Information on employment land completions for the period 20004/05 to 2008/09 is also provided.

Overview of policies

C2.8 The policies relating to the development and use of employment land which are spelt out in the current Cambridge City and South Cambridgeshire planning policies are based on the

former 2003 Cambridgeshire & Peterborough Structure Plan; these were effectively 'saved' to form the core policies of the Regional Spatial Strategy for the Cambridge sub-region.

C2.9 The over-riding emphasis of these policies is to promote the role of the Cambridge sub-region as a world leader in higher education, R&D and knowledge-based industries. Emphasis is based on identifying and supporting clusters of high technology, biotechnology, ICT, higher education and emerging new products. The approach is very much 'selective management'. In spatial terms, economic growth is generally restricted to sustainable and accessible locations – and this, of course, drives the overall development pattern, concentrating on urban extensions and a major new town at Northstowe. Relatively fast employment growth in recent years has occurred within this 'selective growth' policy framework, which actively restricts a wide range of business activities on developed sites.

C2.10 South Cambridgeshire DC identifies a restricted number of established science and business parks for further development. Generally there is no support for further development in the countryside outside village envelopes or in the Green Belt, although some existing establishments can develop further.

C2.11 User restrictions are considered important, restricting the type of company occupying new developments for 10 years. User conditions prevent the switch of users from B1(b) to B2 or B8, for example.

C2.12 Policies discourage the entry of large scale manufacturing (defined as over 1,850 square metres), warehousing and distribution sites and offices which have no proven need to be in the Cambridge area; they are explicitly prevented from occupying new developments. Offices with a proven regional function may be considered, but only in Cambridge City, not South Cambridgeshire. Any other major office development must be linked to high technology or higher education. This policy therefore prevents substantial inward investment by HQ functions or manufacturing activities.

C2.13 However, the planning policies recognise the importance of maintaining and enhancing the diversity of jobs in the Cambridge sub-region and policies generally enable existing businesses to expand in situ. There is also a general presumption against the loss of existing employment sites and the 'best' industrial and storage areas are to be protected so as to provide a range of new employment land.

C2.14 Within Cambridge City there are explicit policies for the future development of both the University of Cambridge and Anglia Ruskin University. Language schools are constrained; no new schools are permitted and existing schools can only expand to a very limited degree. However, there are no specific policies relating to other educational establishments. Whilst it may be assumed that the only demand for development relates to local need – such as schools and FE for local residents – there are potential growth areas in terms of private sixth form education attracting students internationally.

Monitoring land use change

C2.15 The monitoring of changes in employment land concentrates on two key areas:

- the gross loss of existing employment land – how much, what type and where? What are the reasons for the loss? This includes changes from one employment Use Class to another
- gross new development – how much, what type and where?
- other factors which must be taken into account when looking to the future include
- the loss of land with planning permission or allocated for employment to other uses – how much, what type and where?
- pressures on the planning system, including applications which are refused – how many, what and where; appeals and their outcome
- matching demand with supply; changes in likely employment profile in the future and the implications for employment land.

C2.16 This section draws on employment land monitoring for both Cambridge City and South Cambridgeshire up to March 31st 2009.

Completions

C2.17 The following three tables summarise the gross employment land gains, losses and net change for Cambridge City and South Cambridgeshire over the 5 year period 2004/05 to 2008/09. The analysis is in hectares.

Table C2-1: B1 to B8 employment land 'gains' in Cambridge City & South Cambridgeshire, hectares, 2004/05 to 2008/09 (% of all)

District	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
Cambridge City	0	2.12	3.68	0.35	2.25	0.97	9.36
South Cambs	1.01	15.69	25.33	11.01	11.23	22.11	86.41
Cambridge sub-area	1.01	17.81	29.01	11.36	13.48	23.08	95.77
% of all	1.1%	18.6%	30.3%	11.9%	14.1%	24.1%	100%

Source: Research & Monitoring Group, Cambridgeshire County Council

Table C2-2: B1 to B8 employment land 'losses' in Cambridge City & South Cambridgeshire, hectares, 2004/05 to 2008/09

District	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
Cambridge City	0	-8.66	-0.42	-1.2	-3.25	-1.69	-15.21
South Cambs	-0.1	-3.76	-27.93	-4.26	-7.53	-9.49	-53.06
Cambridge sub-area	-0.1	-12.42	-28.35	-5.46	-10.78	-11.18	-68.27
% of all	0.1%	18.2%	41.5%	8%	15.6%	16.4%	100%

Source: Research & Monitoring Group, Cambridgeshire County Council

Table C2-3: B1 to B8 employment land 'net change' in Cambridge City & South Cambridgeshire, hectares, 2004/05 to 2008/09

District	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
Cambridge City	0	-6.54	3.26	-0.85	-1	-0.72	-5.85
South Cambs	0.91	11.93	-2.6	6.75	3.7	12.62	33.35
Cambridge sub-area	0.91	5.39	0.66	5.9	2.7	11.9	27.5
% of all	3.3%	19.6%	2.4%	21.5%	9.8%	43.3%	100%

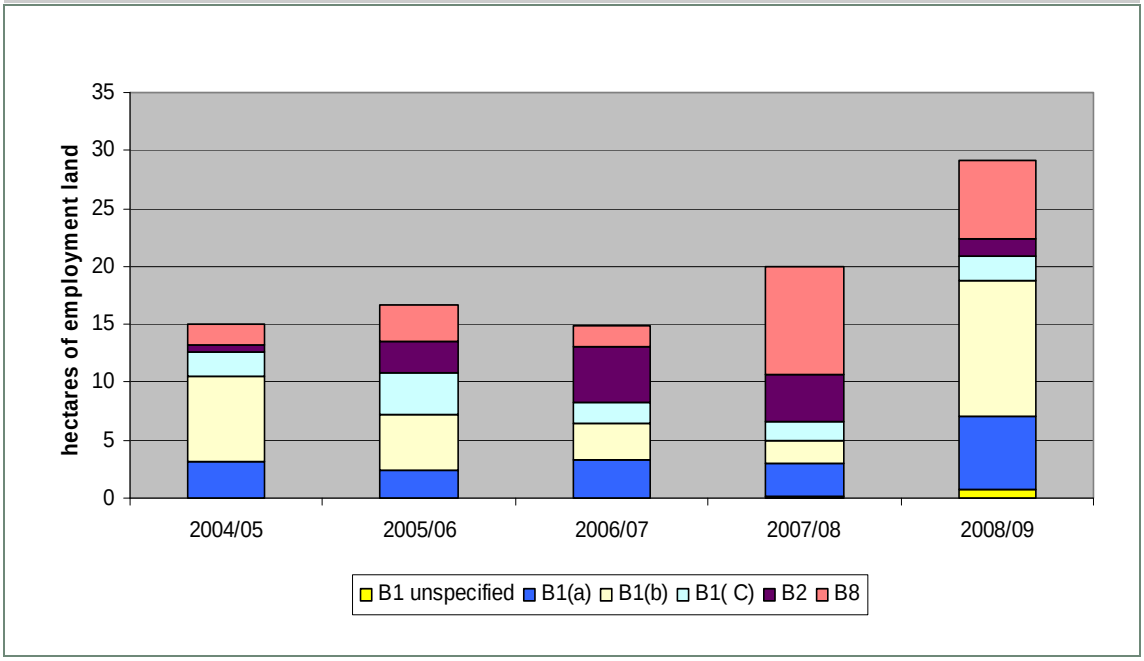
Source: Research & Monitoring Group, Cambridgeshire County Council

C2.18 The tables show that South Cambridgeshire has accounted for significantly more gross and net employment land change than Cambridge City over the past five years. However, even more significant is the large amount of employment land lost, relative to that completed. In the Cambridge sub-area as a whole the gross completions totalled 95.8 hectares in the five years; losses totalled 68.3 hectares, giving a net gain of 27.5 hectares, around one-quarter of all employment land completed.

C2.19 The profile of employment land gained and lost is similar. However, whereas B1(b) accounted for 30% of gains, it constituted almost 42% of losses; as a consequence B1(b) contributed only 2.4% of net completions. B8 land accounted for 24% of gross completions but a small percentage share of losses, 16%. Overall B8 contributed 43% of the net increase in employment land in the Cambridge sub-area. B1(a) accounted for nearly 20% of the net gains in the area as a whole, but in Cambridge there was a net loss of 6.5ha, which was more than offset by a net gain of nearly 12ha in South Cambridgeshire.

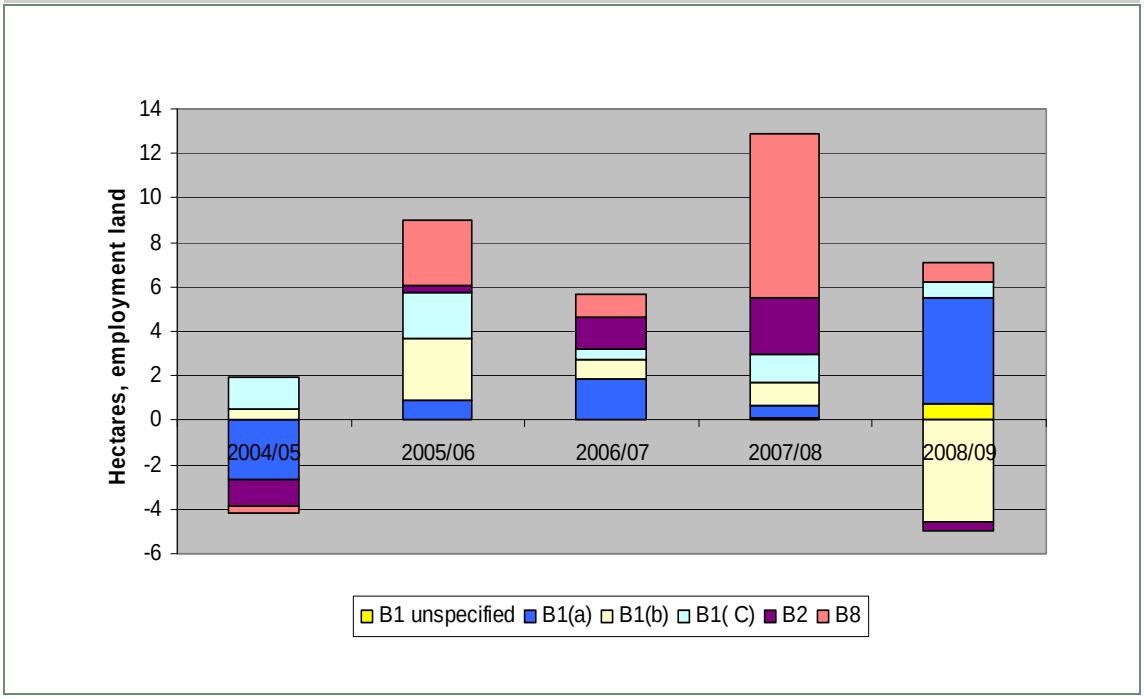
C2.20 The year-on-year changes for the two districts combined are shown in the following figures; the first covers gross completions and the second net change in land.

Figure C2-1: Gross completions of B1 to B8 employment land, Cambridge City & South Cambridgeshire, 2004/05 to 2008/09



Source: Research & Monitoring Group, Cambridgeshire County Council

Figure C2-2: Net change in B1 to B8 employment land, Cambridge City & South Cambridgeshire, 2004/05 to 2008/09



Source: Research & Monitoring Group, Cambridgeshire County Council

C2.21 The employment land data is also monitored in terms of floorspace (square metres) and this alters the profile slightly – but the general picture is the same. There appears to be more distinction between completions and losses than between Use Classes when a different unit of measurement is adopted. Employment land 'lost' is generally of lower density, in terms of the hectare to square metres of floorspace ratio, than employment land completed, or 'gained'.

Planning commitments

C2.22 The following tables and figures show the net change in land in business use according to commitments in both Cambridge City and South Cambridgeshire as at March 31st 2009. As in the preceding section the analysis is in hectares rather than floorspace.

Table C2-4: B1 to B8 employment land commitments, Cambridge City, 31st March 2009

Factor	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
Under construction	0	-0.04	2.64	-0.03	-2.08	0.13	0.63
Full planning permission - not started	0.26	2.28	-3.63	-0.85	-0.46	-4.28	-6.68
Outline planning permission	0	5.97	17.55	0.12	-0.8	-0.91	21.65
Allocations without pp	-0.46	5.1	16.2	-0.16	-1.22	-0.17	19.58
Total	-0.2	13.32	32.76	-0.92	-4.56	-5.23	35.17
% of all	-0.6%	37.9%	93.1%	-2.6%	-13.0%	-14.9%	100.0%

Source: Research & Monitoring Group, Cambridgeshire County Council

C2.23 Cambridge City has just over 35 hectares of land in commitments. Assuming that all anticipated losses have been identified this equates to many years supply at recent

development rates. Overall losses of B2 and B8 land are proposed, with a modest loss of B1(C); effectively most of the net increase looks set to be R&D in B1(b). Increases in B1(a) land are also significant.

South Cambridgeshire

Table C2-5: B1 to B8 employment land commitments, South Cambridgeshire, 31st March 2009

Factor	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
Under construction	0	1.78	0.7	0.05	-0.06	2.81	5.28
Full planning permission - not started	4.45	10.17	6.46	5.61	-1.27	2.51	27.93
Outline planning permission	3.97	6.16	15.06	1.27	3.18	-0.07	29.57
Allocations without pp	25.16	9.37	0.81	0	7.36	4.52	47.22
Total	33.58	27.49	23.03	6.93	9.2	9.78	110
% of all	30.5%	25.0%	20.9%	6.3%	8.4%	8.9%	100.0%

Source: Research & Monitoring Group, Cambridgeshire County Council

C2.24 South Cambridgeshire has commitments of 110 hectares identified. This is equivalent to around 6.5 years of gross new development at the rates experienced 2004/05 to 2008/09 – but a significantly longer period of almost 17 years if the table includes all likely losses of employment land.

C2.25 The combined sub-area figures are given in the following table.

Table C2-6: B1 to B8 employment land commitments, Cambridge sub-area, 31st March 2009

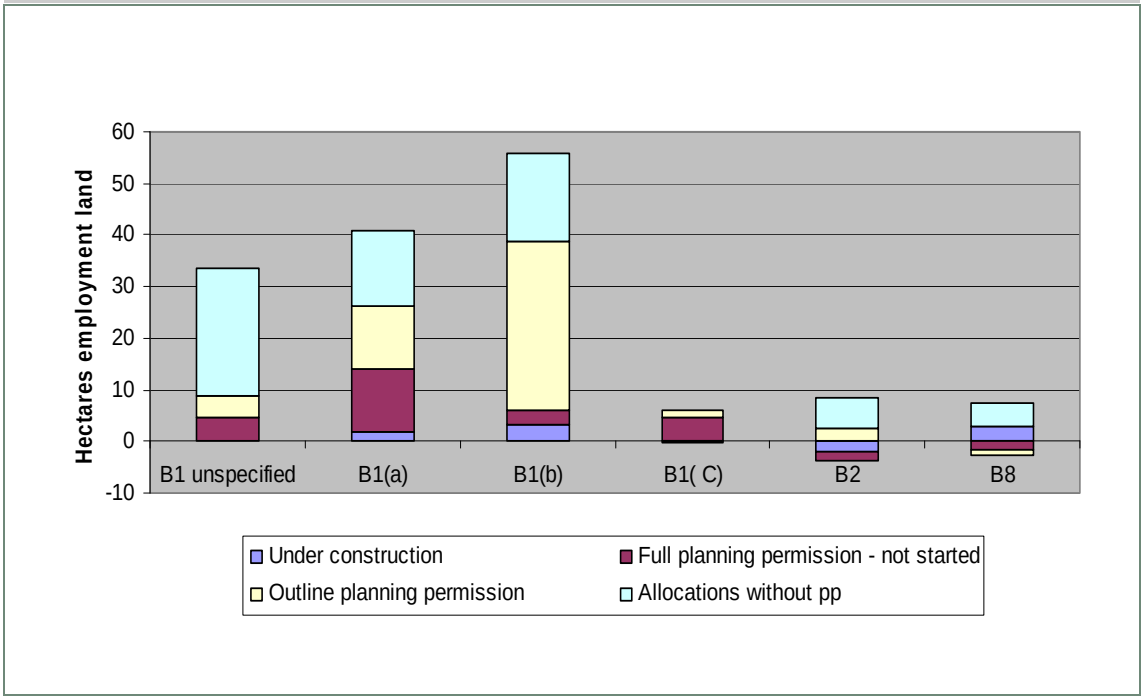
Factor	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
Under construction	0	1.74	3.34	0.02	-2.14	2.94	5.91
Full planning permission - not started	4.71	12.45	2.83	4.76	-1.73	-1.77	21.25
Outline planning permission	3.97	12.13	32.61	1.39	2.38	-0.98	51.22
Allocations without pp	24.7	14.47	17.01	-0.16	6.14	4.35	66.8
Total	33.38	40.81	55.79	6.01	4.64	4.55	145.17
% of all	23.0%	28.1%	38.4%	4.1%	3.2%	3.1%	100.0%

Source Research & Monitoring Group, Cambridgeshire County Council

C2.26 Overall 145 hectares have been identified which equates to just over 7 years supply for 'gross' new development at recent rates and a very much longer 26 years for 'net' development. Of this over 38% is B1(b) for R&D and 28% is for B1(a) other non-'high street' professional services. Net additional land identified for other B uses is relatively low, although a significant share, 23% is for B1 (unspecified).

C2.27 The figure shows the amount of land in commitments by land use type and planning 'factor'.

Figure C2-3: B1 to B8 employment land commitments, Cambridge sub-area, as at March 31st 2009



Source: Research & Monitoring Group, Cambridgeshire County Council

C2.28 In their Annual Monitoring Report for 2008/09 Cambridge City Council comment on the substantial losses of employment land to residential uses in the city over the past 10 years and the relatively small share of the sub-area's employment land supply which is in the city itself. The Report states that the joint Employment Land Review, published in 2008, identified a total of 176ha in the two districts – of which 37 ha faced development constraints and only 34ha was actually in the City. The review suggested that between 145ha and 165ha would be required to accommodate all B Class uses to 2026. It would appear that even since this Review was published further losses of employment land have occurred. The review recommended that there should be more new land provided and existing land for light industrial and traditional office uses should be protected.

C2.29 The AMR comments that the ring-fencing of B1(b) R&D land has worked very well, but the policy 'may have dis-benefited certain other sectors of the economy such as high quality offices for business services and small scale industrial uses'. The conclusions are that: '

- the City Council needs to do all it can to support the economy through these difficult times
- ..further research and legal advice may be needed on the operation of the selective management policy 7/2 (Selective Management of the Economy)
- Policy 7/3 (Protection of Industrial & Storage Space) needs to be considered with a view to developing more balance between the need for housing and employment land'.

C2.30 South Cambridgeshire notes in its Annual Monitoring Report that 2008/09 saw a significant amount of new business floorspace completed, doubling the development rate of the previous five monitoring years. However, at the same time a significant amount of employment land

was lost with the demolition of the former Bayer CropScience site at Hauxton; other significant losses were at the Unwins site at Impington.

C2.31 During the last monitoring year a number of high density business developments were completed, resulting in a large increase in floorspace relative to land take. Two developments were on the Cambridge Science Park and one was at Papworth Business Park. These uses were predominantly B1(a) and B1(b). The year 2008/09 also saw a significant increase in B8 land and floorspace completions, all involving change of use from agriculture, light and general industrial uses (B1(c) and B2).

C2.32 The profile of commitments shows that much of the land with planning permission for B1(b) uses is on sites such as Granta Park, Cambridge Research Park (Landbeach) and the Babraham Institute. During the year the adoption of the North West Cambridge Area Action Plan has increased the amount of employment land allocated . The Site Specific Policies DPD has added allocated land in Papworth – on the hospital site and West Central. The additional 5.45 ha at Papworth Hospital is scheduled for re-use in some form for healthcare uses; only if no suitable user comes forward would business uses be allowed.

C2.33 There AMR commented on a planning application for employment land which was refused and subsequent appeals. The Secretary of State overruled the Inspector considering the planning application for a research building on Huntingdon Road, Girton (S/1464/01) and allowed the appeal. The Secretary of State concluded that although the proposed development constitutes inappropriate development in the Green Belt, any harm to the Green Belt is outweighed by the national importance of the research work envisaged combined with the lack of a clearly more suitable alternative site. This site has now been released from the Green Belt as it is within the North West Cambridge AAP area.

Changing policy context

C2.34 A number of factors occurring since the adoption of the employment land use policies potentially challenge them; do the policies continue to provide an adequate framework for the current economic and planning environment?

C2.35 In spatial planning terms, local authority policies have placed considerable emphasis on the provision of new employment sites in three areas which are now subject to review: Northstowe, East Cambridge and 'north east Cambridge'. The East Cambridge policies and Area Action Plan have been removed, following Marshall's decision to maintain its aerospace and airport functions in Cambridge for the foreseeable future. Northstowe is delayed; major development could be delayed for many years without investment in the A14 to increase capacity. North east Cambridge requires a total re-think as the sewage works is not re-locating. Potentially this may result in increased capacity for employment land.

C2.36 The economy has slowed following the onset of the recession. Whilst the Cambridge sub-region has proved relatively resilient the anticipated cut-backs in public expenditure could have a major impact on both direct and indirect employment. Public administration, education and health are directly affected – as are businesses such as Marshalls Aerospace and many smaller employers in services such as advertising, computer services and consultancy. The

Coalition government has announced a renewed interest in manufacturing, with increased employment based on improved export performance a key objective.

C2.37 How the local economy will change is still uncertain, but there are already demands for increased flexibility in terms of planning policies affecting employment.

Issues

C2.38 The amount of employment land available in Cambridge City is very low and is dominated by B1(b). There is a call for further research into the operation of Policy 7/2 on selective management; in the light of a general shortfall of employment land in the city there are potential shortages of general business and light industrial land.

C2.39 Current planning policies prevent HQ offices or manufacturing facilities of over 1850 sq m from setting up in new developments in the Cambridge sub-area, although these could broaden the employment base and hence job opportunities.

C2.40 Despite the growing importance of business, financial and professional services to employment in Cambridge, there was a net loss of 6.5ha of general office space (B1(a) in the City 2004-05 to 2008-09. However, there is now a significant commitment of 27.5ha of B1(a) land.

C2.41 There appears to be adequate land in South Cambridgeshire for most new development.

C2.42 The amount of former employment land lost to other uses appears to be significant – but mainly affecting Cambridge City until 2008/09.

C2.43 This analysis does not include the detailed monitoring of many types of employment land, including A and D Classes. Both are very important, especially in Cambridge City.

C2.44 Employment land at Cambridge East is no longer available and that at Northstowe is unlikely to be developed in the near future. This has implications for B1(a), B1(c), B2 and B8 developments.

Theme 2 Annex 1: Planning policies

South Cambridgeshire – Core Strategy adopted January 2007

Relevant objectives

ST/a To provide an adequate and continuous supply of land for housing and employment, to meet strategic requirements, in sustainable locations.

ST/b To locate development where access to day-to-day needs for employment, shopping, education, recreation, and other services is available by public transport, walking and cycling thus reducing the need to travel, particularly by private car.

ST/h To support the Cambridge Area's position as a world leader in research and technology based industries, higher education and research, particularly through the development and expansion of

ST/k To locate development where it will ensure maximum use of previously developed land and minimise loss of countryside and the best and most versatile agricultural land.

POLICY ST/8 Employment Provision

Policies in Local Development Documents will ensure sufficient employment land is available to enable further development of the high technology clusters and meet local needs. Additional land will be brought forward for employment development at the Strategic Employment Locations of Northstowe, Cambridge East and Northwest Cambridge.

Commercial land take-up between mid 1991 and March 2002 averaged 10.7 hectares per year. The Structure Plan foresees the annual rate increasing to 14 hectares, giving a total estimated land take-up of 196 hectares 2002 to 2016.

Development Control Policies DPD (extract) – adopted July 2007

Objectives

To support the Cambridge Area's position as a world leader in research and technology based industries, higher education and research, particularly through the development and expansion of clusters.

ET/b To manage carefully development pressures in South Cambridgeshire by favouring those uses which need to be located near to Cambridge.

ET/c To support existing businesses by applying positive policies towards the appropriate expansion of existing firms where appropriate, including through use of previously developed land, and the conversion / adaptation or replacement of suitable buildings for business use.

ET/d To reduce commuting distances and the need to travel, particularly by car, by bringing home and workplace closer together, and by encouraging employment opportunities in accessible locations, or accessible by sustainable modes of travel.

ET/e To support the rural economy and enable farm diversification.

ET/f To support the growth of the tourism industry of South Cambridgeshire, whilst ensuring new facilities and accommodation do not have an adverse impact on the built and natural environment.

POLICY ET/1 Limitations on the Occupancy of New Premises in South Cambridgeshire

1. Employment development, including change of use, will only be permitted if it is demonstrated that it falls into one or more of the following:

a. Offices or other development in the use class B1 (a), providing an essential service for Cambridge as a local or sub-regional centre (1);

b. High technology and related industries and services, in use class B1 (b), primarily concerned with research and development, which show a special need to be located close to the universities or other established research facilities or associated services in the Cambridge Area (2);

c. Use classes D1 educational uses, and sui generis research establishments that can show a special need, to be located close to existing major establishments in related fields (such as the universities, the teaching hospital, or private research establishments), in order to share staff, equipment or data, or to undertake joint collaborative working (3);

d. Other small-scale industries, in use classes B1 (c), B2, and B8 (up to 1,850 m2), which contribute to a greater range of local employment opportunities, particularly if it takes advantage of the development of locally-based skills or expertise (large scale expansion of such firms will not be permitted) (4).

2. The occupation of development will be controlled by condition or legal agreement, for a period of 10 years from the first date of occupation.

NOTES:

1 Offices: User restrictions will apply to offices over 300 m2. 300 m2 reflects PPG4 Industrial and Commercial Development and Small Firms (1992), which states that user occupancy restrictions are not necessary for developments of under 300 m2 of office floor area. However, a condition or legal agreement may be necessary to prevent multiple small units being combined or let to a single office user who does not comply with the policy. Essential Service: Local and sub-regional service or administrative facility with the majority of its business based in the Cambridge Sub-Region. Services might include banking, finance, management and business services, property services, legal and accounting services, educational, housing and recruitment services, medical and other professional scientific service and patent agents, and specialist component assembly.

2 High Technology and Research and Development: The investigation, design and development of an idea, concept, material, component, instrument, machine, product or process, up to and including production for testing (but excluding mass production) where the work routine requires daily discussion and action on the part of the laboratory and design

staff. Cambridge Area: The area covered by Cambridge City Council and South Cambridgeshire District Council.

3 Research Establishments: Provide accommodation for organisations whose primary purpose is to research or investigate ideas, theories and concepts, and / or to design and develop instruments, processes or products, up to and including production for testing, but excluding manufacture.

4 Other small-scale industries: 1850m2 refers to the maximum size of occupation of any one user on a site.

5.1 New employment growth must be managed to ensure the very qualities that attract firms in the first place remain, and to ensure employment land is reserved for firms that need it most. RSS6 Policy 26 states that Development Plans should continue to include policies for the selective management of development within the area close to Cambridge, discriminating in favour of uses that have an essential need for a Cambridge location. This approach is continued in Policy P9/7 of the Cambridgeshire and Peterborough Structure Plan 2003.

5.2 The policy reserves employment land for development that can demonstrate a clear need to be located in the area, to serve local needs, or contribute to the continued success of the Cambridge Sub-Region as a centre of high technology and research. This may be in order to share staff, equipment or data, or undertake joint collaborative projects.

5.3 Large-scale manufacturing, distribution and warehousing, and office firms that could equally well locate in other areas of the county, will not be permitted. This approach is necessary to manage the intensive development pressure in and around Cambridge. Given the need to protect the environment, employment land in the district is a scarce resource. The policy also supports the further development of the clusters of high technology, research and development.

5.4 Small-scale developments in industry will be permitted, where they can contribute to providing a better balance of local job opportunities, and contribute to the development of local skills.

5.5 South Cambridgeshire already contains a number of research institutes of national importance, associated with the University or other research establishments. Proposals for new research establishments, or the expansion of those existing, must demonstrate a specific need to be located near the existing establishments in the Cambridge area. Where there is conflict between proposals and other policies and proposals in the plan, the applicant must demonstrate that they are outweighed by evidence of the national interest. Proposals will be considered against the development principles detailed in the plan, and environmental impact of new development should be minimised. Future occupation will be restricted to the uses specified by conditions or legal agreement.

5.6 Supporting text to Cambridgeshire and Peterborough Structure Plan 2003 Policy P9/8 states that exceptionally, office style employment serving a regional function may be located in the sub-region. However, it would not be desirable for national headquarters, call centres, or similar to develop in the vicinity of Cambridge. As any regional offices are to be an

exception, it is appropriate that they are focused in the city of Cambridge itself, rather than the rural areas of South Cambridgeshire.

POLICY ET/2 Promotion of Clusters

1. Development proposals in suitable locations will be permitted which support the development of clusters, in the following sectors:

a. Biotechnology and biomedical;

b. Computer services;

c. Electronic engineering;

d. Information technology / telecommunications;

e. Healthcare, teaching and research;

f. Research and development;

g. Other locally driven clusters as they emerge.

2. Employment land allocations especially suited for cluster development are Northstowe, and the urban extensions to Cambridge. Area Action Plans will indicate the availability and suitability of sites for cluster development, and encourage provision of a range of suitable units, including incubator units.

South Cambridgeshire is home to a number of clusters. A cluster is a group of independent organisations or companies operating in a specific field of industrial or economic activity with representation from across the value chain, ranging from academic institutions with sector expertise to venture capitalists and specialized suppliers (Regional Economic Strategy, EEDA 2004). The benefits of clustering may be spread over a relatively wide area, depending on the nature of the firm. Clusters are of great importance to the success of not only the local, but also the regional and national economy.

Clusters have specific requirements for premises and development sites. The Local Development Framework will aim to allow suitable sites for small firms to start up and expand, but also support the development of more mature clusters. This is consistent with Policy ST/8 of the Core Strategy DPD which seeks to ensure sufficient employment land is available to enable further development of the high technology clusters.

POLICY ET/3 Development in Established Employment Areas in the Countryside

1. In defined Established Employment Areas in the Countryside, redevelopment of existing buildings, and appropriate development for employment use may be permitted.

2. The following Established Employment Areas in the Countryside are defined on the Proposals Map:

a. Buckingway Business Park

b. Cambourne Business Park

c. Cambridge Research Park, Landbeach

d. Site to North of Cambridge Research Park, Landbeach

e. Granta Park, Great Abington

f. Wellcome Trust Genome Campus, Hinxton

g. Norman Way Industrial Estate, Over

h. Land at Hinxton Road, South of Duxford

i. Convent Drive / Pembroke Avenue site, Waterbeach

j. Brookfields Business Estate / Park, Twentypence Road, Cottenham

k. Spicers Ltd, Sawston

l. Daleshead Foods Ltd, Cambridge Road, Linton.

3. Permission will be refused where there would be a negative impact on surrounding countryside, or landscape character area. Developments will be subject to other policies in the document, in particular Policy ET/5 on Development for the Expansion of Firms.

New employment development outside village frameworks will not generally be permitted. This is to protect the countryside from unnecessary development, which can be visually intrusive, but also lead to unsustainable patterns of development. However, South Cambridgeshire contains a number of Established Employment Areas in the Countryside, which are identified on the Proposals Map. The policy provides a context for considering planning applications on these sites.

Within these areas, appropriate development and redevelopment will be permitted, subject to consideration of land supply across the district, and other policy concerns. This will enable more efficient use of the sites, and allow them to be adapted for the needs of existing and future users.

The sites identified are outside village frameworks, and not in the Green Belt. Employment sites created from the conversion of agricultural buildings have not been included, as these were permitted through specific policies, and are not intended for extension.

This policy does not cover Major Developed Sites in the Green Belt, which are dealt with elsewhere in the plan.

POLICY ET/4 New Employment Development in Villages

Planning permission will be granted at an appropriate scale for new small-scale employment in the B1 to B8 Use Classes provided that the development would contribute to a greater range of local employment opportunities, or facilitate cluster development within village frameworks, and on previously developed sites adjoining or very close to the village frameworks of Rural Centres or Minor Rural Centres. Small-scale employment development in villages is defined as employing no more than 25 people as follows:

a. Offices (B1a): 400m2.

b. High tech / R & D (B1b): 725m2.

c. Light Industry (B1c): 800m2.

d. General Industry (B2-B7): 850m2.

e. Warehousing (B8): 1,250m2.

Sensitive small-scale employment development can help sustain the rural economy, and achieve a wider range of local employment opportunities. It can enhance the vitality of rural centres, and reduce the need to travel. There is also potential for cluster related firms to develop on an appropriate scale.

Employment development may provide the opportunity to make best use of a previously developed site, including vacant, derelict, or under used land. The policy provides an element of flexibility for the redevelopment of suitable sites adjoining or near to the more sustainable villages in the district.

Small-scale is defined as the employment of up to 25 people. The actual scale of new employment which would be appropriate in any village will be determined having regard to the size of each village and the amount of locally available employment. 25 jobs is converted into floor space using the English Partnerships publication 'Employment Densities: A Simple Guide'.

POLICY ET/5 Development for the Expansion of Firms

1. Development for the expansion of firms will be permitted that:

a. Meets the tests and is regulated by Policy ET/1; or

b. Other existing firms for their own occupation and use.

2. Expansion will be permitted:

c. Within village frameworks, or previously developed sites next to or very close to village frameworks (subject to provisions of ET/4);

d. Within Northstowe and Cambridge East;

e. Within Established Employment Areas in the Countryside listed in Policy ET/3.

3. A firm or business will be considered as ‘existing’ if a significant element of its operation has been based in the Cambridge Area for a minimum of five years prior to the date of any planning application for development and within that time has maintained a viable business operation locally.

4. Expansion will not be permitted where it consolidates a nonconforming use1, or causes problems with traffic, noise, pollution, or other damage to the environment. It would not be permitted if it would conflict with other policies of the Plan.

5. Other than expansion of firms subject to condition or legal agreement detailed by Policy ET/1, occupation will be limited for a period of 10 years after first occupation, by condition or legal agreement to persons, firms, companies or other organizations existing in the

Cambridge Area. Expansion means additions or alterations to an existing building, or physically related in terms of its siting and use, within the curtilage or immediately adjacent land.

NOTE:

1 Non-conforming Use - a use which does not conform to the general provisions of the development plan for the area in which it is located, and may have an adverse impact on an area's principal use.

It is important that existing firms that do not meet the requirements of Policy ET/1 have the opportunity to expand and adapt for the continued success of the business, but this must be in appropriate circumstances. The scale of growth must not conflict with other policies in the plan, and must not result in an unsustainable level of development in a particular location. Firms seeking large scale expansion are encouraged to seek locations outside the Cambridge Area, for example in the surrounding market towns.

POLICY ET/6 Loss of Rural Employment to Non-Employment Uses

1. The conversion, change of use or re-development of existing employment sites to non-employment uses within village frameworks should be resisted unless one of the following criteria is met:

a. It is demonstrated that the site is inappropriate for any employment use to continue having regard to market demand. Applications will need to be accompanied by documentary evidence that the site is not suitable or capable of being made suitable for continued employment use. Evidence would be required that the property has been adequately marketed for a period of not less than twelve months on terms that reflect the lawful use and condition of the premises; or

b. The overall benefit to the community of the proposal outweighs any adverse effect on employment opportunities and the range of available employment land and premises; or

c. The existing use is generating environmental problems such as noise, pollution, or unacceptable levels of traffic and any alternative employment use would continue to generate similar environmental problems.

Employment sites within village frameworks are a scarce resource, which should be retained. It will often be the case that new employment developments in village frameworks will be limited due to their potential impact on village character. Making best use of existing employment sites reduces the pressure for development of new sites, including new sites in the countryside. It also provides a greater range of employment opportunities and reduces the need to travel. Sites should be retained to provide local employment, unless specific factors indicate otherwise.

POLICY ET/7 Conversion of Rural Buildings for Employment

1. The change of use or adaptation of buildings (without extension) in the countryside for employment use will be permitted provided the following apply:

a. The buildings are structurally sound;

b. The buildings are not makeshift in nature and are of permanent, substantial construction;

c. The buildings are capable of re-use without materially changing their existing character or impact upon the surrounding countryside;

d. The form, bulk and general design of the buildings are in keeping with their surroundings.

2. Any increase in floor area will be strictly controlled, and must be for the benefit of the design, or in order to better integrate the development with its surroundings. There will be a general presumption against future extensions of such buildings. Incidental uses such as car parking and storage should be accommodated within the group of buildings, or on well related land where landscaping can reduce the visual impact of the new site.

3. Employment generated must be in scale with the rural location. Developments resulting in significant numbers of employees or visitors must only be located near to larger settlements or accessible by public transport, cycling, or walking. The cumulative impact of the conversion of a number of buildings on adjoining sites will also be considered.

South Cambridgeshire contains a stock of rural buildings. Where buildings are no longer required for their original use, predominantly agriculture, they can provide a valuable opportunity to provide employment and support the rural economy. Potential uses include commerce and industry, and for tourism or recreation. There is also potential for 'lower tech' industries, contributing to providing a greater diversity of employment opportunities across the district.

Due to their location, such developments must be carefully controlled. It is crucial that design takes account of the character and appearance of the existing building, and the surrounding area. It is not sufficient to simply retain the frame of a building, and substantially reconstruct around it.

Developments should be of a scale appropriate to their location, as large employment developments in the countryside may conflict with the principles of sustainable development, resulting in unsustainable traffic movements, and potential environmental harm. Developments resulting in significant numbers of employees or visitors should be located near to settlements or accessible by public transport, cycling, or walking. In areas without such access, small-scale business development may still be appropriate where it results in only a modest increase in daily vehicle movements. This may require the production of a Travel Plan and / or mitigation of traffic impact in accordance with Policy TR/3.

POLICY ET/8 Replacement Buildings in the Countryside

When considering proposals for replacement buildings in the countryside for employment use, any increase in floor area will be strictly controlled, and must be for the benefit of the design, or in order to better integrate the development with its surroundings.

Planning Policy Statement 7 paragraph 19 is supportive of the replacement of suitably located, existing buildings of permanent design and construction in the countryside for economic development purposes where it would bring about environmental improvement, and result in a more sustainable development.

Cambridge City Local Plan 2006

Objectives

1. To promote economic growth in sustainable and accessible locations.

2. To promote the growth of and linkages between employment clusters such as high technology /biotechnology /ICT/higher education.

3. To recognise innovation and enable Cambridge's role as a world leader in higher education, research, and knowledge based industries.

4. To implement the selective management of the economy.

5. To protect the best industrial and storage areas and provide a range of new employment land.

6. To maintain and enhance the diversity of jobs available in the City.

Policies

7/1 Employment Provision

Sites of 0.25 hectares or more proposed for strategic and other employment development are identified in the Proposals Schedule and on the Proposals Map.

Proposals for employment development on windfall sites will be permitted subject to the future land supply guidelines, existing land use and compatibility with adjoining uses.

Completions over the last decade have averaged 2.3 hectares per annum. However, during the period to 2016, the Structure Plan considers that the annual completion rate is likely to rise to approximately 4 hectares per annum, due to:

_ the allocation of strategic employment sites in the Structure Plan;

_ the release of land from the Green Belt; and

_ more recent trends in economic growth in the City.

19.3 hectares of land is already committed for employment development as at 31st March 2002 in the form of outstanding planning permissions. Therefore, an additional 36.7 hectares of employment land is likely to be required between 2002 and 2016.

The 'Employment Land Review' notes that this policy identifies strategic and other employment sites of 52 hectares, judged to be needed to meet the Structure Plan requirement of 52 hectares for the period 2002 to 2016. The policy also provides for 4 hectares of windfall sites.

The sites listed in the Proposals Schedule with employment uses on B class land include:

New Street/Newmarket Road – to include employment B1, housing, student hostels

Betjeman House, Hills Road – mixed use B1(a), B1(b), A1 retail, A3 and housing

Mitcham's corner sites – to include mixed uses, B1(a), A1, A2, A3 and housing

Coldham's Lane – employment B1©, B2

East Cambridge

Addenbrooke's & adjoining land – higher education, B1(b), D1

Cambridge Northern Fringe

Madingley Road/Huntingdon Road

Station area

7/2 Selective Management of the Economy

Employment development proposals, including changes of use, will only be permitted if it can be demonstrated that they fall into one or more of the following categories:

a. the provision of office or other development within Use Class B1(a) providing an essential service (1) for Cambridge as a local or Sub-regional centre or exceptionally where there is a proven need for a regional function; or

b. high technology and related industries and services within Use Class B1(b) concerned primarily with commercial research and development (2), which can show a special need to be located close to the Universities or other established research facilities or associated services in the Cambridge Area (3); or

c. other industries within Use Classes B1(c), B2 and B8 on a limited scale (4) which would contribute to a greater range of local employment opportunities, especially where this takes advantage of, or contributes to the development of, particular locally based skills and expertise; or

d. D1 educational uses and associated sui generis research establishments and academic research institutes5 that would accord with the provisions of Policy 7/4 where it is in the national interest or there is clear supporting evidence of the need for a Cambridge location.

Notes

(1)This policy does not apply to development by established Bodies (6) for their own occupation and use.

Essential service is defined as a local or Sub-regional service or administrative facility for Cambridge or part of the Sub-region. This might include banking, finance, insurance, management and business services, property services, legal and accounting services, education, housing and recruitment services, medical, other professional and scientific services, patent agents, and specialist component assembly. It might also include social firms (7) that provide employment and support to members of the community at a disadvantage in the labour market.

(2) High Technology and Research and Development.

(3) The Cambridge Area is taken for the purposes of this policy to mean the Cambridge City and South Cambridgeshire District Councils' administrative areas.

(4) Limited scale will be taken to mean 1,850 square metres or below.

(5) Research Institutes are taken to mean sui generis uses affiliated with the Universities, the Medical Research Council or Addenbrooke's Hospital, where there is a need for regular day-to-day contact or sharing of materials, staff and equipment.

(6) Established is taken to mean five years or more in Cambridge in its current lawful use.

(7) A social firm is a business with social and community objectives, created for the employment and support of people at a disadvantage in the labour market. Profits are re-invested into achieving the firm's social objectives.

The accompanying text states:

Employment land in and close to Cambridge will be reserved for development that can demonstrate a clear need to be located in the area in order to serve local requirements or contribute to the continuing success of the Sub-region as a centre for high technology and research.

This will include commercial high technology research and development uses, further and higher educational uses within Use Class D1, and associated sui generis research institutes. These need close links with University departments and other research organisations in the area. Development under this policy will be regulated by way of a condition, or a planning obligation, to restrict the future occupation and use of the premises for the purposes proposed.

The policy seeks to restrict office development to businesses or organisations that provide a local or Sub-regional function. Exceptionally office style employment serving a regional function may be located within the City, in recognition of the growing role of Cambridge as a centre for the East of England Region. This would, for example, include regional government and other government agencies and public bodies. However, applicants for regional office development will need to demonstrate a proven need for a regional function and a Cambridge location. Each case would be considered on its merits. It would not however be desirable for general office development, such as national headquarter offices, call centres or similar, to develop in Cambridge exacerbating labour shortages and long distance commuting.

Large-scale mass production and regional warehousing and storage within Use Classes B1(c), B2 or B8 are not appropriate uses within Cambridge because of their likely large land take and labour force demands adding pressure for housing. However, small-scale developments of 1,850 square metres or below may serve to widen the range of jobs available locally, especially where there is a predominance of high technology jobs, and so serve to redress the current imbalance and diversify the economy.

The occupation of developments will be controlled by legal agreement.

Whilst the selective management of the economy is an important aspect of planning policy within the City, it is recognised that there are some long established firms within the City who, whilst not meeting the other criteria of this policy, nevertheless make a very important

contribution to the economy of the City and its Sub-region. The growth and expansion of such firms is supported provided development is for their own use, and the scale is compatible with other aims of the Plan. Firms are encouraged to look beyond the Cambridge Sub-region or in the market towns or at the strategic employment location at Alconbury Airfield for larger scale expansion.

In 7.19, the text states that guidance will be prepared concerning the assessment of proposals in relation to this policy.

7/3 Protection of Industrial and Storage Space

Development, including changes of use, that results in loss of floorspace within Use Classes B1(c), B2 and B8 will not be permitted where the site is identified on the Proposals Map as a protected industrial/storage site. Development, including changes of use, that results in a loss of floorspace within Use Classes B1(c), B2 and B8 elsewhere in the City will only be permitted if:

a. there is sufficient supply of such floorspace in the City to meet the demand and/or vacancy rates are high; and either

b. the proposed development will generate the same number or more unskilled or semi-skilled jobs than could be expected from the existing use; or

c. the continuation of industrial and storage uses will be harmful to the environment or amenity of the area; or

d. the loss of a small proportion of industrial or storage floorspace would facilitate the redevelopment and continuation of industrial and storage use on a greater part of the site; or

e. redevelopment for mixed use or residential development would be more appropriate.

The explanatory text states that the policy should help ensure that there is a diversity of employment opportunity and the provision of the full range of services the City requires. ‘In an attempt to maintain some balance in the economy, the best industrial/storage sites (meaning B1(c), B2 and B8 uses) in Cambridge are specifically protected from redevelopment for other uses, whilst other industrial/storage sites across the City can only be redeveloped for alternative uses if certain criteria are met. In essence, a policy of 'protect the best, evaluate the rest'.

The protected sites are listed as:

1. Kings Hedges Road – Kirkwood Road/Kilmaine Close

2 Ditton Walk (North) – Beadle Industrial Estate

3 Mercers Row Industrial Estate

4 Cherry Hinton Road – Clifton Court and Clifton Road

5 College Business Park, Coldham's Lane

6 Jedburgh Court, Jedburgh Close

7 Ronald Rolph Court, Wadloes Road

8 Barnwell Business Park and Barnwell Drive

9 Coldham's Lane Business Park, Coldham's Lane

10 Purbeck Road

For those industrial/storage sites that are not specifically protected by this policy, the evaluation of proposals for the loss of such floorspace will consider a number of factors. First, consideration will be given to the current levels of supply, demand and vacancy rates in the City for each use. Where there is sufficient supply to meet demand, or the vacancy rates for a use are high, then the loss of the use will be acceptable in principle.

If, upon analysis of supply, demand and vacancy rates, it has been determined that the loss of the use would be acceptable in principle, consideration will then be given to a number of other factors as set out in the policy. Permission will be granted for development that would generate the same number or more unskilled or semi-skilled jobs than could be expected from the existing use. If the continuation of industrial and storage uses will be harmful to the environment or amenity of the area or the loss of a small proportion of floorspace would facilitate the development and continuation of industrial and storage use on a greater part of the site, then permission will also be granted. Finally, permission will also be granted if residential development is proposed, to help meet the need for housing in Cambridge.

7/4 Promotion of Cluster Development

Development will be permitted which fosters innovation and helps reinforce the existing high technology and research clusters of Cambridge, and which can demonstrate a clear need to be located in the area. This will include:

a. healthcare, biomedical and biotechnology development;

b. higher education and related research institutes;

c. computer software and services;

d. telecommunications; and

e. other high technology clusters as they emerge.

The provision of purpose-designed accommodation will be encouraged to provide for these sectors. These will include the development of commercial high technology incubator units, new academic facilities and sui generis research establishments that are in the national interest or where there is clear supporting evidence of the need for a Cambridge location.

Locations particularly suited to these activities include:

a. land west of Addenbrooke's Hospital for healthcare biomedical and biotechnology research and development activities, related support activities; related higher education and sui generis research institutes;

b. land at West Cambridge for higher education and associated research facilities needing close proximity to the scientific faculties being established there; and

c. land between Madingley Road and Huntingdon Road for higher education and associated research facilities to enable the continued development of the University education and research cluster.

Other policies

Policy 7/5 covers Faculty development in the central area for the University of Cambridge. This permits further development and redevelopment of faculty and administrative sites for the University of Cambridge if this leads to improved facilities, a reduction in parking spaces and generally improved use of land and enhanced attractiveness. An element of mixed use will be supported on the Mill Lane/Old Press and new Museums site. Smaller scale properties on the fringe of central academic sites which are surplus to requirements may be returned to suitable alternative uses such as residential, retail or community uses.

Policy 7/6 covers development for Cambridge University in West Cambridge, south of Madingley Road. The site is a major allocation from the 1996 Local Plan for University faculty development, research institutes, commercial research & development, a sports complex, residential and associated uses.

Policy 7/8 relates to development at Anglia Ruskin University, East Road campus, allowing upgrading and limited further development. Longer term the policy states that growth would be supported 'particularly at East Cambridge'.

Policy 7/11 covers language schools. It states that 'the establishment of additional permanent or temporary language schools will not be permitted. Development of existing schools will be permitted where existing facilities are being improved or teaching facilities is being increased by no more than 10% of existing floorspace'. Permissions given for the expansion of non-teaching floorspace will be subject to planning conditions or legal agreements to prevent the use of such space for teaching.

There are no specific policies relating to other educational establishments.

Policy 8/12 states that aviation development at Cambridge airport will not be permitted where it would have a significant adverse effect on the environment and residential amenity. The City Council is stated to be committed to the relocation of Marshall Aerospace and Cambridge airport – consequently there is no scope for significant development on the current site. There are some 'permitted development rights' for airports, including modest development or extensions of terminals. Policy 8/13 relates to Cambridge airport's public safety zone, restricting development of an intensive nature.

'Areas of major change' establish the principal land uses in urban extensions, (Policy 9/3), East Cambridge (9/4), Southern Fringe (9/5), Northern Fringe (9/6), Land between Madingley Road & Huntingdon Road (9/7), Land between Huntingdon Road and Histon Road (9/8) and the Cambridge Station area (9/9).

In June 2009 the East Cambridge policy was deleted. The East Area Action Plan (produced jointly with South Cambridgeshire DC) proposed 20-25 hectares of employment land

supporting 4-5,000 jobs. This is in addition to land identified for local services, education and especially higher education (ARU).

The Southern Fringe policy identifies significant land at Addenbrooke's for NHS and private clinical development, medical research and higher education. The Northern Fringe policy identifies land for mixed commercial uses, including B1, B2 and B8 (2 hectares each). It should be noted that the original proposals for 35 hectares of housing (2,300 dwellings) have now been dropped as the relocation of the sewage works has proved infeasible. Much of this land is potentially available for other uses, including sports & community as well as employment land. Land between Madingley and Huntingdon Road includes provision for 14 hectares for a range of higher education uses as well as 6 hectares for university-related and other research institutes and commercial research uses in Use Class B1(b). The Station area (known as CB1) includes provision for B1(a) and B1(b) land uses

Theme 2 Annex 2: Annual Monitoring Reports

Completions on B1 to B8 land uses 2004/05 to 2008/09

In all instances the data source in Cambridgeshire County Council's Research & Monitoring Group, Environment Directorate.

Cambridge City

Table 7: Employment land gained, hectares Cambridge City, B1 to B8, 2004/05 to 2008/09

Year	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
2004/05	0	0.79	0.68	0	0.01	0.11	1.58
2005/06	0	0.35	0.81	0	0	0	1.16
2006/07	0	0.29	2.13	0.06	0.09	0.4	2.96
2007/08	0	0.58	0.06	0.21	2.06	0.46	3.37
2008/09	0	0.11	0	0.08	0.09	0	0.29
Total	0	2.12	3.68	0.35	2.25	0.97	9.36

Table 8: Employment land lost, hectares, Cambridge City, B1 to B8, 2004/05 to 2008/09

Year	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
2004/05	0	-5.24	0	-0.01	-1.06	-0.74	-7.05
2005/06	0	-0.84	-0.22	-0.99	-0.64	-0.02	-2.71
2006/07	0	-0.41	0	-0.14	-0.74	-0.61	-1.9
2007/08	0	-1.75	0	-0.01	-0.81	-0.11	-2.68
2008/09	0	-0.42	-0.2	-0.05	0	-0.21	-0.87
Total	0	-8.66	-0.42	-1.2	-3.25	-1.69	-15.21

Table 9 Net employment land gain, hectares, B1 to B8 Cambridge City, 2004/05 to 2008/09

Year	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
2004/05	0	-4.45	0.68	-0.01	-1.05	-0.63	-5.47
2005/06	0	-0.49	0.59	-0.99	-0.64	-0.02	-1.55
2006/07	0	-0.12	2.13	-0.08	-0.65	-0.21	1.06
2007/08	0	-1.17	0.06	0.2	1.25	0.35	0.69
2008/09	0	-0.31	-0.2	0.03	0.09	-0.21	-0.58
Total	0	-6.54	3.26	-0.85	-1	-0.72	-5.85

South Cambridgeshire

Table 10: Employment land gained, hectares, South Cambridgeshire, B1 to B8, 2004/05 to 2008/09

Year	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
2004/05	0	2.33	6.65	2.16	0.57	1.73	13.45
2005/06	0.05	1.93	4.05	3.63	2.65	3.24	15.56
2006/07	0	3.01	1.01	1.81	4.63	1.46	11.91
2007/08	0.22	2.19	1.92	1.38	2.04	8.8	16.56
2008/09	0.74	6.23	11.7	2.03	1.34	6.88	28.93
Total	1.01	15.69	25.33	11.01	11.23	22.11	86.41

Table 11: Employment land lost, hectares, South Cambridgeshire, B1 to B8, 2004/05 to 2008/09

Year	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
2004/05	0	-0.51	-6.82	-0.74	-0.73	-1.42	-10.22
2005/06	0	-0.58	-1.87	-0.59	-1.66	-0.27	-4.97
2006/07	0	-1.03	-2.28	-1.23	-2.56	-0.26	-7.35
2007/08	-0.07	-0.53	-0.89	-0.34	-0.78	-1.73	-4.35
2008/09	-0.03	-1.11	-16.07	-1.36	-1.8	-5.81	-26.17
Total	-0.1	-3.76	-27.93	-4.26	-7.53	-9.49	-53.06

Table 12: Employment land net change, hectares, South Cambridgeshire, B1 to B8, 2004/05 to 2008/09

Year	B1 unspecified	B1(a)	B1(b)	B1(C)	B2	B8	B1 - B8
2004/05	0	1.82	-0.17	1.42	-0.16	0.31	3.23
2005/06	0.05	1.35	2.18	3.04	0.99	2.97	10.59
2006/07	0	1.98	-1.27	0.58	2.07	1.2	4.56
2007/08	0.15	1.66	1.03	1.04	1.26	7.07	12.21
2008/09	0.71	5.12	-4.37	0.67	-0.46	1.07	2.76
Total	0.91	11.93	-2.6	6.75	3.7	12.62	33.35

Theme 3: Transport

C3.1 This Theme Report summarises the key transport issues for the sub region, as context for the analysis of future constraints on economic development. The paper takes as its starting point the transport priorities identified in the Strategic Transport section of the Cambridgeshire Integrated Development Programme (IDP), supplemented by other sources including EEDA's response to consultations by the Cambridge Transport Commission consultation on the Transport Innovation Fund bid, and by the Highways Agency on the A14 improvements scheme. It then considers the current situation and its implications for the future of the sub region's economy.

The impact of transport on the economy

C3.2 The Transport and the Economy of the East of England Study (TEES - September 2008), concluded that congestion in the East of England imposes a significant economic cost on the UK (£1bn per annum today, rising to £2bn per annum by 2021), and that Cambridge was one of the urban centres within the region where the costs of congestion to residents and businesses are particularly severe.

C3.3 TEES used output from the East of England Regional Transport Model to estimate - using standard DfT methodologies - the costs of traffic congestion in Cambridgeshire. These are summarised in Table C3-1.

Table C3-1: Economic costs imposed by transport constraints in Cambridgeshire districts

District	Total Welfare Costs - £m per annum (i.e. costs to all users, business, leisure and commuting)	GDP costs - £m per annum (i.e. costs only to businesses - a sub-section of welfare costs)	Average productivity loss per employee - £ per annum
Year	***2008***	***2021***	***2008***
Cambridge	31.4	76.1	17.1
South Cambridgeshire	29.4	72.5	16.8
East Cambridgeshire	13.2	29.9	6.9

Source: Transport Economic Evidence Study (2008)

Note: future costs have been predicted using a Business As Usual scenario

C3.4 The TEES concluded for Cambridge that:

- under a business as usual scenario the negative economic impact of transport constraints and congestion in Cambridge sub-region will double between 2008 and 2021
- productivity losses due to congestion are high in both Cambridge City and South Cambridgeshire, primarily due to the presence of highly productive jobs on the boundaries of Cambridge City, such as in the Science Park, that benefit from the effects of business agglomeration.

C3.5 The study demonstrated that improved urban access to Cambridge would have large economic benefits: for example, a 10% reduction in congestion in Cambridge would give a £250m boost to the local economy (over a 60 year appraisal period).

C3.6 However TEES concluded that road building to provide additional capacity *within urban areas* does not contribute significantly to eliminating the economic costs of congestion. Therefore the focus for reducing congestion in Cambridge should be on an increased supply of public transport and demand management, not by increased road capacity. In contrast, TEES also concluded that significant economic benefits can be generated through targeted intervention in key *inter urban bottlenecks* such as the A14 corridor.

Transport priorities

C3.7 The IDP (December 2009) identified four main transport investment priorities for the sub region based on the findings of the TEES report:

- Cambridgeshire Guided Busway
- A14 improvements from Ellington to Fen Ditton
- county cycle and pedestrian links
- rail upgrades to increase capacity and reliability on the routes between Cambridge and London.

C3.8 These priorities are in addition to priority local projects identified through the Local Infrastructure Framework process.

Current situation

C3.9 The current situation with respect to the major priorities can be summarised as follows.

Cambridgeshire Guided Busway (CGB)

C3.10 The CGB is virtually complete, with the final section between Cambridge station and Addenbrooke's due for completion in January 2011. However, there is an on-going dispute between the County Council and the contractor, BAM Nuttal, which shows no sign of resolution. Recent statements by both sides suggest the dispute is only likely to be resolved through the Courts. It is possible that the CGB will open once construction is complete, and that the dispute over defects in the construction claimed by the Council will continue in parallel. However, it is also possible that the CGB will remain closed until the dispute is settled. The original schedule was for the CGB to open in February 2009, hence it will have been delayed by a minimum of two years.

C3.11 It is fair to say that the CGB was always controversial: there was a strong lobby for reopening the railway on which the CGB has been constructed north of Cambridge, and there was always concern that the bus will suffer from congestion in Cambridge, where it will use public roads instead of a dedicated track. Its justification was partly predicated on the

construction of Northstowe, which has been severely delayed for completely different reasons. The combination of initial scepticism, serious delays to both projects, and the very public dispute between the County Council and the contractors, has generated a great deal of adverse comment from residents and local businesses (comments made to us during consultation ranged from resigned acceptance of the delay to fierce criticism of the whole project), a concern that the CGB will never fulfil its potential, and a negative attitude (whether or not it is justified) to the role of local government in the project.

C3.12 Despite the problems, it is important that the CGB becomes operational soon, because it should be a major contributor to economic development:

- it provides a direct, high quality and (hopefully) fast public transport link between the three main employment areas in Cambridge – the Science Park and other employment sites on the northern edge, the city centre, and Addenbrooke's
- it provides a high quality public transport link in the A14 corridor between Huntingdon, St Ives and Cambridge, the most congested commuting and business route in the Cambridge sub region
- it will serve Northstowe, the largest housing and employment growth area in the sub region (although now in doubt due to the cancellation of the A14 improvements – see below).

A14 improvements from Ellington to Fen Ditton

C3.13 The A14 between Ellington and Fen Ditton is acknowledged to be one of the most congested and accident prone stretches of trunk road in the country, and one of the most important routes nationally, regionally and locally. For many businesses and residents in the Cambridge sub region it is both the single most important transport scheme, and the main symbol of the infrastructure deficit that the area faces. Even the Department of Transport acknowledges that the route "*faces severe congestion, and that mobility along the route is critical for economic success and success and growth*" (quote taken from Cambridge News, 26 October 2010).

C3.14 Nevertheless, the planned improvement scheme was scrapped as part of the announcements linked to the Comprehensive Spending Review, published on 20 October 2010, due to its high cost. Instead, the Department of Transport has committed to "*undertake a study to identify cost-effective and practical proposals which bring benefits and relieve congestion – looking across modes to ensure we develop sustainable proposals*" (quote taken from Cambridge News, 27 October 2010).

C3.15 This decision will both seriously delay and reduce any improvements to the A14, and therefore the potential impact on congestion and economic development in the sub region. It will also disrupt planned housing and employment growth, since several of the major development sites are partially or completely blocked by the Highways Agency until the now cancelled A14 improvements are underway. These include Northstowe, NW Cambridge, and most of the development at NIAB. It is not yet clear how this issue will be resolved, since the Government is supportive of the growth of Cambridge but is not willing to fund the current A14 improvement scheme which is essential to facilitate that growth.

County cycle and pedestrian links

C3.16 It is not yet clear how planned cycle and pedestrian links will be affected by the reductions in public expenditure announced in the Comprehensive Spending Review, although is it very likely that various projects will be delayed, reduced in scale or scrapped. However, some of the planned routes were related to development areas (e.g. NW Cambridge) which may also be subject to delays, so the impact on projects servicing existing residential and business areas may be limited.

Rail upgrades to increase capacity and reliability on the routes between Cambridge and London

C3.17 The planned upgrades to the Cambridge – London route appear to be proceeding as planned:

- National Express East Anglia has announced plans to improve train services and increase capacity on the West Anglia route in 2011, including the introduction of new 12-carriage trains, which it says should be running by December next year
- Network Rail has applied for planning permission to build a new platform "island" at Cambridge station, and to extend the length of the platform at Royston, as part of a scheme to cut overcrowding on the Cambridge to London route. The improvements at Royston will enable 12-carriage services to be run from early 2011, adding 6,500 seats to capacity at peak periods
- the new platform island at Cambridge will increase the capacity of the station, and will be complemented by refurbishment of existing station buildings, including expansion of the ticket hall by 250 per cent, with easier access and more waiting areas, and bus interchange improvements. These related improvements will be implemented as part of the first phase of the CB1 development, which is expected to be completed by the end of 2012.

C3.18 There are also revised proposals for a railway station at Chesterton, situated on the east side of Milton Road and using the trackbed of the spur towards St Ives from the Cambridge to Ely line. Cast Iron, the local rail pressure group, claim that the station could be opened in 18 months for £3 million, compared to the £21 million plans for a station at Chesterton Sidings which looks increasingly unlikely to proceed[44].

C3.19 However, Cambridge will not be part of the high speed rail network planned by the Government: the High Speed North East route would have served London, Cambridge, Nottingham, Sheffield, Leeds, Newcastle and potentially Edinburgh, but the Government has committed only to building a high-speed rail line from London to Birmingham, then onwards to Manchester and Leeds.

[44] Cambridge News, 19 April 2010

Annex A: Labour market and employment projections

Introduction

A.1 This Annex pulls together labour market and demographic forecasts and projections for Cambridgeshire and the Cambridge area to provide context for the 'Cambridge Cluster – 50 years on' study. It focuses on work carried out in the period 2008 to 2010. The first section deals with employment and the second concentrates on population and labour supply.

Employment Forecasts & Projections

A.2 This section covers two sets of employment projections: (i) Oxford Economics (for EEDA) and (ii) Cambridge Econometrics (for Cambridgeshire County Council).

Oxford Economics employment projections

A.3 In the absence of any central government-sponsored employment projections, EEDA has in recent years commissioned Oxford Economics (OE) to develop a regional forecasting model which uses individual local authorities as the basic building blocks. The key output summarised in this Annex relates to projections of employment at the level of 28 industry sectors.

A.4 Since 2008 the OE model has been run twice a year, in spring and autumn. The latest suite of 'baseline', or trend, projections was produced in March 2010. Consequently it is 'recession-aware'. However it is important to appreciate two factors:

- the most up-to-date industry sector employment data published at a local authority level remains the September 2008 Annual Business Inquiry (ABI) – which effectively pre-dates the recession. Subsequent national survey and administrative data available to inform employment estimates and forecast is derived from surveys which are not robust at a local level
- the March 2010 projections pre-date the General Election and both the Labour and subsequent Coalition Government budgets. This means they do not incorporate the significant cuts in public expenditure announced in recent months.

A.5 Table A-1 provides an overview of the projections for Cambridgeshire as a whole.

Table A-1: Baseline Employment projection, Cambridgeshire 2001 to 2031, '000 (Oxford Economics March 2010)

Sector	2001	2009	2009/21	2021/31	2031
Agriculture etc	8.4	9.3	-1.2	-1.5	6.6
Extraction	0.2	0.3	-0.1	-0.1	0.1
Manufacture - food & drink	5	5.2	-0.7	-0.7	3.8
Manufacture - other low tech	9.5	5.2	-1.6	-0.9	2.7

Sector	2001	2009	2009/21	2021/31	2031
Manufacture - metals & engineering	**16.8**	**15.2**	**-3.5**	**-2.4**	**9.3**
Manufacture - chemicals & processing	**8.9**	**5.7**	**-1.4**	**-0.9**	**3.4**
Manufacture - other, recycling	2.9	2.2	0	0	2.2
Utilities	0.8	0.6	-0.1	-0.1	0.4
Construction	14.3	19.4	2	2.2	23.6
Wholesale & motor trade	19.3	19.4	2.9	0.2	22.5
Retailing	26.9	25.5	5.4	1.4	32.3
Hotels & catering	13.7	15.5	2.5	0	18
Air transport	0.2	0	0	0	0
Communications	**5.2**	**3.2**	**-0.3**	**-0.4**	**2.5**
Land & other transport	8.3	9.5	2.9	1.5	13.9
Water transport	0	0	0	0	0
Finance	4.8	4	0.7	0.8	5.5
Computer-related	**11**	**11.1**	**3.7**	**2.2**	**17**
Labour recruitment, security, industrial cleaning	10.1	14.3	8.2	4.3	26.8
Business services - call centres	4.8	7.2	2.2	1.1	10.5
Business services - R&D, technical testing	**9.5**	**12.9**	**7**	**4.1**	**24**
Business services - real estate, renting	6	7.2	3	1.6	11.8
Business services - other tradeable	16.1	18.6	7.5	4.3	30.4
Public administration	11.4	13.7	0	0.5	14.2
Education	**33.4**	**42**	**3.7**	**4.6**	**50.3**
Health	29.7	39.7	5.3	7.1	52.1
Other personal services - miscellaneous	13.2	14.1	2.3	1	17.4
Other public services - waste	1.6	1.9	0.5	0.3	2.7
Total	294.7	325.9	50.9	30.3	407.1

Source: Oxford Economics Baseline projection March 2010. ***Note: Hi-tech and knowledge-based sectors***

A.6 The table indicates that between 2009 and 2021 employment in the county is expected to increase by 50,900 jobs and further growth of 30,300 jobs is projected for 2021/31.

A.7 Looking at high tech and other knowledge-related sectors, the projections show a reduction in employment in manufacturing: both metals & engineering and chemicals & process industries. Communications are also projected to lose employment. However, this sector covers postal services as well as telecommunications and it is likely that the major job losses will occur in postal operations.

A.8 Computing services jobs are expected to increase in both time periods following what appears to have been sluggish growth between 2001 and 2009. Employment in Research & Development and in technical testing/consultancy is expected to see most job growth: 7,000 in the period 2009/21 and 4,100 between 2021 and 2031. Education, which includes high tech employment within the Higher Education sector, is projected to grow relatively modestly.

A.9 Other 'knowledge-based' posts are in the health and Business services: other tradeable sectors.

A.10 The core Cambridge City and South Cambridgeshire areas combined are shown in Table A-2.

Table A-2: Baseline Employment projection, Cambridge City & South Cambridgeshire, 2001 to 2031 '000: Oxford Economics, March 2010

Sector	2001	2009	2009/21	2021/31	2031
Agriculture etc	1.9	2.4	-0.2	-0.3	1.9
Extraction	0	0.1	0	0	0.1
Manufacture - food & drink	1.1	1.3	-0.1	-0.1	1.1
Manufacture - other low tech	5	2.4	-0.7	-0.4	1.3
Manufacture - metals & engineering	**9.2**	**8.3**	**-1.8**	**-1.2**	**5.3**
Manufacture - chemicals & processing	**4.1**	**2.5**	**-0.7**	**-0.4**	**1.4**
Manufacture - other, recycling	0.6	0.3	0	0	0.3
Utilities	0.4	0.2	0	0	0.2
Construction	6.1	7.8	0.7	0.9	9.4
Wholesale & motor trade	8.4	7.8	1.1	0.1	9
Retailing	12.3	12.5	3.1	1	16.6
Hotels & catering	7.9	8.5	1.9	0.4	10.8
Air transport	0.2	0	0	0	0
Communications	**3.6**	**2.1**	**-0.3**	**-0.4**	**1.4**
Land & other transport	2.7	2.4	0.8	0.5	3.7
Water transport	0	0	0	0	0
Finance	3.2	2.5	0.6	0.6	3.7
Computer-related	**8.5**	**8.6**	**3.1**	**2**	**13.7**
Labour recruitment, security, industrial cleaning	5.9	7.5	3.9	1.9	13.3
Business services - call centres	2.4	3.1	1.3	0.9	5.3
Business services - R&D, technical testing	**7.7**	**10.5**	**5.8**	**3.4**	**19.7**
Business services - real estate, renting	2.5	3.3	1.6	1	5.9
Business services - other tradeable	10.9	12.6	6.5	4.4	23.5
Public administration	4.5	5.6	0	0.2	5.8

Sector	2001	2009	2009/21	2021/31	2031
Education	**26.6**	**30.8**	**3.8**	**4.1**	**38.7**
Health	18.8	20.4	3.7	4.2	28.3
Other personal services - miscellaneous	6.1	7.1	2.1	1.3	10.5
Other public services - waste	0.7	1	0.3	0.1	1.4
Total	162.5	173.6	36.5	23.5	233.6

Source: Oxford Economics, March 2010 ***Note: Sectors in bold are high tech or knowledge-based***

A.11 Table A-2 shows that Cambridge City and South Cambridgeshire together account for projected growth of 60,000 jobs between 2009 and 2031 out of the county total of 81,200, around three-quarters.

Cambridge Econometrics – November 2008

A.12 Cambridge Econometrics (CE) was commissioned by the Cambridgeshire local authorities and Cambridgeshire Horizons to produce county and district-level 'recession-aware' forecasts of employment by industry sectors as part of the Cambridgeshire Development Study. Two variants were produced in the spring of 2009, based on November 2008 regional forecasts. The first was essentially a 'business as usual' outlook which assumed that ONS population projections would be fulfilled. The second was a modified forecast. This assumed that growth would be in line with the County Council's population forecasts. These forecasts essentially assumed that housebuilding and hence population would be in accord with the East of England Plan targets through to 2021 and would continue at similar annual rates of growth thereafter through to 2031. (The East of England Plan, following on from the County Structure Plan, assumed a significant increase in new housing in Cambridge City and South Cambridgeshire as compared with trends in the 1990s, with a similar reduction in rates of new development elsewhere in the county). As compared with population projections for Cambridgeshire prepared by ONS, the County's forecasts were lower overall and assumed a different distribution of housing and hence population.

A.13 Table A-3 provides a county overview of forecast job growth in Cambridgeshire based on the County Council's population forecasts. Table A-4 provides the combined Cambridge City and South Cambridgeshire share. The industry sectors are those usually produced by CE. These are very detailed as regards manufacturing but very broad as regards services. Unfortunately the key 'high tech' services of R&D and technical testing are not identified separately, but are instead included in one 'super' sector, Professional services.

Table A-3: Employment Forecast for Cambridgeshire, 2001 to 2031, controlled to County Council population forecast, '000

Sector	2001	2009	2021	2031	2009/21	20021/31
1 Agriculture etc	7.4	9.4	7.8	6.5	-1.7	-1.2
3 Oil & Gas etc	0.1	0.0	0.0	0.0	0.0	0.0
4 Other Mining	0.1	0.1	0.1	0.1	0.0	0.0
5 Food, Drink & Tob.	5.0	4.4	3.8	3.4	-0.6	-0.5

Sector	2001	2009	2021	2031	2009/21	20021/31
6 Text., Cloth. & Leath.	1.5	1.2	0.7	0.2	-0.5	-0.5
7 Wood & Paper	4.0	3.3	1.9	1.1	-1.4	-0.8
8 Printing & Publishing	4.4	3.1	2.8	2.4	-0.3	-0.4
9 Manuf. Fuels	0.0	0.0	0.0	0.0	0.0	0.0
10 Pharmaceuticals	**0.8**	**0.7**	**0.7**	**0.7**	**0.0**	**0.0**
11 Chemicals nes	**1.7**	**0.4**	**0.4**	**0.4**	**0.0**	**0.0**
12 Rubber & Plastics	4.8	3.4	2.9	2.3	-0.4	-0.6
13 Non-Met. Min. Prods.	2.2	2.2	1.4	1.0	-0.7	-0.4
14 Basic Metals	0.3	0.2	0.1	0.1	-0.1	0.0
15 Metal Goods	3.4	3.6	3.7	3.7	0.1	0.0
16 Mech. Engineering	3.2	3.0	2.3	1.5	-0.7	-0.8
17 Electronics	**3.6**	**1.6**	**1.5**	**1.2**	**-0.1**	**-0.3**
18 Elec. Eng. & Instrum.	**3.3**	**2.9**	**1.9**	**1.2**	**-1.0**	**-0.7**
19 Motor Vehicles	2.1	1.9	1.6	1.3	-0.3	-0.2
20 Oth. Transp. Equip.	2.4	3.2	2.8	2.4	-0.4	-0.4
21 Manuf. nes	3.0	3.2	3.0	2.8	-0.2	-0.1
22 Electricity	0.1	0.0	0.0	0.0	0.0	0.0
23 Gas Supply	0.1	0.1	0.1	0.1	0.0	0.0
24 Water Supply	0.4	0.6	0.6	0.6	0.0	0.0
25 Construction	15.6	22.2	23.1	23.9	0.8	0.8
26 Distribution	19.6	18.2	17.5	17.6	-0.6	0.1
27 Retailing	24.6	27.8	29.4	31.6	1.6	2.2
28 Hotels & Catering	14.5	18.1	19.8	21.5	1.7	1.7
29 Land Transport etc	9.6	9.5	10.4	11.0	0.9	0.6
30 Water Transport	0.0	0.0	0.0	0.0	0.0	0.0
31 Air Transport	0.0	0.0	0.0	0.0	0.0	0.0
32 Communications	**4.9**	**4.3**	**4.1**	**4.0**	**-0.2**	**-0.1**
33 Banking & Finance	4.4	3.8	3.9	3.9	0.0	0.0
34 Insurance	0.6	0.1	0.1	0.1	0.0	0.0
35 Computing Services	**11.0**	**11.0**	**15.8**	**21.8**	**4.9**	**6.0**
36 Prof. Services	**35.6**	**37.6**	**46.8**	**57.3**	**9.2**	**10.5**
37 Other Bus. Services	14.4	21.8	25.2	28.5	3.4	3.3
38 Public Admin. & Def.	14.6	18.1	16.9	16.1	-1.2	-0.8

Sector	2001	2009	2021	2031	2009/21	20021/31
39 Education	**32.0**	**42.0**	**41.9**	**43.0**	**-0.1**	**1.1**
40 Health & Social Work	28.9	37.5	41.3	45.3	3.8	4.0
41 Misc. Services	14.2	18.1	18.7	19.6	0.6	0.9
TOTAL	**298.4**	**338.6**	**354.9**	**378.0**	**16.3**	**23.1**

Sources: Cambridge Econometrics; SQW Consulting. ***Note: Sectors in bold include high tech and knowledge-based employment***

A.14 The table suggests that job growth between 2001 and 2009 (the latter a forecast) amounted to around 40,000. The forecasts indicated 16,300 increase between 2009 and 2021 and a further growth of 23,100 jobs between 2021 and 2031, or 39,400 over the entire 2009/31 period.

A.15 The Cambridge City & south Cambridgeshire forecasts are shown in Table A-4.

Table A-4: Employment forecasts for Cambridge City & South Cambridgeshire, 2009 to 2031, '000: Cambridge Econometrics controlled to County Council population forecast

Sector	2001	2009	2021	2031	2009/21	2021/31
1 Agriculture etc	1.7	2.3	1.7	1.3	-0.6	-0.4
3 Oil & Gas etc	0.1	0.0	0.0	0.0	0.0	0.0
4 Other Mining	0.0	0.1	0.1	0.0	0.0	0.0
5 Food, Drink & Tob.	1.1	1.0	0.8	0.6	-0.2	-0.1
6 Text., Cloth. & Leath.	0.6	0.2	0.1	0.0	-0.1	-0.1
7 Wood & Paper	1.3	0.6	0.2	0.1	-0.3	-0.1
8 Printing & Publishing	3.2	2.3	2.0	1.7	-0.2	-0.3
9 Manuf. Fuels	0.0	0.0	0.0	0.0	0.0	0.0
10 Pharmaceuticals	**0.8**	**0.7**	**0.7**	**0.7**	**0.0**	**0.0**
11 Chemicals nes	**1.3**	**0.2**	**0.2**	**0.2**	**0.0**	**0.0**
12 Rubber & Plastics	0.7	0.5	0.3	0.2	-0.1	-0.1
13 Non-Met. Min. Prods.	1.2	0.9	0.5	0.4	-0.4	-0.2
14 Basic Metals	0.1	0.1	0.1	0.1	0.0	0.0
15 Metal Goods	1.2	1.3	1.4	1.4	0.0	0.0
16 Mech. Engineering	1.3	1.3	0.9	0.5	-0.4	-0.4
17 Electronics	**2.2**	**1.0**	**0.9**	**0.7**	**-0.1**	**-0.2**
18 Elec. Eng. & Instrum.	**2.2**	**1.6**	**1.0**	**0.6**	**-0.6**	**-0.4**
19 Motor Vehicles	1.1	0.8	0.7	0.6	-0.2	-0.1
20 Oth. Transp. Equip.	2.2	2.9	2.6	2.2	-0.4	-0.4
21 Manuf. nes	0.6	0.6	0.6	0.6	0.0	0.0
22 Electricity	0.1	0.0	0.0	0.0	0.0	0.0
23 Gas Supply	0.0	0.1	0.1	0.0	0.0	0.0

Sector	2001	2009	2021	2031	2009/21	2021/31
24 Water Supply	0.2	0.1	0.1	0.1	0.0	0.0
25 Construction	7.0	9.2	9.5	9.8	0.3	0.3
26 Distribution	8.7	7.6	7.2	7.2	-0.4	0.0
27 Retailing	11.5	13.7	15.4	16.9	1.7	1.5
28 Hotels & Catering	8.4	10.1	12.0	13.3	1.8	1.4
29 Land Transport etc	3.2	2.7	2.9	3.0	0.2	0.1
30 Water Transport	0.0	0.0	0.0	0.0	0.0	0.0
31 Air Transport	0.0	0.0	0.0	0.0	0.0	0.0
32 Communications	**3.4**	**2.6**	**2.5**	**2.5**	**-0.1**	**-0.1**
33 Banking & Finance	2.7	2.4	2.4	2.4	0.0	0.0
34 Insurance	0.5	0.1	0.1	0.1	0.0	0.0
35 Computing Services	**8.6**	**8.3**	**12.0**	**16.6**	**3.7**	**4.6**
36 Prof. Services	**24.1**	**25.3**	**32.4**	**40.5**	**7.1**	**8.1**
37 Other Bus. Services	8.2	10.6	12.1	13.5	1.4	1.4
38 Public Admin. & Def.	5.7	7.4	7.7	7.4	0.3	-0.3
39 Education	**25.6**	**29.3**	**31.1**	**32.1**	**1.7**	**1.1**
40 Health & Social Work	16.7	20.7	24.7	27.4	4.0	2.7
41 Misc. Services	6.8	9.6	10.9	11.7	1.3	0.8
TOTAL	**164.6**	**178.3**	**197.9**	**216.6**	**19.6**	**18.7**

Sources: Cambridge Econometrics; SQW Consulting. ***Note: Sectors in bold include high tech and knowledge-based employment***

A.16 The table suggests that virtually all net job growth in Cambridgeshire is expected to occur in Cambridge City and South Cambridgeshire. Professional and computing services account for most of the growth.

A.17 CE's own baseline projections for employment growth are, at a county level, higher than those detailed in Table A-3. As discussed, they reflects higher overall population growth, generally in line with ONS 2006-based population projections. However, the breakdown at a district level is quite different, as this reflects past patterns of house-building and hence population growth, rather than the proposed future plans with their concentration on the Cambridge area. Table A-5 provides a broad summary of the differences.

Table A-5: CE 'unconstrained' employment projections and CCC policy-led forecasts, 2001, 2009, 2021 and 2031, '000 jobs

Forecast/Area	2001	2009	2021	2031	2009/31
Unconstrained Cambridge City	98.49	99.85	108.86	117.09	17.24
Unconstrained South Cambs	66.08	78	84.05	93.31	15.31

Forecast/Area	2001	2009	2021	2031	2009/31
Unconstrained Cambridgeshire	298.38	338.93	361.48	386.66	47.73
Policy led Cambridge City	98.49	100.29	113.96	121.07	20.78
Policy led South Cambs	66.08	78.05	83.95	95.57	17.52
Policy led Cambridgeshire	164.57	338.6	354.89	378.02	39.42
Difference Cambridge City	n/a	-0.44	-5.1	-3.98	-3.54
Difference South Cambs	n/a	-0.05	-0.1	-2.26	-2.21
Difference Cambridgeshire	n/a	0.33	6.59	8.64	8.31

Source: Cambridge Econometrics

A.18 The table shows that the 'unconstrained' employment projection indicates an additional 47,730 jobs in Cambridgeshire 2009 to 2031; constraining the forecast to the house building envisaged by the East of England Plan reduces the growth to around 39,400 jobs. However, the 'unconstrained' projection spreads job growth across the county so that the Cambridge City/South Cambridgeshire contribution is 32,550. The forecast reflecting the East of England Plan would result in aggregate job growth for the two districts of 38,300 between 2009 to 2031.

Comparing OE and CE projections

A.19 Table A-6 compares the OE and CE employment growth projections and forecasts for the period 2009 to 2021 and 2021 to 2031 for the combined area of Cambridge/South Cambridgeshire and the county as a whole. It also provides the regional forecast as context.

Table A-6: Comparison of employment forecasts & projections, Cambridgeshire, 2009/21, 2021/31, '000 jobs

Forecast/area	2009/21	2021/31	2009/31	% of East 2009/31
OE baseline – Cambridge/South Cambs	36.5	23.5	60.0	15.2%
OE baseline – Cambridgeshire	50.9	30.3	81.2	20.5%
OE baseline - East	270.0	125.5	395.5	100%
CE unconstrained – Cambridge /South Cambs	15.1	17.5	32.6	8.6%
CE unconstrained – Cambridgeshire	22.6	25.2	47.7	12.5%
CE unconstrained – East	183.7	197.3	381.0	100%
CE policy led – Cambridge/South Cambs	16.3	23.1	38.3	10.1%
CE policy led – Cambridgeshire	19.6	18.7	39.4	10.3%
CE unconstrained - East	183.7	197.3	381.0	100%

Source: OE; CE; SQW Consulting Note: OE – Oxford Economic 2010s; CE – Cambridge Econometrics winter 2009; There is only one CE projection for employment in the East of England region

A.20 The table shows that the OE baseline projection of employment in the region as a whole is marginally higher than the earlier CE projection of jobs in the East of England for the period 2009/31 as a whole, although the phasing of growth between the two periods 2009/21 and 2021/31 is very different. OE anticipate significantly higher job growth in the first part of the period than CE.

A.21 The OE projections of employment for both Cambridgeshire as a whole and the combined Cambridge/South Cambridgeshire sub-area are significantly higher than both the CE 'trend', (i.e. 'unconstrained') and 'policy-led' forecasts. The OE projections give Cambridge/South Cambs just over 15% of the region's anticipated job growth 2009/31 and give Cambridgeshire just 20% of the expected job growth over this period. In contrast the CE trend projections give Cambridge/South Cambs 8.6% of the region's growth and Cambridgeshire 12.5%. The 'policy-led' forecasts produced by CE give Cambridge/South Cambs a higher 10.1% of the region's growth – just below the county's total share of just 10.3%. (This is because some districts are expected to lose jobs as population growth reduces significantly).

Comparing OE & CE job forecasts – high tech

A.22 Different industry sector breakdowns adopted by OE and CE make it difficult to compare forecasts of high tech and knowledge-economy jobs. There are even difficulties in reconciling data for the base year 2001, primarily because self-employment by industry sector has had to be estimated in the absence of detailed 2001 Census data.

A.23 The only sectors where definitions are consistent are communications, computing services and education. The comparison shows significant differences in anticipated employment totals and rates of growth:

Table A-7: Baseline job projections & policy-led job forecasts for key high tech & knowledge-economy industry sectors, 2009/31 '000 (% of region)

Forecast/sector	Cambridge/South Cambs	Cambridgeshire	East of England
OE baseline – communications	- 0.7	- 0.7	+ 0.5
OE baseline – computer services	+ 5.1 (30.2%)	+ 5.9 (34.9%)	+ 16.9
OE baseline - education	+ 7.9 (43.2%)	+ 8.3 (45.4%)	+ 18.3
OE baseline total	+ 60 (15.2%)	+ 81.2 (20.5%)	+ 395.4
CE policy led – communications	- 0.2	- 0.3	- 2.4
CE policy led – computer services	+ 8.3 (16.7%)	+ 10.9 (21.9%)	+ 49.8
CE policy led - education	+ 2.8 (14%)	+ 1.0 (5%)	+ 20
CE policy led total	+ 38.3 (10%)	+ 39.4 (10.3%)	+ 381.1

Source: CE, OE

Possible explanation of differences

A.24 OE comment that the 2008/09 recession has not followed historic trends. In particular, although there has been a significant drop in productivity and GVA, employment levels have been much less affected. The employment projections relate to total number of jobs, not hours

worked or 'full-time equivalents'. There is evidence that some workers and employers have reacted to reduced demand for goods and services by reducing hours worked per person or even by reducing pay rates.

A.25 Consequently when OE looked at the evidence relating to employment levels in early and mid 2009 they concluded that jobs had held up relatively well. The original suite of projections published concerning the recession and its impact on jobs were more pessimistic and these have been revised upwards.

A.26 In contrast the CE trend and policy led forecasts were produced early on as the recession took hold in the autumn of 2008. At that stage there was no evidence that one response would be to adjust hours worked downwards, rather than shed jobs completely. Consequently the November 2008 projections are downbeat.

Employment (jobs) and 'workplace population'

A.27 The OE employment projections have also been expressed as 'workplace population', taking into account a potential increase in the numbers and percentage of the population with at least two jobs. The Cambridgeshire employment growth projection 2009/31 outlined above is 81,200, with the Cambridge/South Cambridgeshire share 60,000. However, expressed as workplace population (i.e. the main job only), OE project increases for Cambridgeshire of 72,100 and for Cambridge/South Cambridgeshire alone of 52,600. The comparable figures for the Eastern region 2009/31 are: employment (jobs): 395,500 and workplace population a lower 341,800. This distinction is important when looking at the likely jobs/labour supply balance in future years.

Population and Labour Supply

Oxford Economics (OE) projections

A.28 Table A-8 provides an overview of the population growth assumed by OE in their 'baseline' March 2010 suite of projections for the Cambridge area, Cambridgeshire and the East of England. There is no specific labour supply figure but there is an estimate of 'employed residents' for each local authority which is adopted as a broad proxy.

Table A-8: Population projections, 2001 to 2031, '000

Element/area	2001	2009	2021	2031	2009/21	2021/31
Population – Cambridge/South Cambs	240.4	265	310.8	346.1	45.8	35.2
Population – Cambridgeshire	554.7	607.5	688	750.4	80.5	62.5
Population – East	5,400.5	5,762.1	6,256.7	6,642.1	494.5	385.4
Population of working age (16-64m/59f) – Cambridge/South Cambs	159.4	174.4	200.3	214.8	25.9	14.5

Element/area	2001	2009	2021	2031	2009/21	2021/31
Population of working age (16-64m/59f) – Cambridgeshire	352.3	381.1	423.4	445.2	42.2	21.9
Population of working age (16-64m/59f) – East	3,293.6	3,487.3	3,716.4	3,805.7	229.1	89.3
Employed residents – Cambridge/South Cambs	118.3	124.6	148.7	163.2	24.1	14.6
Employed residents – Cambridgeshire	275.5	297.3	339.7	362.5	42.4	22.8
Employed residents - East	2,579.1	2,750	3,009.8	3,112	259.9	102.2

Source: OE March 2010

A.29 The projected increase in employed residents should be compared with the projected growth in 'workplace population' to assess whether or not net commuting is likely to change. For Cambridge/South Cambridgeshire the increase of employed residents 2009/31 is 38,700. As discussed above, the increase in workplace population is projected to be 52,600. This suggests that net in-commuting to the two districts could increase by 14,000 between 2009 and 2031.

A.30 At a county level the projected increase in workplace population of 72,100 is slightly higher than the projected increase in numbers of employed residents, 65,200. Consequently the projection suggests a modest increase in net in-commuting to Cambridgeshire. At a regional level the projected increase in employed residents exceeds the projected increase in workplace population: 362,100 as compared with 341,800. So the East of England could experience a small increase in net out-commuting.

Cambridgeshire County Council population forecasts

A.31 Cambridgeshire County Council (CCC) produces population estimates and forecasts and the 2008-based suite incorporates housing targets derived from the adopted East of England Plan, which provides the framework for local planning policies throughout the county. Post 2021 it is assumed that house-building continues at similar annual rates to the RSS, although Cambridge City's share of that growth is transferred to South Cambridgeshire.

A.32 The following table shows population, population of usual working age and labour force forecasts for Cambridge City and South Cambridgeshire combined and Cambridgeshire county for 2001, 2009, 2021 and 2031[45].

[45] It is understood that these forecasts were produced before Marshalls announced that they were unlikely to move their aerospace operations out of Cambridge. The Cambridge East development is unlikely to go ahead as originally proposed

Table A-9: Population projections Cambridge City/South Cambridgeshire and Cambridgeshire, 2001 to 2031, '000

Element/area	2001	2009	2021	2031	2009/21	2021/31
Total population – Cambridge/South Cambs	240.5	262.7	325.6	368.2	62.9	42.6
Total population – Cambridgeshire	552.1	599.2	673.6	739.5	74.4	65.9
Population of working age (16-64m/59f) – Cambridge/South Cambs	162.5	174.9	203.7	217.4	28.8	13.8
Population of working age (16-64m/59f) – Cambridgeshire	354.1	378.5	399.6	410.6	21.1	11.0
Labour supply – Cambridge/South Cambs	123.8	135.8	162.5	175.3	26.7	12.8
Labour supply – Cambridgeshire	286	309.7	338.7	351.4	29	12.7

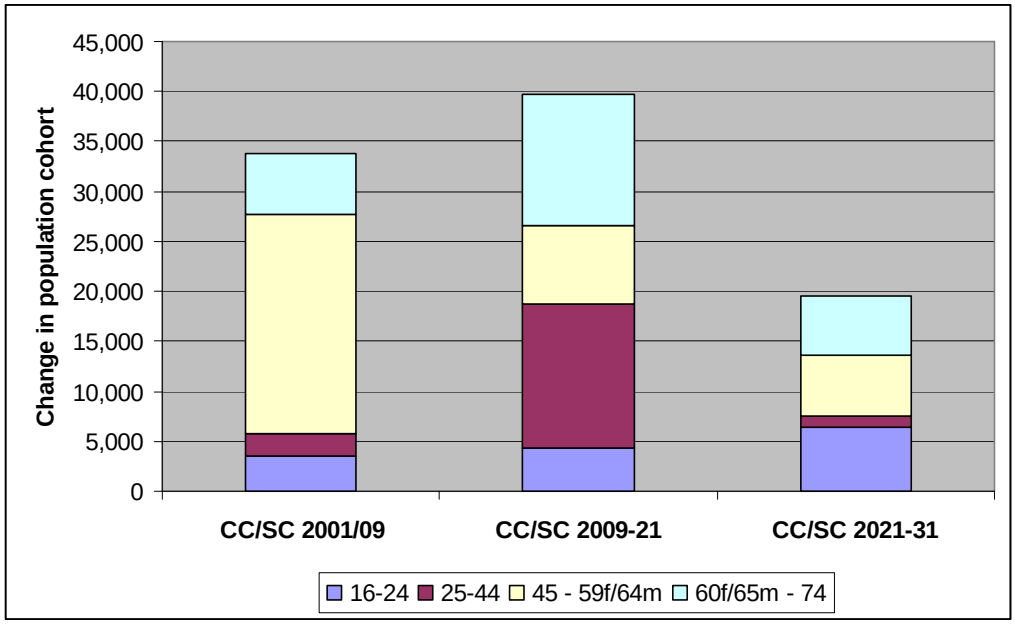
Source: Cambridgeshire County Council Research Group

A.33 The table shows that Cambridge City and South Cambridgeshire together are expected to account for the bulk of Cambridgeshire's population growth, particularly in the period 2009 to 2021, reflecting the high share of new house building in the county currently proposed.

A.34 Over the period of the forecasts the state pension age for women rises from 60 to 65; that for men now looks likely to rise from 65 to 66 in 2016 and the pension age may increase beyond 65 for both men and women in the forecast timespan. This will have an important impact on the future labour supply. The labour supply forecast included in the table does not take full account of changes in state pension age, nor does it reflect changes in pension funding. It is based on economic activity (EA) rates developed by ONS in early 2003, at a time when final salary pension schemes were relatively common in the private as well as the public sector. The context has now changed markedly and it is to be expected that there will be significant increases in EA rates for both men and women aged 50 to 70 over the forecast period.

A.35 It is valuable to break the population forecasts down by age bands to examine the profile of the labour supply and how this changes over time. Figure A-1 covers the Cambridge sub-area alone (i.e. Cambridge City and South Cambridgeshire combined). Figure A-2 looks at Cambridgeshire county as a whole. The age groups selected are: 16 to 24, 25 to 44, 45 to the current state pension age and pension age to 74. The last age group is the one where there my be significant changes in economic activity over the next ten years.

Figure A-1: Change in potential 'working' population by age band, Cambridge City & South Cambridgeshire, 2001-09, 2009-21, 2021-31



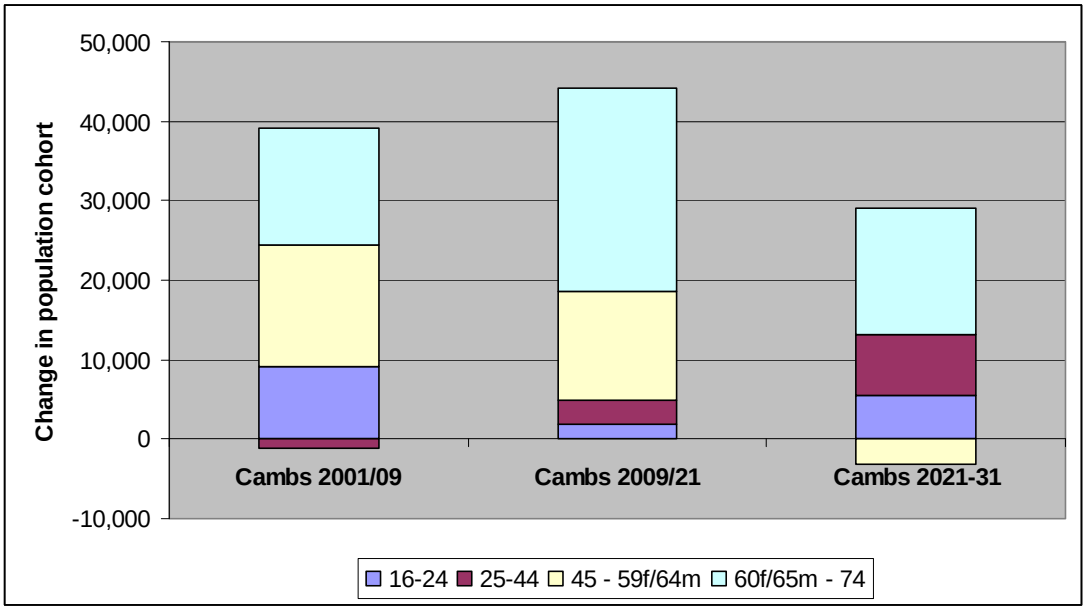
Source: Cambridgeshire County Council Research Group

A.36 Figure A-1 shows that in the period 2001-09 the bulk of growth of the sub-area's 'potential working age' population has consisted of people aged 45 to pension age. The age group 25-44 has increased only modestly, with higher growth in numbers of people aged from pension age to 74.

A.37 Over the medium term, 2009 to 2021, the profile changes significantly. The acceleration of house building proposed brings in relatively younger migrants aged 25-44 to the area. However, the 'baby boom' of post WWII Britain underpins a substantial increase in people aged 60f/65m to 74. Of the total increase of just under 40,000 people of 'potential working age' around 13,000 are forecast to be over the current state pension age.

A.38 In the longer term period 2021-31 the age profile again changes as population growth rates decline, reflecting the fact that Cambridge City is by then considered to be 'built out'. Higher birth rates being experienced in the period 2008 on support an increase in the numbers of young adults aged 16 to 24. There is a squeeze on the 25 to 44 year old group, which grows only slightly. The majority of the increase is in age groups 45 to 74.

Figure A-2: Change in potential 'working' population by age bands, Cambridgeshire, 2001-09, 2009-21, 2021-31



Source: Cambridgeshire County Council Research Group

A.39 Figure A-2 shows that, at a county level, the profiles of changes in the population of 'potential working age' are significantly different from the smaller Cambridge sub-area. The oldest age group, pension age to 74, accounts for a significant proportion of the increase in all three time periods. The 25 to 44 year old group contributes only a very small share of growth in the county as a whole; this implies that districts outside the Cambridge sub-area will experience a net loss of people aged 25 to 44 during the period 2009 to 2021.

Annex B: Quantifying the scale of the high tech community

Introduction

B.1 This Annex presents key data relating to the high tech 'community' in Cambridgeshire. It covers employment and numbers of enterprises, broken down by industry sector and local authority district. The database underpinning the analysis is maintained by Cambridgeshire County Council's Research Group, with a full update every two years. As well as a summary of the relevant stocks of jobs and businesses in 2006 and 2008, we also examine the components of change arising from 'new', 'lost' and 'in situ' high tech employers. Finally, we distil the longer-term context, summarising high tech employment change in Cambridgeshire over the period 1991 to 2008.

Defining the 'high tech community'[46]

B.2 It is important to appreciate that although the majority of enterprises covered are classified as 'high tech' on account of their industry sector, such as computer software, electronics engineering or telecommunications, there are a significant number of specialist employers which would be omitted if 'high tech' was strictly restricted by sector. In the case of Cambridgeshire, scientific research departments at Cambridge University are important employers within the wider high tech community. As defined here, the 'community' also includes technical testing and consultancy businesses, specialist precision engineers, wholesalers supporting high tech manufacturers and business support companies.

Overview 2006 to 2008

B.3 Table B-1, together with Figures B-1 and B-2, presents an overview of the number of businesses and employment in both 2006 and 2008 by district. It can be seen that total employment amounted to around 48,100 jobs in 2008, an increase of 3,700 (8.4%) as compared with 2006. However, the number of businesses reduced slightly by 41 (2.9%) from 1,420 in 2006 to 1,379 in 2008.

Table B-1: Employment & businesses in the High tech 'community', Cambridgeshire, 2006-08

Element	Cambridge City	East Cambs	Fenland	Huntingdon-shire	South Cambs	Cambridge-shire
2006 Jobs	16,518	1,479	787	7,676	17,914	44,374
2008 Jobs	16,577	1,630	849	8,868	20,175	48,099
2006/08 Jobs	59	151	62	1,192	2,261	3,725
% change in jobs 2006 to 2008	0.4%	10.2%	7.9%	15.5%	12.6%	8.4%
2006 Businesses	461	118	45	304	492	1,420

[46] Note that in quantifying the high tech community – and drawing on the database developed and maintained by the Research Group at Cambridgeshire County Council – the definition includes Role 1 and key elements of Role 2 as discussed within this report

Element	Cambridge City	East Cambs	Fenland	Huntingdon-shire	South Cambs	Cambridge-shire
2008 Businesses	410	110	49	310	500	1,379
2006/08 Businesses	-51	-8	4	6	8	-41
% change in businesses 2006 to 2008	-11.1%	-6.8%	8.9%	2.0%	1.6%	-2.9%

Source: Cambridgeshire County Council Research Group

B.4 There was significant growth in *high tech employment* across all districts apart from Cambridge City, where numbers of jobs remained little changed in 2008 as compared with 2006. However, as we demonstrate later, Cambridge City effectively 'exported' a significant number of firms and jobs to other parts of the county between 2006 and 2008, most notably to South Cambridgeshire. The inference then is that Cambridge City effectively 'incubates' high tech firms and employment for a wider area.

B.5 The data demonstrate further that Cambridge City and South Cambridgeshire retain their importance in terms of the numbers of high tech jobs which are located in them. Huntingdonshire has become relatively more important and by 2008, it accounted for almost 9,000 jobs, just over 18% of the county's total.

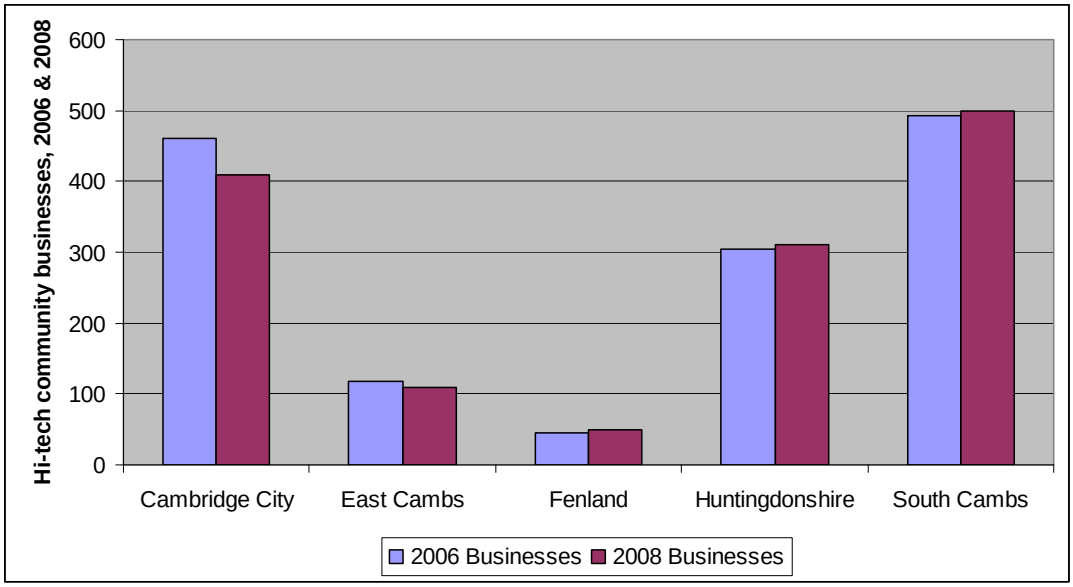
Figure B-1: Employment in High tech community businesses, Cambridgeshire districts, 2006 & 2008

Source: Cambridgeshire County Council Research Group

B.6 The profile of *high tech businesses* by location in both 2006 and 2008 is shown in Figure B-2. South Cambridgeshire accounts for around 500 businesses in both years, marginally more than Cambridge City. Huntingdonshire is also relatively important, with over 300 high tech businesses identified in both 2006 and 2008. Both East Cambridgeshire and Fenland account for higher shares of the county's high tech businesses than of the county's high tech jobs.

B.7 Cambridge City experienced the biggest absolute and percentage reduction in high tech businesses between 2006 and 2008. The breakdown is examined in more detail later.

Figure B-2: Businesses in the High tech community, Cambridgeshire districts, 2006 & 2008



Source: Cambridgeshire County Council Research Group

Employment by industry sector 2008

B.8 Table B-2 provides a breakdown of employment in 2008 by both main industry sector and local authority district within Cambridgeshire.

Table B-2: Employment in the High tech 'community' in Cambridgeshire, 2008, by industry sector

Industry sector	Cambridge City	East Cambs	Fenland	Huntingdonshire	South Cambs	Cambridgeshire	% of all
Metal alloys etc	0	0	0	5	3	8	0.0%
Scientific glass	16	15	0	0	10	41	0.1%
Chemicals	263	93	38	155	2,321	2,870	6.0%
Metal finishing	0	0	0	0	30	30	0.1%
Specialist mechanical engineering	176	233	234	349	130	1,122	2.3%
Computer & office hardware	139	20	0	586	1,079	1,824	3.8%
Electronic engineering	702	246	13	1,414	1,763	4,138	8.6%
Aero engineering	12	0	0	63	1,585	1,660	3.5%
Instrument engineering	506	212	0	921	928	2,567	5.3%
Publishing	41	0	20	223	9	293	0.6%
Other manufacture	0	0	0	212	9	221	0.5%
Specialist construction	0	3	0	15	25	43	0.1%
Specialist wholesaling	272	114	229	1,002	572	2,189	4.6%

Industry sector	Cambridge City	East Cambs	Fenland	Huntingdonshire	South Cambs	Cambridgeshire	% of all
Specialist retailing	122	55	10	409	144	740	1.5%
Telecommunications	833	17	15	153	631	1,649	3.4%
Technical services	324	299	223	519	1,483	2,848	5.9%
Computer services	3,469	163	49	1,027	2,367	7,075	14.7%
Other business services	312	7	10	43	159	531	1.1%
Education & training	5,036	8	8	337	22	5,411	11.2%
Research & development	4,255	133	0	1,422	6,488	12,298	25.6%
Other services	99	12	0	13	417	541	1.1%
Total	**16,577**	**1,630**	**849**	**8,868**	**20,175**	**48,099**	**100.0%**
% of all	**34.5%**	**3.4%**	**1.8%**	**18.4%**	**41.9%**	**100.0%**	
Manufacturing/production	*1,855*	*822*	*305*	*3,943*	*7,892*	*14,817*	*30.8%*
Services	*14,722*	*808*	*544*	*4,925*	*12,283*	*33,282*	69.2%

Source: Cambridgeshire County Council Research Group

B.9 The table shows that South Cambridgeshire contributes more jobs than any other district, 20,175 around 42% of the total. Cambridge City accounts for 16,577 jobs, just over a third of the total and Huntingdonshire 8,868 jobs, just under one-fifth of the total. The contributions from East Cambridgeshire (1,630 jobs, 3.4%) and Fenland (849 jobs, 1.8%) are much smaller.

B.10 In terms of industry sectors, R&D (research & development) employs around 12,300 people, over one-quarter of the total. Computer services accounts for 7,075 jobs (just under 15%) and higher education provides over 5,400 jobs (11.2%). Technical services, including consultancy, contributed more than 2,800 jobs (5.9%). Services collectively accounted for over 69% of the county's high tech employment in 2008.

B.11 Electronics engineering is the biggest manufacturing sector, contributing more than 4,100 jobs in the county as a whole. Other significant manufacturing sectors include chemicals, with 2,870 jobs (6%) and instrument engineering, with around 2,600 jobs (5.3%). Manufacturing & production employment accounted for just under 31% of the total high tech community jobs.

B.12 The 14,800 high tech jobs in manufacturing/production are concentrated in South Cambridgeshire (almost 7,900) and in Huntingdonshire, with around 3,950. Cambridge City contributed fewer than 1,900 manufacturing high tech jobs in 2008. In contrast, Cambridge City accounted for over 14,700 high tech services jobs, 44% of the Cambridgeshire total, ahead of South Cambridgeshire (12,280) and Huntingdonshire, (around 4,900).

Employment by industry sector 2006

B.13 The comparable picture for 2006 is given in Table B-3.

Table B-3: Employment in High tech 'community' in Cambridgeshire 2006 by industry sector

Industry sector	Cambridge City	East Cambs	Fenland	Hunting donshire	South Cambs	Cambridge-shire	% of all
Metal alloys etc	0	0	0	17	3	20	0.0%
Scientific glass	25	8	0	0	14	47	0.1%
Chemicals	13	167	103	154	2,212	2,649	6.0%
Metal finishing	0	0	0	0	30	30	0.1%
Specialist mechanical engineering	113	167	231	306	100	917	2.1%
Computer & office hardware	204	20	0	478	1,087	1,789	4.0%
Electronic engineering	920	182	11	1,501	1,471	4,085	9.2%
Aero engineering	0	0	0	64	1,613	1,677	3.8%
Instrument engineering	509	127	0	962	986	2,584	5.8%
Publishing	39	0	30	223	10	302	0.7%
Other manufacture	7	0	0	100	9	116	0.1%
Specialist construction	0	3	0	7	29	39	0.3%
Specialist wholesaling	177	63	202	888	517	1,847	4.2%
Specialist retailing	162	30	10	322	146	670	1.5%
Telecommunications	837	17	15	145	784	1,798	4.1%
Technical services	380	241	116	545	1,337	2,619	5.9%
Computer services	3,547	285	51	823	2,246	6,952	15.7%
Other business services	277	20	10	32	129	468	1.1%
Education & training	4,861	6	8	17	23	4,915	11.1%
Research & development	4,364	128	0	1,078	4,814	10,384	23.4%
Other services	83	15	0	14	354	466	1.1%
Total	**16,518**	**1,479**	**787**	**7,676**	**17,914**	**44,374**	**100.0%**
% of all	**37.2%**	**3.3%**	**1.8%**	**17.3%**	**40.4%**	**100.0%**	**0.0%**
Manufacturing/production	*1,830*	*674*	*375*	*3,812*	*7,564*	*14,255*	*32.1%*
Services	*14,688*	*805*	*412*	*3,864*	*10,350*	*30,119*	*67.9%*

Source: Cambridgeshire County Council Research Group

B.14 The table shows the breakdown of 44,374 high tech jobs by industry sector and district. As compared with 2008, Cambridge City contributed a higher share of jobs.

Employment change 2006 to 2008

B.15 Table B-4 provides a summary of changes in high tech employment 2006-2008 by industry sector and location of jobs.

Table B-4: Change in employment in high tech community in Cambridgeshire, 2006 to 2008, industry sector

Industry sector	Cambridge City	East Cambs	Fenland	Huntingdonshire	South Cambs	Cambridge-shire	% of all
Metal alloys etc	0	0	0	-12	0	-12	-0.3%
Scientific glass	-9	7	0	0	-4	-6	-0.2%
Chemicals	250	-74	-65	1	109	221	5.9%
Metal finishing	0	0	0	0	0	0	0.0%
Specialist mechanical engineering	63	66	3	43	30	205	5.5%
Computer & office hardware	-65	0	0	108	-8	35	0.9%
Electronic engineering	-218	64	2	-87	292	53	1.4%
Aero engineering	12	0	0	-1	-28	-17	-0.5%
Instrument engineering	-3	85	0	-41	-58	-17	-0.5%
Publishing	2	0	-10	0	-1	-9	-0.2%
Other manufacture	-7	0	0	112	0	105	2.8%
Specialist construction	0	0	0	8	-4	4	0.1%
Specialist wholesaling	95	51	27	114	55	342	9.2%
Specialist retailing	-40	25	0	87	-2	70	1.9%
Telecommunications	-4	0	0	8	-153	-149	-4.0%
Technical services	-56	58	107	-26	146	229	6.1%
Computer services	-78	-122	-2	204	121	123	3.3%
Other business services	35	-13	0	11	30	63	1.7%
Education & training	175	2	0	320	-1	496	13.3%
Research & development	-109	5	0	344	1,674	1,914	51.4%
Other services	16	-3	0	-1	63	75	2.0%
Total	**59**	**151**	**62**	**1,192**	**2,261**	**3,725**	**100.0%**
% of all	**1.6%**	**4.1%**	**1.7%**	**32.0%**	**60.7%**	**100.0%**	
Manufacturing/production	*25*	*148*	*-70*	*131*	*328*	*562*	*15.1%*
Services	*34*	*3*	*132*	*1,061*	*1,933*	*3,163*	*84.9%*

Source: Cambridgeshire County Council Research Group

B.16 The table shows that South Cambridgeshire contributed over 60% of the net increase in the county's high tech employment between 2006 and 2008 with Huntingdonshire accounting for a further 32%. In contrast, Cambridge City accounted for very little jobs growth.

B.17 The manufacturing sectors to experience a significant increase in high tech employment were chemicals, (up by over 220, or 5.9%) and specialist mechanical engineering, (up by 205 or 5.5%). Other changes were marginal at a county level – although a number of relocations

resulted in bigger relative changes at a district level. For example, Cambridge City and Huntingdonshire both experienced a reduction in electronic engineering employment whereas South Cambridgeshire experienced an increase. There were no major losses of high tech manufacturing employment in other industry sectors in the county. Overall, total high tech manufacturing employment in Cambridgeshire increased by 560 jobs, or 15% of the net growth in high tech community jobs. More than half of the net growth took place in South Cambridgeshire, (around 330 jobs). However, both East Cambridgeshire, (with an additional 150 jobs) and Huntingdonshire (with an additional 130) were also important contributors. Only Fenland recorded a net loss of high tech manufacturing employment (-70 jobs).

B.18 The 'services' sectors were dominated by an increase in employment in Research & Development , increasing by over 1,900 jobs at the county level; most of these were in South Cambridgeshire (around 1,675), with Huntingdonshire contributing over 340. Education & training increased by just under 500 jobs, with Huntingdonshire contributing the lion's share, 320 and Cambridge City a further 175 jobs. Employment in specialist wholesaling businesses increased by over 340 jobs in Cambridgeshire as a whole; again Huntingdonshire (114) and Cambridge City (95) were the main beneficiaries. Technical services employment increased by around 230 jobs at a county level, with a more mixed profile across districts. Both South Cambridgeshire and Fenland recorded increases of over 100 jobs; in contrast both Cambridge City and Huntingdonshire reported a small reduction in jobs.

B.19 The wide-ranging computer services industry expanded at a county level by 123 jobs, or 3.3%. This is a relatively modest growth in one of the sectors identified for large increases in employment by economic forecasters. In fact, both Cambridge City and East Cambridgeshire recorded a reduction in employment and only Huntingdonshire and South Cambridgeshire reported an increase in jobs in the computer services sector.

B.20 Only one services sector recorded a reduction in high tech employment at a county level, telecommunications. The loss of around 150 jobs was concentrated in South Cambridgeshire.

B.21 The high tech services sector overall recorded an increase of over 3,160 jobs, around 85% of the net change in all high tech employment in the county between 2006 and 2008. South Cambridgeshire, (around 1,930 jobs) and Huntingdonshire (around 1,060) accounted for the majority of the net increase.

High tech businesses 2008

B.22 Tables B-5 to B-7 provide a summary of the breakdown of high tech businesses by industry sector and local authority. Table B-5 shows the situation in 2008. In total, 1,379 separate businesses were identified. Of these 500 were in South Cambridgeshire (just over 36%), 410 in Cambridge City (just under 30%) and 310 were in Huntingdonshire (around 23%). East Cambridgeshire accounted for 110 businesses and Fenland for 49.

Table B-5: High tech 'community' businesses in Cambridgeshire by industry sector 2008

Industry sector	Cambridge City	East Cambs	Fenland	Huntingdonshire	South Cambs	Cambridge-shire	% of all
Metal alloys etc	0	0	0	1	1	2	0.1%

Industry sector	Cambridge City	East Cambs	Fenland	Huntingdonshire	South Cambs	Cambridge-shire	% of all
Scientific glass	1	1	0	0	1	3	0.2%
Chemicals	3	6	2	4	17	32	2.3%
Metal finishing	0	0	0	0	1	1	0.1%
Specialist mechanical engineering	2	6	3	9	6	26	1.9%
Computer & office hardware	4	3	0	9	17	33	2.4%
Electronic engineering	18	9	3	45	50	125	9.1%
Aero engineering	1	0	0	4	5	10	0.7%
Instrument engineering	18	10	0	23	35	86	6.2%
Publishing	5	0	1	3	3	12	0.9%
Other manufacture	0	0	0	2	1	3	0.2%
Specialist construction	0	1	0	3	1	5	0.4%
Specialist wholesaling	21	9	8	43	28	109	7.9%
Specialist retailing	15	4	4	12	10	45	3.3%
Telecommunications	10	3	1	9	17	40	2.9%
Technical services	23	11	4	17	48	103	7.5%
Computer services	158	24	20	96	131	429	31.1%
Other business services	20	5	2	7	18	52	3.8%
Education & training	28	4	1	5	5	43	3.1%
Research & development	76	13	0	15	99	203	14.7%
Other services	7	1	0	3	6	17	1.2%
Total	**410**	**110**	**49**	**310**	**500**	**1,379**	**100.0%**
% of all	**29.7%**	**8.0%**	**3.6%**	**22.5%**	**36.3%**	**100.0%**	
Manufacturing/production	*52*	*36*	*9*	*103*	*138*	*338*	24.5%
Services	*358*	*74*	*40*	*207*	*362*	*1041*	75.5%

Source: Cambridgeshire County Council Research Group

B.23 Computer services accounted for 429 businesses, over 31%. The next largest sector in terms of enterprises was R&D, with 203 businesses. Three further sectors each accounted for over 100 businesses: electronic engineering (125), specialist wholesaling (109) and technical services (103). Instrument engineering, with 86 businesses, was the next largest sector in terms of numbers of enterprises.

B.24 Collectively, there were 338 high tech manufacturing businesses recorded in 2008, just under 25% of the total. As Table B-2 shows, together they accounted for around 31% of high tech employment. The 1,041 high tech services enterprises accounted for just over 75% of businesses but a slightly lower 69% of employment.

High tech businesses 2006

B.25 Table B-6 provides an overview of high tech businesses by location and industry sector in 2006.

Table B-6: High tech 'community' businesses in Cambridgeshire by industry sector 2006

Industry sector	Cambridge City	East Cambs	Fenland	Huntingdonshire	South Cambs	Cambridge-shire	% of all
Metal alloys etc	0	0	0	2	1	3	0.2%
Scientific glass	1	1	0	0	1	3	0.2%
Chemicals	2	5	2	3	19	31	2.2%
Metal finishing	0	0	0	0	1	1	0.1%
Specialist mechanical engineering	3	4	3	9	4	23	1.6%
Computer & office hardware	9	3	0	8	17	37	2.6%
Electronic engineering	24	11	2	52	47	136	9.6%
Aero engineering	0	0	0	3	5	8	0.6%
Instrument engineering	21	8	0	24	38	91	6.4%
Publishing	4	0	1	3	4	12	0.8%
Other manufacture	1	0	0	1	1	3	0.2%
Specialist construction	0	1	0	2	2	5	0.4%
Specialist wholesaling	21	11	4	41	33	110	7.7%
Specialist retailing	21	3	5	10	9	48	3.4%
Telecommunications	12	3	1	6	13	35	2.5%
Technical services	27	13	3	16	41	100	7.0%
Computer services	177	31	21	94	130	453	31.9%
Other business services	18	7	2	5	18	50	3.5%
Education & training	28	3	1	5	6	43	3.0%
Research & development	87	13	0	16	96	212	14.9%
Other services	5	1	0	4	6	16	1.1%
Total	461	118	45	304	492	1,420	100.0%
% of all	32.5%	8.3%	3.2%	21.4%	34.6%	100.0%	
Manufacturing/production	*65*	*33*	*8*	*107*	*140*	*353*	*24.9%*
Services	*396*	*85*	*37*	*197*	*352*	*1067*	*75.1%*

Source: Cambridgeshire County Council Research Group

B.26 The profile is very similar to 2008, with computer services alone accounting for around 32% of all high tech enterprises.

Change in businesses 2006 to 2008

B.27 Table B-7 summarises the net change in number of businesses between 2006 and 2008, again broken down by industry sector and district within Cambridgeshire.

Table B-7: Net change in high tech businesses in Cambridgeshire by industry sector, 2006 to 2008

Industry sector	Cambridge City	East Cambs	Fenland	Hunting donshire	South Cambs	Cambridge-shire
Metal alloys etc	0	0	0	-1	0	-1
Scientific glass	0	0	0	0	0	0
Chemicals	1	1	0	1	-2	1
Metal finishing	0	0	0	0	0	0
Specialist mechanical engineering	-1	2	0	0	2	3
Computer & office hardware	-5	0	0	1	0	-4
Electronic engineering	-6	-2	1	-7	3	-11
Aero engineering	1	0	0	1	0	2
Instrument engineering	-3	2	0	-1	-3	-5
Publishing	1	0	0	0	-1	0
Other manufacture	-1	0	0	1	0	0
Specialist construction	0	0	0	1	-1	0
Specialist wholesaling	0	-2	4	2	-5	-1
Specialist retailing	-6	1	-1	2	1	-3
Telecommunications	-2	0	0	3	4	5
Technical services	-4	-2	1	1	7	3
Computer services	-19	-7	-1	2	1	-24
Other business services	2	-2	0	2	0	2
Education & training	0	1	0	0	-1	0
Research & development	-11	0	0	-1	3	-9
Other services	2	0	0	-1	0	1
Total	**-51**	**-8**	**4**	**6**	**8**	**-41**
Manufacturing/production	*-13*	*3*	*1*	*-4*	*-2*	*-15*
Services	*-38*	*-11*	*3*	*10*	*10*	*-26*

Source: Cambridgeshire County Council Research Group

B.28 Overall the county experienced a net loss of 41 high tech businesses; of these 15 were in manufacturing/production sectors and 26 were in services. Cambridge City experienced the highest loss of enterprises (although some moved elsewhere in and around Cambridgeshire). The computer services industry, which is characterised by a large number of very small businesses, contributed 24 of the total net loss countywide, most of which were from

Cambridge. Electronics engineering recorded a net loss of 11 businesses and R&D a net loss of 9 enterprises.

Components of employment change 2006 to 2008

B.29 This section looks at the components of changes in high tech employment between 2006 and 2008, taking account of:

- 'new' businesses within each district; these can be start-ups, businesses forming as a new subsidiary or spin-off or moving in from outside the district – previously based either within or outside Cambridgeshire
- lost employment due to 'closing' businesses within each district. Enterprises may have merged, become dormant without staff, have closed down completely or have moved elsewhere – either within Cambridgeshire or outside the county
- net employment change in businesses which were in situ in both 2006 and 2008.

B.30 Table B-8 gives a summary. This provides a useful insight into what appears from Tables B-1 to B-3 to be a rather poor performance by Cambridge City, with total high tech employment increasing by just 59 between 2006 and 2008. The table shows that there was a significant net loss of over 1,770 jobs due to 'closures' locally between 2006 and 2008. However, a number of businesses relocated, especially to South Cambridgeshire[47]. High tech businesses which were 'in situ' in Cambridge in both 2006 and 2008 actually increased employment by over 1,100.

Table B-8: High tech employment: Stocks 2006 and 2008 and components of change 2006-08

Stock/ Component of change	Cambridge City	East Cambs	Fenland	Huntingdonshire	South Cambs	Cambridge-shire
2006 employment	16,518	1,479	787	7,676	17,914	44,374
'New' employment	723	216	35	665	1,862	(3,501)#
'Lost' employment	- 1,772	- 173	- 7	- 315	- 1,354	(-3,621)#
Net change in 'in situ' employment	1,108	108	34	842	1,753	n/a #
Total change in employment 2008-2008	59	151	62	1,192	2,261	3,725
2008 employment	16,577	1,630	849	8,868	20,175	48,099

Source: Cambridgeshire County Council Research Group Note: # the true county figure will be less that the sum of the districts because businesses can move between districts – i.e. a 'new' business in one district will be a 'lost' business in another

Components of change in businesses 2006 to 2008

B.31 Table B-9 provides a summary of changes in numbers of businesses by district, 2006 to 2008.

[47] It should be noted that locations such as the Cambridge Science Park are technically in South Cambridgeshire. Hence a move of a couple of miles from an address in the administrative district of Cambridge will technically be counted as a 'loss' to Cambridge itself

Table B-9: High tech community - businesses: Stocks 2006 and 2008 and components of change 2006-08

Stock/ Component of change	Cambridge City	East Cambs	Fenland	Huntingd onshire	South Cambs	Cambridge -shire
2006 businesses	461	118	45	304	492	1,420
'New' businesses	41	14	7	46	80	(188)#
'Lost' or closed businesses	- 92	- 22	- 3	- 40	- 72	(229)#
Total change in businesses 2008-2008	- 51	- 8	4	6	8	- 41
2008 businesses	410	110	49	310	500	1,379

Source: Cambridgeshire County Council Research Group Note# the county figure is not the sum of the district figures because businesses can move between districts

B.32 The table shows that there was a significant element of 'churn' at a district level between 2006 and 2008. In South Cambridgeshire the gross numbers of both 'new' and 'closed' businesses (80 and 72 respectively) each amounted to almost 20% of the 2006 stock of high tech businesses. Cambridge City saw twice as many businesses close or move away than start up – 92 lost as compared with 42 'new'.

B.33 This analysis indicates that the high tech community is relatively dynamic in terms of business mobility. In addition to the gross 'moves' outlined in Table B-9 there will also have been businesses who started and closed between the 'snap-shots' of the start and end dates; there will also be businesses who moved location within a district as these have not been captured in this analysis.

Key industry sectors – 'new' and 'lost' businesses

B.34 Table B-10 looks in more detail at both 'new' and 'lost' businesses in the two key sectors of computer services and Research & Development (R&D). For the 'lost' businesses it shows 2006 employment levels; for 'new' businesses the recorded employment relates to 2008.

Table B-10: Jobs and enterprises in computer services and Research & Development industry sectors: lost and new, 2006 to 2008, Cambridgeshire districts

Industry sector/unit	Cambridge City	East Cambs	Fenland	Huntingd onshire	South Cambs	Cambs county
Computer services – lost jobs	629	111	2	50	181	973
Computer services – new jobs	228	16	1	204	274	623
Computer services – lost ents.	34	9	1	16	23	83
Computer services – new ents.	15	2	1	10	24	60
R&D – lost jobs	453	9	0	10	221	693
R&D – new jobs	79	8	0	17	939	1,043
R&D – lost enterprises	18	1	0	4	13	36
R&D – new enterprises	7	1	0	3	16	27

Source: Cambridgeshire County Council Research Group

B.35 Computer services accounted for 973 jobs and 83 businesses 'lost' between 2006 and 2008 in the county as a whole. The same industry accounted for a lower 623 'new' jobs, provided by 60 enterprises, over the same two year period. Cambridge City accounted for a large share (almost two-thirds) of the 'lost' jobs, 629, but a somewhat smaller share of the lost enterprises, (34 of 83, or 41%). In contrast, Huntingdonshire 'lost' 50 jobs but experienced an overall net gain in employment, with 'new' businesses generating 204 jobs. South Cambridgeshire also experienced a net increase of jobs in the computer services industry, with new jobs outstripping those lost (274 to 181).

B.36 The collapse of the 'dot.com' bubble resulted in a significant loss of telecommunications and computer software jobs in recent years and this may still be playing through the industry. There are many fewer 'one-man bands' operating in the sector, reflecting higher levels of IT competency amongst the workforce at large; there is less dependency on outsourced 'specialists' to support most day-to-day computing requirements in many small companies.

B.37 The profile of 'lost' and 'new' businesses in the Research & Development sector is slightly different. However, as with computer services, Cambridge City experienced more jobs lost (453) than gained (79). But throughout most of the county the jobs created by 'new' companies outstripped those lost through closures, moves etc. This was particularly true of South Cambridgeshire, with 221 jobs 'lost' and 939 'new' jobs recorded, 2006 to 2008.

B.38 Together, computer services and R&D account for just under one-half of all jobs 'lost' and 'gained' in Cambridgeshire between 2006 and 2008. They account for 52% of businesses 'lost' and a slightly smaller percentage of 'new' enterprises, 46%.

The role of Cambridge City

B.39 Cambridge City has not experienced the same overall rate of growth of high tech employment between 2006 and 2008 as other districts in Cambridgeshire and has also recorded a significant loss in numbers of high tech enterprises compared with the rest of the county. However, there is some evidence to suggest that the City plays a rather different role than other districts in terms of high tech developments. As Table B-9 shows, the main reason jobs growth in the City was low arises from the relatively high numbers of lost jobs and businesses. The 'new' and 'in situ growth' figures were both sound.

B.40 Table B-11 shows that a significant number of the City's 'lost' high tech jobs and businesses actually involved relocations within Cambridgeshire: 859 jobs and 40 businesses. *This suggests that the City plays a role in helping to develop businesses which then move on to new locations within the sub-area. South Cambridgeshire benefits in particular.*

Table B-11: High tech jobs & businesses 'lost' from Cambridge City & moving within Cambridgeshire – 2006 employment

Destination district	Jobs	Businesses
East Cambridgeshire	97	5
Huntingdonshire	4	1
South Cambridgeshire	758	34
Cambridgeshire	**859**	**40**

Destination district	Jobs	Businesses
(Total 'lost')	(1,772)	(92)

Source: Cambridgeshire County Council Research Group

The longer term perspective: High tech employment growth – 1991 to 2008

B.41 Table B-12 and Figure B-3 provide an overview of changes in high tech 'community' employment and businesses over the period 1991 to 2008. There was significant growth in jobs from 1991 through to 2002, followed by a dip in 2004 and a plateau through 2006. However, significant growth resumed in the most recent period, 2006 to 2008. The decline in jobs in the period 2002 to 2006 was characterised by reductions in high tech manufacturing in the main: electronics engineering, computer hardware, chemicals and instrument engineering all experienced employment loss. Services generally remained strong, growing throughout the period. The one exception was telecommunications, with employment reducing from as early as 1997.

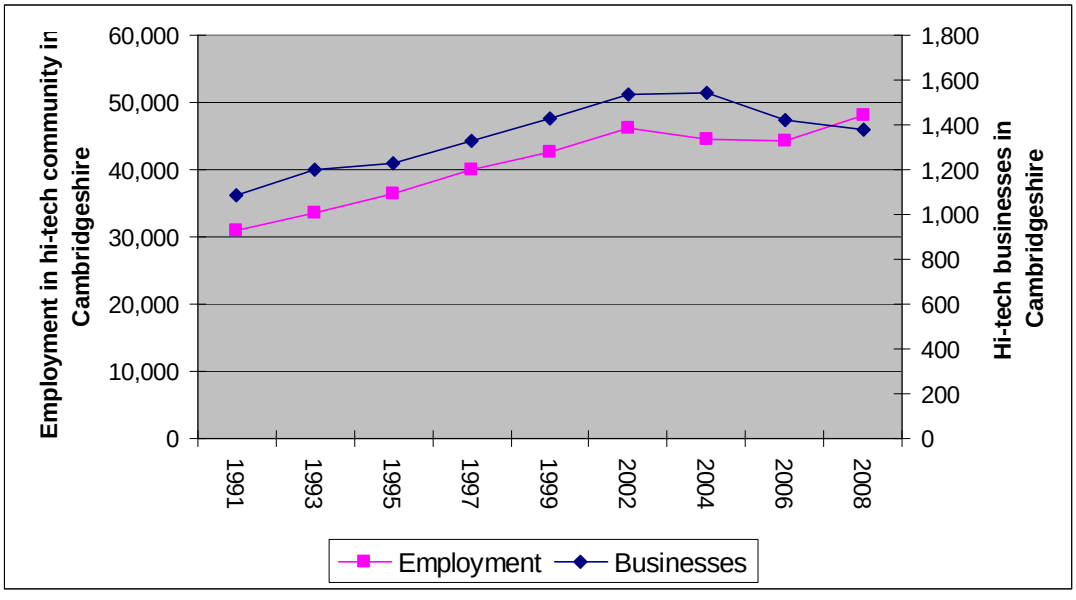
Table B-12: Employment and businesses in the 'high tech community' in Cambridgeshire, 1991 to 2008

Element	1991	1993	1995	1997	1999	2002	2004	2006	2008
Employment	30,934	33,541	36,423	40,101	42,527	46,224	44,525	44,374	48,099
Businesses	1,083	1,200	1,225	1,327	1,426	1,539	1,540	1,420	1,379

Source: Cambridgeshire County Council Research Group

B.42 The profile of businesses over time is rather different. Growth in the county was steady from 1991 through to 2002; numbers remained at the same level in 2004 and have declined through 2006 to 2008. There has been a significant reduction in numbers of very small computer service businesses – as part of a general trend towards fewer micro businesses in high tech.

Figure B-3: High tech community employment & businesses in Cambridgeshire, 1991 to 2008



Source: Cambridgeshire County Council Research Group

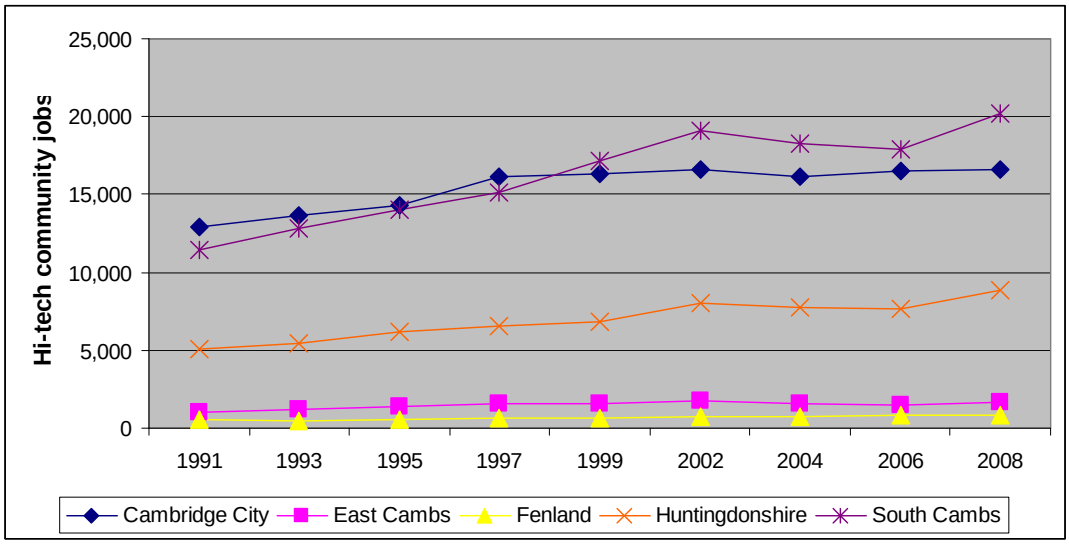
B.43 Tables B-13 and B-14 and Figures B-4 and B-5 provide a district level breakdown of trends in employment and businesses from 1991 to 2008.

Table B-13: High tech community employment in Cambridgeshire districts, 1991 to 2008

District	1991	1993	1995	1997	1999	2002	2004	2006	2008
Cambridge City	12,933	13,615	14,276	16,171	16,325	16,573	16,109	16,518	16,577
East Cambs	1,011	1,171	1,384	1,523	1,554	1,751	1,591	1,479	1,630
Fenland	518	496	548	665	674	733	780	787	849
Huntingdonshire	5,068	5,472	6,146	6,591	6,806	8,023	7,742	7,676	8,868
South Cambs	11,404	12,787	14,062	15,145	17,162	19,140	18,303	17,914	20,175
Cambridgeshire	30,934	33,541	36,416	40,095	42,521	46,220	44,525	44,374	48,099

Source: Cambridgeshire County Council Research Group

Figure B-4: High tech community jobs in Cambridgeshire districts, 1991 to 2008



Source: Cambridgeshire County Council Research Group

B.44 The table and figure show clearly how South Cambridgeshire has experienced the highest rate of growth in high tech employment over the 17 year period 1991 to 2008. Following initial growth in the period 1991 to 1997 high tech employment growth within Cambridge City has stalled somewhat. Growth in Huntingdonshire has been significant during the period. In contrast, both East Cambridgeshire and Fenland have experienced only modest growth in high tech jobs.

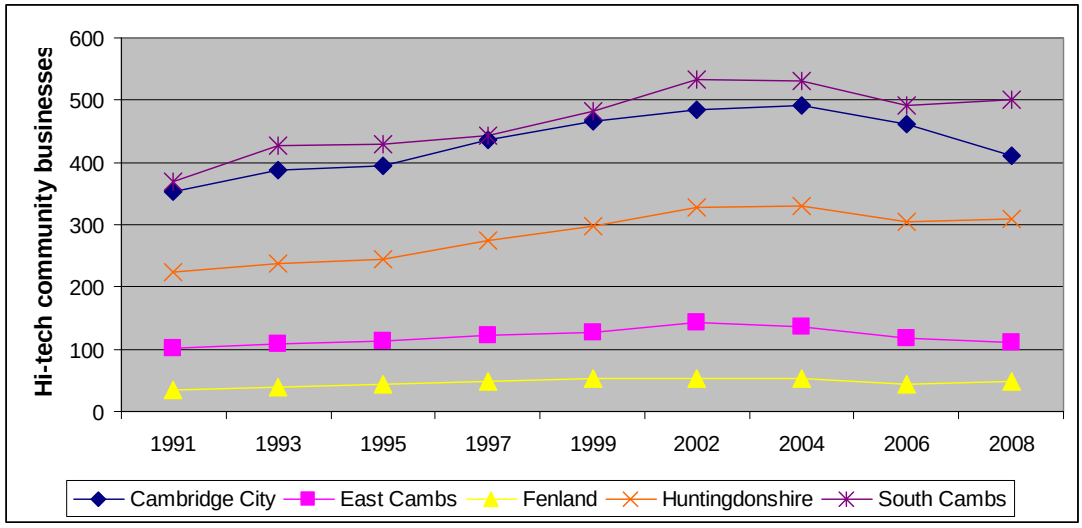
Table B-14: High tech community businesses in Cambridgeshire districts, 1991 to 2008

District	1991	1993	1995	1997	1999	2002	2004	2006	2008
Cambridge City	352	388	395	437	466	484	492	461	410
East Cambs	101	108	113	122	127	142	136	118	110
Fenland	35	39	43	49	52	52	52	45	49

District	1991	1993	1995	1997	1999	2002	2004	2006	2008
Huntingdonshire	225	237	245	275	298	328	330	304	310
South Cambs	370	428	429	444	483	532	530	492	500
Cambridgeshire	1,083	1,200	1,225	1,327	1,426	1,538	1,540	1,420	1,379

Source: Cambridgeshire County Council Research Group

Figure B-5: High tech community businesses in Cambridgeshire districts, 1991 to 2008



Source: Cambridgeshire County Council Research Group

B.45 The profile of businesses shows a somewhat different picture. Huntingdonshire, Fenland and East Cambridgeshire all record relatively more high tech businesses than high tech jobs. The number of high tech businesses is not growing as fast as the number of high tech jobs, reflecting to some extent changes in the structure of the computer services industry sector in the county.

B.46 All districts experienced a reduction in the number of high tech businesses recorded in 2006 as compared with 2004, although growth resumed in most areas between 2006 and 2008. Cambridge City experienced the biggest reduction in numbers of businesses. However, as discussed above, some of the increase in high tech enterprises in South Cambridgeshire in 2008 reflects companies relocating from Cambridge City.

Conclusions from the analysis of data

B.47 Overall, between 1991 and 2008, the total number of employee jobs in Cambridge and South Cambridgeshire increased from 108,000 to 155,900, an increment of over 43% (ABI). According to Oxford Economics, total employment rose from 131,000 to 175,000 (+33%) over this timeframe while Cambridge Econometrics' data suggest a change in employment from 147,000 to 179,000 (+21%). Over the same period, the number of high tech jobs increased from 24,000 to about 37,000, an increment of well over 50%. Whichever set of

numbers we choose to believe, the implication, then, is that *within the two core districts, high tech employment has grown more quickly than the economy as a whole*.

B.48 Beyond this key finding, three key conclusions stand out:

- overall, the number of high tech jobs in Cambridgeshire increased from almost 31,000 in 1991 to over 48,000 in 2008. Against this overall backdrop, high tech employment in Cambridge has been static over the last decade while South Cambridgeshire has seen very rapid growth. There is some evidence to suggest that Cambridge acts – effectively – as a business incubator for other parts of the county with a good number of high tech jobs being "exported" to other districts – particularly South Cambridgeshire – as firms grow

- the number of high tech businesses increased from 1,100 in 1991 to around 1,500 in 2002 and 2004. Subsequently, it appears to have fallen back to around 1,400. In the context of rising employment, the inference is an increase in average business size – from 29 jobs (in 1991) to 35 in 2008. Typically, larger high tech businesses are found in Cambridge and South Cambridgeshire while much smaller high tech enterprises are prevalent in Fenland and East Cambridgeshire

- in the very recent past, employment in both high tech manufacturing and high tech services has increased. Whereas the former increased by 4% between 2006 and 2008, the latter grew by some 11%. The recent growth in high tech manufacturing employment is in contrast to the longer term trend: the number of jobs in high tech manufacturing has fallen significantly since 1991.

Annex C: Bibliography

Below, we provide a selective bibliography focusing on key reports which chart the evolution of the Cambridge Cluster.

Jack Lang	undated	Creating the climate for innovation: The Cambridge Phenomenon
Segal Quince Wicksteed	1985	The Cambridge Phenomenon
SQW	2000	The Cambridge Phenomenon Revisited
Rob Koepp	2002	Clusters of creativity: enduring lessons on innovation and entrepreneurship from Silicon Valley and Europe's Silicon Fen
Jack Lang	2002	The high tech entrepreneur's handbook
PACEC	2003	The Cambridge Phenomenon – Fulfilling the Potential
Garnsey E., Heffernan P.	2005	"High Tech Clustering through Spin Out and Attraction; the Cambridge Case", Regional Studies, Vol. 39.8, pp. 1127-1144
Peter Hiscocks, IfM	2005	The performance of new business ventures from the University of Cambridge
Library House	2006	The Impact of the University of Cambridge on the UK Economy and Society
Library House	2007	Looking inwards, reaching outwards – the Cambridge Cluster report
St John's Innovation Centre	2008	Cambridge Technopole Report – An overview of the UK's leading high technology cluster
Library House	2008	Competitive advantage – the Cambridge Cluster report
St John's Innovation Centre	2008	East of England Technopole Report: An overview of the UK's leading high tech region
Evans M., Garnsey E.	2009	The Cambridge Cluster on the eve of the financial crisis
Mohr V., Garnsey E.	2010	Exploring the Constituents of Growth in a Technology Cluster: Evidence from Cambridge, UK

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Babraham Institute	Michael Wakelam
Bidwells	John Tweddle
Cambridge Academy of English	John Barnett
Cambridge Angels	Robert Sansom
Cambridge City Council	Rob Hammond
Cambridge City Council	Emma Thornton
Cambridge City Council	David Roberts / Myles Greensmyth
Cambridge Commercial Lending Company	Nigel Brown OBE
Cambridge Enterprise	Teri Willey, Richard Jennings, Shirley Jamieson
Cambridge Mechatronics	Tony Hooley
Cambridge Network	Matt Schofield
Cambridge Phenomenon Ltd	Charles Cotton
Cambridge Regional College	Rick Dearing (and replacement from Huntingdonshire College)
Cambridge Retail & Commercial Association	Michael Wiseman
Cambridge Temperature Concepts	Shamus Husheer
Cambridge University	Elizabeth Garnsey
Cambridge University	Ian White
Cambridge University	Lindsay Dane
Cambridge University	Prof Andy Hopper
Cambridge University Careers	Mary Blackman
Cambridge University Health Partners (Addenbrooke's)	Stephen Davies, Paul McGhee
Cambridge University, Plastic logic, CDT	Prof Sir Richard Friend
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ERBI/One Nucleus	Harriet Fear
Fenland District Council	Alan Pain
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GCP	Martin Garratt
Global Inkjet Systems	Nick Geddes
Haverhill Enterprise	Richard Herbert
Herriot Associates	Walter Herriot
Hewitsons	John Dix
Horizon Drug Discovery	Darrin Disley
Hotel Felix	Shara Ross
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HyperTag	Jonathan Morgan
IfM	Peter Templeton
Institute for Biotechnology	Professor Chris Lowe
Institute for Manufacturing	Professor Mike Gregory
John Lewis	Robert Hallam
Marshall of Cambridge	Steve Sillery
Microsoft Research	Ken Wood
MRC and LMB	Hugh Pelham, Sir Gregory Winter, Megan Davies,
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11. kidsunlimited	Angela Dewey
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3. Biochrom Ltd	Steve Marriott
4. Curling Consulting	Cathy Curling
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