



Tall Buildings Market Analysis

Prepared on behalf of Reading Borough Council

November 2007

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Executive Summary

The Reading office market is currently experiencing healthy levels of demand from a broad range of occupiers. Letting activity has recovered over that last 18 months, demand for new accommodation is strong and this has helped erode availability levels and encourage rental growth.

Although there is limited evidence of take-up of space in tall buildings this has been due to the quality of accommodation available in the existing tall buildings rather than a more profound trend in occupier preference.

Given the current strength of demand within the market there is considered to be a gap in the supply of new, good quality accommodation within the town centre and while there are a number of units currently under-construction in the area, the strength and depth of demand would suggest that additional new schemes, particularly close to the station would be well received by potential occupiers.

A number of key regional cities in recent years have also adopted a tall buildings policy or at least have theoretically supported the development of taller buildings with varying degrees of success.

In Birmingham city centre every single major office development under construction is a tall building with ten or more storeys. As well as being a clear response to market conditions the dominance of tall buildings within the city centre is a reflection of the Council's desire to change the skyline and profile of the city through the presence of tall buildings.

In Bristol the council also formally adopted a tall buildings policy. Consultation revealed support for new tall buildings in Bristol provided they fulfilled a number of criteria such as sound design, sustainable and suitable. However, there are currently no tall buildings within the city's current development pipeline.

In Liverpool the City Council introduced a tall building policy in December 2004. However, following a number of tall building plans being rejected and a growing resentment and frustration over the implementation of the policy the City Council decided to do away with the policy in August 2006. There are currently three separate tall buildings under construction in Liverpool.

At present the office market in Manchester is experiencing almost unprecedented levels of speculative development. Although development levels in the city have been high over the last five years, the majority of space built was pre-let. However, there are currently four tall building schemes under construction in Manchester which are all scheduled to complete by year end 2008.

Active named demand within the South East and Thames Valley office market remains healthy with interest from a diverse range of sectors, most notably Professional Services (which include Legal, Property and Consulting Businesses).

Attracting occupiers depends on a number of other variables as well as the height of the building. Other factors which may affect an occupier's choice of location include quality, the availability of the right kind of accommodation at the right time, price, accessibility, available work force, confidence in the landlord and whether or not the buildings available meet certain sustainable criteria.

There has been something of a renaissance over the past two to three years with a noticeable revival in the development of high rise residential buildings. 'City living' high rise apartments have become increasingly acceptable to developers, planners and importantly purchasers.

Reading has a relatively established city living market which is supported by demographics which present a relatively high proportion of younger smaller households in the top three socio-economic groups. Of particular importance is the high concentration of those categorised as 'Urban Prosperity' at 62.3%. Labour market indicators also point at positives within the Reading economy, with the city gaining weight in terms of financial and business service sector employment.

Population projections indicate that Reading's population is growing. Important to the success and development of the central Reading market is that this growth is in the younger demographic. Reading is attracting those priced out of the London market and other more expensive areas of the South East.

The above drivers of demand point to a healthy and growing market for city living within Reading. This is supported by price performance within the apartment market. We have found that prices paid for apartments across the South East as a whole have appreciated by 3.6%. This has been outstripped by growth in Reading, with prices experiencing a 15.3% increase since Q1 2006.

Reading's house prices growth is however producing an increasing affordability problem. Household incomes and house prices are becoming disparate in increasing proportions. As such, demand for private sector accommodation within Reading is growing. The most recent Housing Needs and Demand Study for Reading indicates a shortfall in supply relative to demand for private rented provision. Findings of the Housing Needs and Demand Study also suggest that access to the private rented housing market is also significantly restricted to the local population by cost.

In conclusion, whilst, the market for tall building schemes is growing within Reading as the population of younger, smaller households with relative affluence increases, the affordability issues that they face may have a detrimental impact on demand outside of the private rented sector. It is thought that the role of the investment market is therefore likely to be critical in supporting the development of a tall building scheme.

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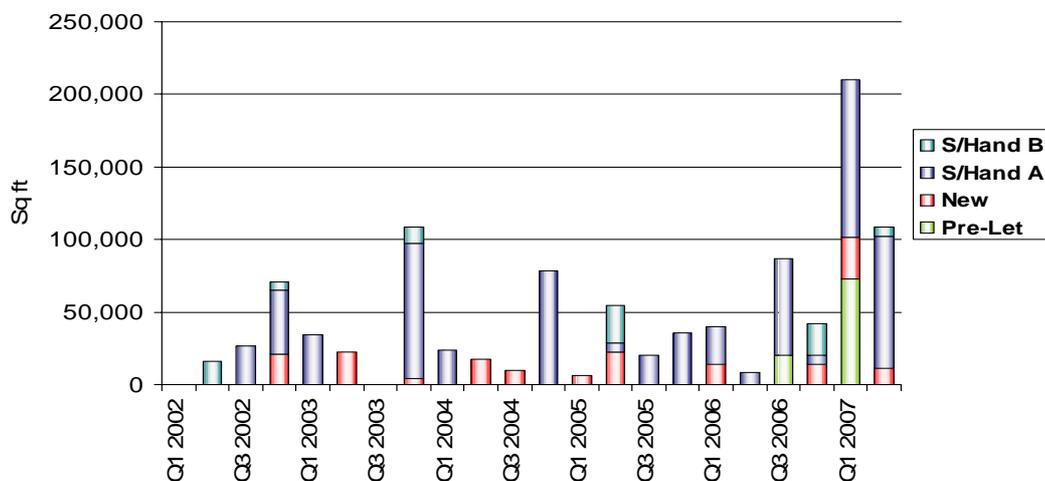
Appendix 1

1.0 Reading Market Overview

1.1 Take-up

The chart below illustrates quarterly take-up activity by grade in the Reading office market since Q1 2002. The profile of the graph reveals the cyclical nature of the market with take-up increasing markedly over the last two years in line with improving market confidence. Letting activity during the first half of 2007 already totals 245,902 sq ft, higher than annual take-up over the previous four years. Office accommodation has been sub-divided into different categories based on quality; Pre-let, New, Second hand A and Second hand B. Second-hand floorspace has been sub-divided into A and B grade accommodation, reflecting high and low quality respectively. Whilst subjective, this categorisation is based on an assessment of each property's age, specification, location and overall attractiveness.

Figure 1 – Quarterly Take-up in Reading



Since 2002 letting activity in the market has been dominated by new and good quality second-hand accommodation which has accounted for over 90% of take-up. Second-hand Grade A accommodation alone accounted for 72% of all lettings. The average annual transaction size has varied quite considerably since 2002 from 9,027 sq ft in 2005 to 20,658 sq ft in 2003. The average transaction size in the market during 2007 to date totals 17,564 sq ft which reflects the long-term average size of transactions within the M25 office market.

Over the last five years the market has been characterised by a considerable amount of re-occupation of accommodation. This trend has been evident in many of the key markets along the M4 Corridor following the collapse of the dot.com market in 2001, although Reading has seen a high level of re-occupation compared to other centres within the Thames Valley. Overall a total of 524,852 sq ft of accommodation has been re-occupied or withdrawn from the market since 2002. The three largest re-occupations include EDS at 1 Thames Valley Park totalling 72,529 sq ft, Logica re-occupying 66,702 sq ft at Brook Drive and BG's re-occupation at H20 totalling 67,066 sq ft. There were only two examples of re-occupations of taller office buildings; Taylor & Francis re-occupied 5,998 sq ft of accommodation at Reading Bridge House in Q4 2002 and a further 5,838 sq ft in Q2 2007.

Transactions in the market involving taller buildings¹ have been minimal although this is partly due to the limited number and the quality of tall office buildings that have been available over the period. There have been only two possible locations for potential occupiers to acquire accommodation in tall buildings in Reading in recent years; Reading Bridge House and Thames Tower. Collectively the two buildings have accounted for 56,570 sq ft in six separate lettings. Due to the limited amount of transactional evidence regarding tall office buildings, lettings that completed in higher office floors (fifth or above) have also been selected for analysis. The key transactions that have involved taller buildings or higher office floors are detailed in the table below:

Table 1 - Key Letting Transactions in tall buildings and on higher floors

Year	Quarter	TC/OT	ADDRESS	Size (Sq ft)	Floor	Rent (£ per sq ft)	Quality
2007	Q2	TC	Reading Bridge House	6,000	8 th	23.00	B
2007	Q1	TC	Abbey Gardens South	76,744	1 st -7 th	21.00	A
2007	Q1	TC	Thames Tower	5,532	1 st	12.00	A
2005	Q3	TC	Thames Tower	12,391	1 st	17.88	A
2003	Q4	TC	Abbey Gardens	26,887	3 rd & 4 th	23.25	A
2003	Q4	TC	Reading Bridge House	11,600	3 rd	12.50	B
2002	Q4	TC	Reading Bridge House	5,688	5 th	-	B
2002	Q3	TC	Thames Tower	15,359	6 th & 10 th	-	A
2002	Q2	TC	Kings Point	16,020		-	B

Over the last five years only nine transactions involving tall buildings or higher floored offices have completed in Reading town centre. The largest of which was the occupation of Abbey Gardens South

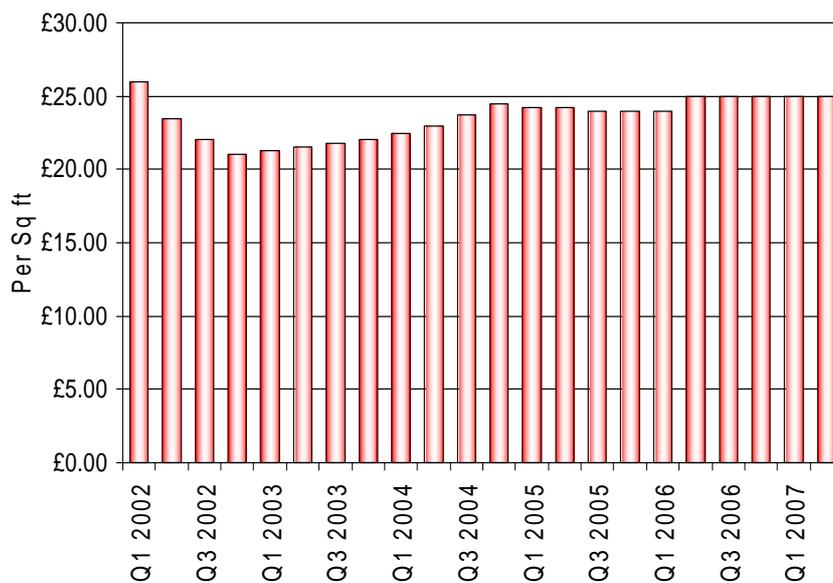
¹ For the purposes of this analysis a tall building is defined as having 10 storeys or more.

in Q1 2007 by Foster Wheeler totalling 76,744 sq ft. Abbey Gardens also witnessed the second largest transaction totalling 26,887 sq ft which was acquired by Huntswood Outsourcing Plc in Q4 2003.

1.2 Rental Levels

Following the cyclical pattern of take-up Figure 2 illustrates the recovery in the market following a decline in rents during 2002. Rental levels within the market have steadily recovered although growth has not been as strong as that experienced during the late 1990s when the dot.com market expanded dramatically. However, following an improvement in letting activity during 2007 there is growing upward pressure on rents within the market which currently stand at circa £25.00 per sq ft.

Figure 2 – Rental Levels

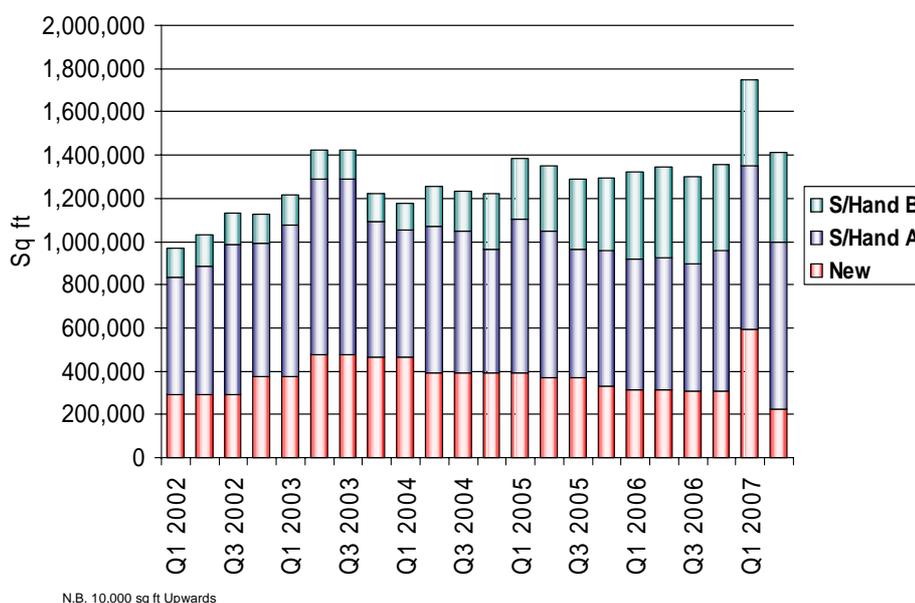


Although there have been improvements in rental levels within the market given that there is no new accommodation available in tall buildings to date, transactional evidence and rents achieved in tall buildings have not reflected prime rents within the centre. The most recent significant transaction involving tall buildings completed in Q2 2007 at Reading Bridge House when Target acquired 6,000 sq ft of Grade A second-hand accommodation at a rent of £23.00 per sq ft, representing a discount of £2.00 per sq ft compared to current prime rents.

1.3 Availability

Figure 3 illustrates how availability in the market since 2002 has continued on an upward trend leading towards 2007. The most significant recent increase in supply occurred in Q1 2007 following the completion of three new units out-of town at Green Park which collectively totalled 318,797 sq ft.

Figure 3 – Quarterly office availability



The table below details accommodation currently available in taller and tall buildings within Reading. For the purposes of this analysis tall and taller buildings have been included; taller buildings being five or more storeys and tall buildings for those with 10 or more storeys. A number of the units listed below have remained vacant for a considerable amount of time, most notably the 7th floor at Bridge House and Minerva House which have remained vacant over two years, collectively totalling 49,154 sq ft. Overall accommodation available in taller buildings accounts for 26% of total floorspace available in Reading.

Table 2 – Office accommodation currently available in tall buildings within Reading

ADDRESS	Size (Sq ft)	Quality
3 rd , 4 th , 6 th , 7 th , 8 th , 9 th & 10 th floors of Thames Tower	60,916	A
Aldwych House	55,000	B
Phoenix House	51,278	A

The Pinnacle	41,885	A
Minerva House	37,535	B
6 th , 8 th & 9 th floors of Reading Bridge House	28,491	B
Apex Plaza	28,011	A
3 rd -7 th floors of Kings Point	24,020	B
3 rd & 4 th floor, The Anchorage	12,000	B
7 th floor, Reading Bridge House	11,619	B
Abbot's House	10,657	A
Total	361,412	

1.4 Market Summary

The commercial office market as a whole has witnessed a gradual recovery over the last 18 months following a period of relatively poor performance. This has been well illustrated by the Reading market in terms of take-up activity with preference by occupiers for good quality accommodation placing upward pressure on rents. Although there has been limited evidence of existing tall buildings having a significant impact on the market this due to age and quality rather than a more profound trend in occupier preferences. Given the current strength of demand within the market there is considered to be a gap in the supply of new, good quality accommodation within the town centre and while there are a number of units currently under-construction in the area, the strength and depth of demand would suggest that additional new schemes, particularly close to the station would be well received by potential occupiers.

2.0 Planned Development in Reading

The following table details the existing office development pipeline in Reading and an indication of the scheduled delivery time.

Table 3 – Reading Office Development Pipeline

Address	Developer	Agent	Size (Sq ft)	Timing (Years) & Planning Status	Notes
Abbey Mill House (The Blade)	Mildmay Partnership		108,000	0-2 Full Planning Permission	Joint venture (PMB Holdings/Emmanuel College). Mixed use tower with offices

				Granted (FPPG)	restaurant and residential element.
Reading Central One	Kier & Invista Real Estate Management	Lambert Smith Hamptons	216,000	0-2 FPPG	One of the largest ever office developments in the town.
472, Basingstoke Road	Parsons		23,000	2-5 Tbc	
Sutton Court	Standard Life Investments	Strutt & Parker	40,000	2-5 FPPG	
Thames Valley Park, Thames Valley Park Drive	Microsoft Ltd		37,200	2-5 FPPG	
360			300,000	2-5 Tbc	
Reading Central Two Forbury Road	Kier & Invista Real Estate		125,000		Awaiting planning consent.
Winnersh Phase 1			400,000	2-5 S106	
HP Site 1	Wharfland		500,000	Tbc	
Green Park	PRUPIM	Knight Frank	650,000	FPPG	
Chatham Street	Knight Frank Residential Development/AMEC		200,000	FPPG	
South Side	PRUPIM & Thames Water	Strutt & Parker and Campbell Gordon	730,000	S106	

Green Park			810,000	5 FPPG	Could potentially be reduced to 300,000 sq ft.
HP Site 2	Wharfland		1,000,000	Tbc	
Winnersh Phase 2			1,500,000	S106	
29/35 Station Road	Kier Property	Fryer Gilbert & Jepps/ Lambert Smith Hampton	34,000	Outline Planning Permission Granted (OPPG)	
Station Hill Reading	Sackville Properties		270,000	Application	270,000 sq ft of offices and circa 700 apartments planned.
Total			6.9m		

There are currently 17 separate schemes within Reading's development pipeline, a number of which will be tall office buildings (10 storeys or higher).

2.1.1 Key Developments

Reading Central One

One of the most significant new developments in the pipeline is the Reading Central One scheme which Reading Borough Council recently granted detailed planning consent for 216,000 sq ft of offices (subject to final agreement on its section 106 commitments). The scheme represents Reading's largest ever town centre development and once complete will change the skyline of the town. Development on site is expected to commence shortly with the publisher Yell Group anticipated to be the first tenant acquiring 100,000 sq ft of space for a new HQ. The second phase of the development Two Reading Central will total 125,000 sq ft and is currently awaiting planning consent.

Abbey Mill House/The Blade

The Abbey Mill House development, also known as The Blade is due to be one of the first speculatively developed schemes in the area for some time. The proposed scheme will be a 16 storey steel and glass structure and is currently under construction and is expected to complete within the next two years.

3.0 Regional Comparisons – Bristol, Liverpool, Manchester and Birmingham

This section details the experiences of a number of key regional cities within the UK in terms of planning policy, attitudes towards tall buildings, key existing tall buildings and proposed schemes. A number of major regional centres in the UK have investigated the concept of using tall buildings to enhance their profiles.

The council in Bristol formally adopted a tall building policy for the city in January 2005 following the completion of the 'Height Matters?' consultation initiative which considered the City's existing tall buildings and what stance should be taken by the City towards future tall buildings. Consultation revealed support for the new tall buildings in Bristol provided “they are well designed, sustainable, distinctive and located to 'fit' into the existing urban landscape. The tall building policy was agreed on the proviso that it set out clearly those areas in the city where they may be acceptable development.” Although the report was focused on Bristol it is clear that the conclusions are equally valid for other major centres across the UK as they are for Bristol.

Of the key regional centres considered each have adopted a tall buildings policy in recent years with varying degrees of success. Both Manchester and Birmingham have witnessed a revival in the development of tall buildings in recent years with both cities successfully raising their profiles and attracting major office occupiers. As well as witnessing a considerable amount of development in recent years both cities also have strong development pipelines including a number of further tall buildings which will further impact on the cityscape. Notably, every single major office development under construction in Birmingham city centre is a tall building with ten or more storeys. A full listing of the development pipelines for each of the selected regional centres is included in Appendix 1 at the end of the report.

Although Bristol adopted a tall buildings policy and there have been a number of major development schemes that have been proposed the current development pipeline reveals there are no buildings of 10 storeys or more in the development pipeline. Liverpool City Council also introduced a tall building policy in December 2004 with the goal of encouraging development in three clusters around the city. However, following a number of tall building plans being rejected and a growing resentment and frustration over the implementation of the policy the City Council decided to do away with the policy in August 2006.

The decision was well received by the city's major property developers who had been highly critical of the way the policy been implemented while council members described the Tall Buildings Policy, which sought to restrict the construction of skyscrapers to certain parts of the city, as "a mistake".

Overall it is clear that the development of tall buildings helped raise the profiles of the major regional centres where they have been completed most notably Birmingham and Manchester. However, it should be noted that both cities needed new development at this time. Birmingham city centre had not experienced any major office development and in the case of Manchester the supply of office accommodation was badly affected by the IRA bomb blast in 1996. Also both cities have experienced an economic upturn in recent years which has had a positive impact on occupier sentiment within the market. Therefore, while the development of tall buildings has been successfully completed within Manchester and Birmingham it is also important to note that timing of these developments coincided with robust economic growth and a shortage of new office development.

In Bristol the market is yet to realise a major new tall office building completion and has no tall buildings in the development pipeline. The lack of tall building development reflects the size of the market as well as the underlying economic conditions. Although rents are improving within Bristol, the impact of a tall building development in terms of the volume of accommodation is substantial and the required rental levels required to justify development may not yet have been reached. Liverpool provides an example that adopting a tall buildings policy does not always lead to development. The example of Liverpool underlines the importance of the overall planning system and the relationship between developers and planners in order to achieve mutually beneficial results from schemes.

4.0 Key Requirements for Owners/Occupiers

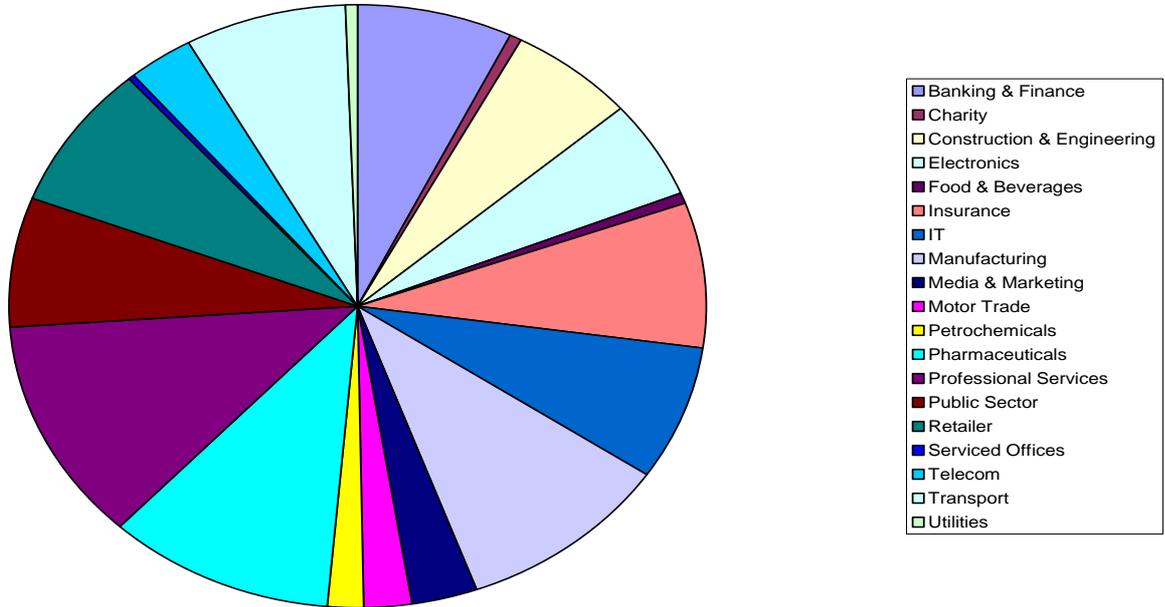
As was clear from the market overview section of the report demand for good quality accommodation within Reading has been improving over the last 18 months and this trend is expected to continue. The market has already witnessed increases in headline rents during 2007 to date and this has been driven by willingness from occupiers to pay for the best quality accommodation available. This section of the report analyses the types of industries that currently drive latent demand within the M25 and the Thames Valley office market. Having outlined the key sectors active in the market, a more detailed review of occupier demand in terms of accommodation and location is considered with regard to tall buildings.

4.1 Short-term

The following pie chart provides an insight into the amount of active named requirements currently in the M25 office market as a whole. The information is gathered by agents active within the market and reflects occupiers current requirements in the market. This provides an indication of the amount of space currently demanded by potential occupiers by employment sector. Over recent years the IT, Pharmaceuticals and Banking & Finance have dominated requirements within the M25 office market.

In Q3 2007, Professional Services, IT and Banking & Finance accounted for over 30% of all active named requirements.

Figure 5 - Active named requirements within the M25 Q3 2007



Active demand requirements provide an indication of current demand within the market. The figure acts as an indicator of how much space could be acquired in the market given the right quality and quantity of available office stock. Often potential occupiers will have a broad remit as to where they require space, i.e. along the Thames Valley Corridor or within a certain radius of a key centre.

The chart demonstrates the considerable diversity of demand from potential occupiers within the M25. At present there are several different industry sectors seeking accommodation in or around the M25 totalling 7.6m sq ft. The largest sector for active demand in the market is Professional Services (which include Legal, Property and Consulting businesses) with maximum potential requirements close to 900,000 sq ft. The three leading sectors in terms of active demand requirements are outlined below:

Professional Services - In the current market there is 904,660 sq ft of active named demand from 26 separate occupiers. There are currently several requirements in excess of 50,000 sq ft.

I.T. - The IT sector has been a major driver of take-up in the M25 and the Thames Valley for several years. Active demand requirements at the end Q3 2007 totalled 557,000 sq ft, the average requirement for each occupier totals 24,000 sq ft.

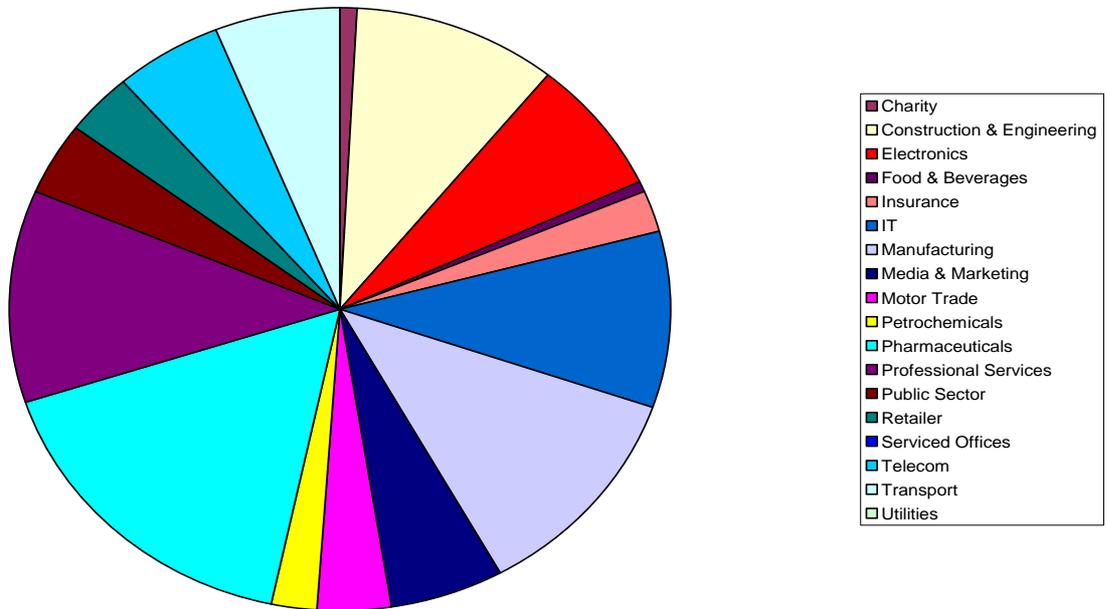
Banking & Finance - Banking and Finance requirements have remained robust in recent years and despite recent events within the market total 544,000 sq ft. Notable occupiers actively seeking accommodation in the market include HSBC, HBOS and Lloyds TSB.

From the active named demand schedule it is clear that as well as offering a broad diversity of occupiers from different sectors, there are often competing firms from a single industry seeking to acquire space such as HSBC and Lloyds TSB in the Banking sector.

Although the major sectors that have driven demand in the market in recent years remain, there are also a number of other industries that are actively seeking accommodation. This should prove particularly beneficial to the market moving forwards as it should help avoid over-reliance on just one or two sectors. The most recent example of the impact over-reliance on a single sector can have on the market was when the dot.com bubble burst in 2001. Current active demand in the market demonstrates a much broader range of industries which should help protect the market from sectoral downturns in demand.

Demand along the Thames Valley market demonstrates a slightly different profile. Although there remains a broad range of sector actively seeking accommodation there is a greater dominance of major industries such as Pharmaceuticals, Manufacturing, Professional Services and Construction & Engineering which collectively account for 50% of the total 4.5m sq ft of active named demand within the Thames Corridor during Q3 2007.

Figure 6 - Active named requirements within the Thames Valley Q3 2007



The proportion of accommodation sought by the Pharmaceutical sector is in line with a longer-term trend given that Thames Corridor is home of the biotech industry within the UK. In contrast the limited amount of requirements from the Banking & Finance sector is notable, particularly given the popularity of the area for back office relocations. However, it should be noted that with recent events in the financial markets the number of requirements from the banking sector is expected to decline, at least over the short-term.

The chart above is based on requirements across the Thames Valley which demonstrates the diversity of industries currently actively seeking accommodation. However, requirements can vary dramatically in terms of specification. In order to recognise the key sectors that will drive demand for accommodation in tall buildings a closer examination of occupier requirements within the market must be considered, as well as the types of occupier which are most likely to occupy accommodation in tall buildings.

One of the key points to be made is that attracting occupiers depends on a number of other variables as well as the height of the building. Other factors which may affect an occupier's choice of location include quality, the availability of the right kind of accommodation at the right time, price,

accessibility, available work force, confidence in the landlord and whether or not the buildings available meet certain sustainable criteria. Each of these factors could impact upon a potential occupier's decision to locate in a certain building or scheme rather than another.

In Reading the importance of accessibility to the train station has proved very important in recent years. An example of how important a location close to the train station is to occupiers is the Apex Plaza, a very successful development, which benefits from a location close to, and offering direct access to the train station. Furthermore, with an increasing emphasis on green policy and issues combined with limited car parking spaces within the centre, the importance of the train station appears set to continue. It is clear that in terms of tall buildings within Reading sites closer to the main station are more likely to be preferred by the majority of occupiers.

The quality and perception of the environment is also an important consideration for occupiers seeking to relocate. While accessibility to the station remains paramount to occupiers in Reading, it is also important that the site is located in close proximity to retail and leisure amenities for staff such as hotels, restaurants, bars, gyms and cafés.

Although there are many locational factors that are considered by potential occupiers which can help sites realise active demand it is clear that the issue of rent remains one of the most fundamental. Overall there are many occupiers that are still prepared to acquire poorer quality accommodation for a discounted rent. Given the scale and price of construction involved with tall buildings quoting rents in the schemes are likely to be high (circa £28.00-£30.00) and as such potential occupiers must be able to afford prime rents this will be a barrier to certain occupiers.

Also, the size of the firm must also be taken into account. Although a firm may be able to afford the new accommodation the size of requirement must also be considered. There have been several examples of larger firms not acquiring accommodation in tall buildings as they were unwilling to spread their operation over several floors. By the same token many older tall buildings have proved difficult to let because the floor plate design did not lend itself to the division of floors for smaller occupiers to acquire space on a single floor. Both these factors underline the significance of floorplate sizes in tall buildings. In the town centre a floorplate of between 7,500 sq ft to 15,000 sq ft which is easily divisible for smaller occupiers would suit the current market.

With regard to potential occupiers for such accommodation the main drivers of demand are likely to be from local and regional firms from the Financial, Business and Professional Services industries

who are able to afford high rents but are less likely to have very large requirements which would prove difficult to fulfil without acquiring several floors.

Another important consideration that must be noted is the importance of the quality of the buildings. This is not just simply ensuring that new office accommodation is provided within the city centre but also making a statement about the centre through development. Following a review of the regional cities it is clear that tall buildings have a significant impact on the community and surrounding area. This was most clearly revealed in the consultation paper feedback in Bristol with many respondents noting the poor quality and negative impact of many of the older existing tall buildings in the city developed in the 1940s-60s. This sentiment was also reflected in feedback from local businesses. In part, it was through the legacy of such buildings that helped promote the importance of Tall Buildings Policy across different centres.

However, while the development of tall buildings in certain cities may have slowed as a result of poor construction in the past, the latest wave of new tall buildings has been greeted as an opportunity to demonstrate economic wealth, iconic architecture and help improve the image of leading cities. This has worked to great effect in Birmingham and Manchester (as well as in London) in recent years. The iconic status of a building is also an important factor for potential occupiers, particularly if the aim is to encourage the relocation of incumbent firms within the centre.

Another factor which is becoming increasingly important in the market is sustainability and green buildings. However, this is yet to fully impact upon the market, except in a few special cases; certain government relocations and a number of energy firms have been keen to make a point of "going green." Moving forwards sustainability is set to become a more significant locational factor and should not be ignored when considering new development.

4.2 Long-term

Independent forecasts from Experian Business Strategies for Berkshire county have been analysed to provide a longer-term view of the demand of office accommodation and the sectors which are projected to be the most active.

Table 12 – Office Employment Sub-sector Employment Growth

	2007-2014		2015-2020		Total 2007-2020	
	Real	%	Real	%	Real	%
Communications	1,151	15	2,263	9	6,973	27
Banking & Insurance	1,131	13	-167	-1	1,846	13
Business Services	1,066	7	8,251	6	18,176	14
Property Related Activities	1,046	5	109	1	1,006	5
Public Admin & Defence	986	-1	-686	-5	-973	-8
Education	1,008	1	271	1	658	2
Other (largely private) services	1,181	18	1,953	5	7,909	26
Total	7,569	8	12,293	4	35,594	13

The figures above demonstrate the significant office based employment growth forecast within the Berkshire county moving towards 2020. Overall the office based industries are expected to be responsible for 35,594 new jobs within the region between 2007 and 2020. The key driver of employment growth within the office based industries is the Business Services sector which is forecast to be responsible for an additional 18,176 new jobs across the county. This is particularly important given that it is the Business Services sector which is most likely to be the source of demand for accommodation in tall buildings. Overall the office based employment figures for the county appear very positive with only Public Administration and Defence forecast to witness a contraction in the number of jobs moving towards 2020 which in terms of tall building occupation is likely to have a limited effect.

Overall it would appear that the conditions in the market are encouraging in terms of projected demand for office accommodation. There has been a steady improvement within the market over the last 18 months and the more positive sentiment from occupiers has translated into rental growth during 2007. There are a number of major schemes in the development pipeline set to complete over the next five years which are likely to have a significant impact on the market in terms of the type of space and buildings available for occupation. Given the positive latent demand in the current market

and the strong employment growth forecasts in key growth sectors such as Business Services and Other (Largely Private) Services there appears sufficient scope to justify development, albeit a finite volume, within the town.

Should the new development be delivered through tall buildings it is useful to consider the experiences of other regional centres. There is evidence from centres across the UK that tall buildings can have a significant impact on office centres and communities. The legacy of many tall buildings constructed in the 1940s, 50s and 60s which had a detrimental effect on city centres has slowly been surpassed in most areas by the latest wave of modern, tall building developments. This has been most evident in Birmingham and Manchester where recent tall buildings developments have helped raise the cities' profiles and attract inward investment. However, it is clear that for the developments to have such a positive impact the buildings must be impressive, iconic, built in suitable locations and designed to satisfy occupier size requirements. In the majority of cases the implementation of a tall buildings policy appears to have been successful in ensuring that construction of tall buildings is part of a coherent strategy, focused in the specific areas and carefully monitored.

In terms of the Reading market, the construction of a tall building or buildings must form the focus of a development specific area of the town rather than be seen as an individual scheme in isolation. Given the importance of the rail link and taking into consideration schemes under-construction or in the planning pipeline there are currently two distinct areas of the office market in Reading where a tall building is potentially viable (sites north and south of the station).

The market as it stands would support a maximum of one tall building of between 15-30 storeys for commercial and residential use over the medium-term (two to five years). This is largely due to the volume of accommodation which already has full planning permission granted or currently under-construction within the town centre (circa 1.5m sq ft) along with the build costs and the associated premium. Although the employment forecasts are positive for the area it must also be noted that the scope for town centre occupiers is more limited.

The proximity to the station will continue to underpin the viability of schemes, the number of storeys constructed and the density. Commercially viable development to the north of the station will be depend on the successful delivery of the current development plans given that the prime office market in a historic sense has always been focused next to the railway station only to the south. However, while this is expected to remain a prime market there are plans for significant amounts of

development to the north of the station which may help over time to broaden the scope of the prime office market within Reading.

Over the longer-term there will be greater scope for more tall buildings upon other sites around the town centre, most notably locations by Forbury Gardens and the Civic area. However, most notably for the latter to succeed the area will require large scale regeneration in order to improve upon occupier's current perception of the area and impact positively upon the achievable rental levels. Major factors which would need to be addressed to encourage successful tall building development in the future will be an improvement in the surroundings as well as the transport infrastructure, including access into and around Reading town centre, these combined would lead to a fundamental improvement in the perception of the area to potential occupiers. Therefore although currently there is capacity for just one tall building, there is potential within the town for further tall buildings provided that current developments are completed successfully to the north of the station and sites to the south experience considerable regeneration. It should also be noted that if one tall building was delivered and was successful it could provide greater impetus for further development and regeneration.

5.0 Reading Residential Market Overview

5.1 Background and instructions

Knight Frank LLP have been instructed by Reading Borough Council to provide detailed residential market analysis and advice relating to the development of tall buildings within Reading. We were directed to explore current and projected: supply, demand and market performance dynamics within Reading; to examine the need and suitability of high rise residential provision and to discuss thematic issues relating to this provision.

This report complements and 'adds value' to the current review of housing needs and demand completed on behalf of Reading Borough Council.

5.2 Report objectives

Specific residential research objectives include;

- Review of demand side trends including changing demographic and socio-economic trends and issues;
- Review of current market activity;
- Review of current market supply including provision to meet housing needs;
- Review of new supply;
- Relate the market situation to the need and suitability of high rise residential development;
- A review of comparable examples of city centre living;
- A discussion of thematic issues raised by high rise living

5.3 Report structure

This report is split into five sections. Whilst all sections are inextricably linked with section one leading to and adding context to section two for example, the analysis and commentary are logically separated for ease of access. The following explains in brief the remit of each following section:

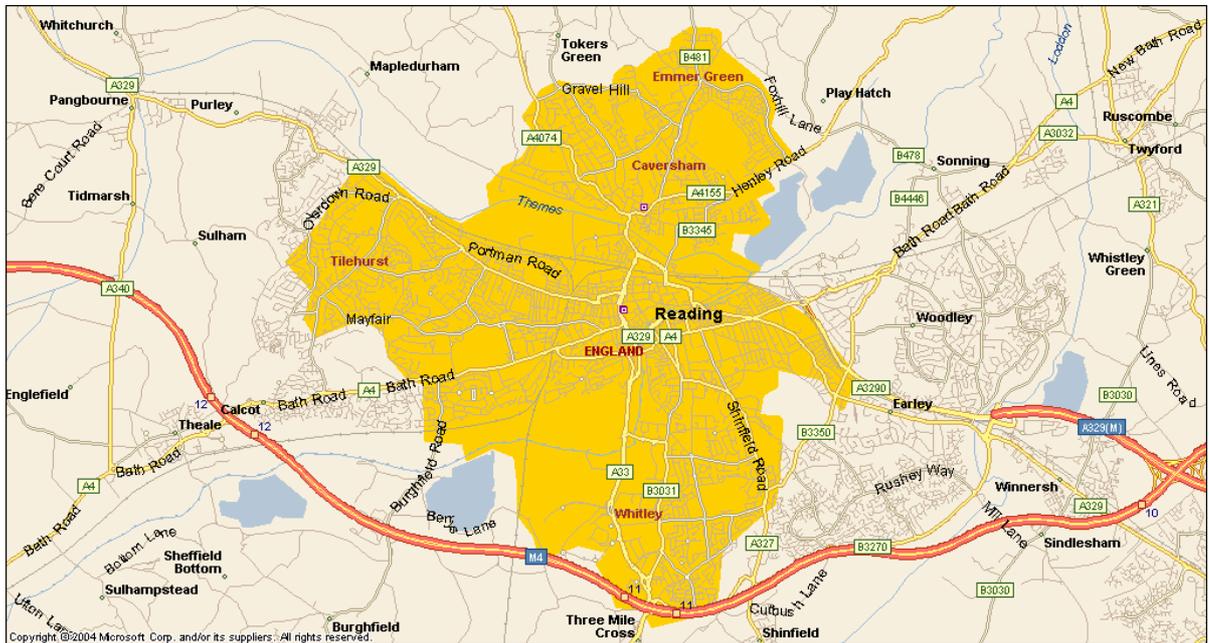
- **Section two** examines the current residential property market placing Reading within the UK and regional context;
- **Section three** moves on to examine drivers of demand, in particular those elements of Reading's population that are associated with the residential elements of tall buildings;
- **Section four** looks at Reading's supply pipeline. In particular we examine the nature of supply within the city centre.
- **Section five** discussed some of the thematic issues relating to residential supply within tall buildings, such as sustainability and affordability and provides a series of case studies.

An executive summary is also provided with this report. The executive summary provides a concise commentary of the key points of discussion.

5.4 Area definition and the sourcing of data

A series of geographical levels are used and referred to within this report. Reading lies within the South East region, and the Berkshire sub-region. The city centre is defined for the purpose of this report as the postcode sectors RG1 1, RG1 2, RG1 3, RG1 4, RG1 5, RG1 6, RG1 7, RG1 8. The 'local' market context refers to the Local Authority of Reading. Spatially this area is defined by postcode sectors in the following postcode districts RG1 1, RG1 2, RG1 3, RG1 4, RG1 5, RG1 6, RG1 7, RG1 8, RG2 0, RG2 6, RG2 7, RG2 8, RG4 5, RG4 7, RG4 8, RG30 1, RG30 2, RG30 4, RG30 6. In terms of administrative and statistical geography Reading consists of the wards of Abbey, Battle, Caversham, Church, Katesgrove, Kentwood, Mapledurham, Minster, Norcot, Park, Peppard, Redlands, Southcote, Thames, Tilehurst, and Whitley. The wards of Abbey and Katesgrove cover the city centre.

Map 5.1 Reading



5.5 Policy context

National policy guidance indicates that urban centres should continue to remain the focus for retail, leisure, offices and other key functions. Emerging policies suggest that development plans should anticipate a requirement for a more pro-active approach to the development, expansion and enhancement of their main centres.

The strategic context for the development of the Reading BC's Local Development Framework (replacing the existing Reading Borough Local Plan) is the Regional Spatial Strategy (RSS), currently the Regional Planning Guidance for the South East (RPG9). A key feature of the emerging RSS is the role that it plays in addressing the links between economic, social, environmental issues and the importance of a holistic integrated policy approach in response.

In terms of the emerging South East Plan (RSS) Reading lies within the Western Corridor and Blackwater Valley sub-region and is defined as a regional hub. The Western Corridor and Blackwater Valley sub-region is one of the most economically successful and dynamic parts of the South East. The future spatial strategy for the sub-region reflects this. In terms of new house building the key points of the spatial strategy are as follows;

- Previously developed land within urban areas will represent the first and priority search for new house building. However, the take up of green field land has not entirely been overridden.
- In the event that the urban areas cannot yield sufficient housing to satisfy the overall sub-regional requirement, sustainable Greenfield allocations may be brought forward through Local Development Documents.
- Emphasis within any Greenfield development on the connectivity to major hubs should be maintained.

The specific housing policies presented within the South East Plan are designed to provide the region with an integrated strategic approach to housing provision which supports an urban renaissance, delivers sustainable development and which provides everyone with the opportunity of a decent home. Reading and the area along the M4 to its west forms its own sub-regional housing market. This is reflected within the Regional Housing Strategy. In terms of RSS housing provision overall within the South East the Plan makes provision for an average of 28,900 homes per annum². This housing allowance looks to cover the period to 2026 and includes that to meet the existing back log of unmet need. The housing distribution for the South East is based on qualitative and quantitative data analysed at local authority level. The housing distribution set out in policy H1 comprises one figure for each district. For Reading this has been set at an annual provision of 521 units to 2016. This policy and its impact on Reading will be explored in more detail within section four of this document. In the allocation of land for new housing Local Development Frameworks are required to reflect the principles established by regional policy.

5.6 Development and urban renaissance within central reading

Reading is currently in a healthy housing delivery position in terms of land supply adhering to the brownfield stipulation. The only exception is development within Green Park 3 (North). Recent development trends have seen a rapid increase in the amount of high density residential development in Central Reading. This has contributed significantly to urban renaissance.

In March 2006 Reading Borough Council began a consultation exercise on the future development of central Reading, part of which is the location and development of tall buildings. The Preferred

² The South East Plan, Draft Plan for submission to Government, March 2006

Options for the Reading Central Area Action Plan support the already high level of commitments within the borough for the central area. Within the options, the station area is highlighted as the predominant location for tall building provision.

5.7 Defining 'tall' buildings

The definition of tall building is a function of the relative dimensions of comparable buildings within a certain locale. A 12 storey building in proximity to 3 or 4 storey buildings could certainly be perceived as 'tall' whilst in the environment of mature high rise development in a world city it would not. A forty or fifty storey building may in this context be defined as 'tall'. In this research report we examine tall buildings within the UK. A building in excess of twenty storeys is defined here as being 'tall'.

6.0 Demand side trends

Demographic overview, projections, and current and projected demand analysis

Within two linked sections we will explore current and projected demographic trends within Reading and Central Reading and from this evidence base draw conclusions about current and projected housing demand sources. Population and household numbers, population age profile, household composition, income and earnings, household socio-economic profile and population employment profile will all be explored. Our analysis will also draw upon short, medium and long term government forecasts for population and household change.

In addition we will also draw upon the most recent housing needs and demand study for indicators of demand stemming from existing households and concealed households within the borough.

All demographic data will be derived from CACI, the Office for National Statistics and Reading Borough Council.

6.1 The trend towards urban centre living

The recent city living phenomenon reflects the continued urban renaissance in urban centres across the country, representing the greatest cultural shift particularly during the last decade. The increasing share of population growth within the 56 biggest urban areas in England since 1981, attests to the success of the recovery of urban centres. These areas accounted for just 7% of national growth between 1981 and 1991, rising to 36% between 1991 to 1997 and 42% between 1997 and 2003 (Urwin, 2005).

Urban centre living is the product of inter-related demographic, economic, social and cultural factors. Set against a background of continuous economic growth during the last decade, city centre living has become particularly aspirational. Correspondingly the UK demographic profile has shifted, nationally household growth has outpaced population growth, between 1961 and 2004 the number of families rose by 2.6 million, yet the number of households increased by 7.8 million (ONS, 2005). The number of single person households is set to increase by 190,000 households per year, to 24 million by 2021 (DCLG), resulting in declining average household size from 2.37 persons per household nationally to 2.16 by 2026.

Living in the centre of cities and towns is an attractive lifestyle choice for young people. Repackaged urban centres providing an arena for what cultural commentators have labelled an 'extended adolescence', proximity to work and leisure facilitating a 'work hard and play hard' attitude (Chatterton et al, 2003). Indeed the vision that regenerated city centres would comprise long term owner occupiers, in sustainable communities has not been realised and urban living has developed a distinctive model, dominated by young people, in no small part due to the growth of the higher education sector (Nathan and Urwin, 2005).

6.2 Who lives in urban centres?

Surveys have indicated that in urban centres such as Leeds, Liverpool, Manchester and Bristol young single people who have never married comprise 65%, 75%, 85% and 48% of the total central population respectively.

Urban centre living being a product of a particular lifestyle stage is reflected in the high degree of churn experienced within these populations. Studies have shown that in any given year 30% of the population move in, or out of city centres, young residents establishing no ties to the area with up to 80% of households planning to move out within the next two years (Unsworth, 2005). What is it that attracts households to live in cities? Recent survey evidence (Unsworth, 2005) suggests that convenience and buzz are the main attractions for most city centre residents. Evidence from Leeds based residents' shows that 37% of residents moved to the city centre for lifestyle reasons (17% moved because of nightlife); while 44% moved to be close to work.

Indeed studies have shown that suburban living remains the default choice of most British households (CABE/MORI, 2004), traditionally, wealth permitting, the life stage of bringing up children has provided the impetus for leaving the city. A centre for cities survey indicated the overwhelming respondent aspiration for leaving city centres at the point of bringing up children, minor annoyances, such as persistent noise and pollution, becoming major issues tending to push people from city centres.

Both the perception and current reality of city living involves considerable trade offs, noise, pollution, lack of green space, lack of convenience and criticisms of new build quality. Indeed despite areas of London being a unique case compared to the rest of the country, where established urbanites and committed city dwellers live, newly forming city centre markets are based on the high density model,

regarded as being unsuitable for family occupation. A study by CABE (*“What Housebuyers Want”*) reported that for potential house buyers, the first concern in choosing a new home is the quality of an area, notably in terms of access to facilities and services, a sense of community, safety and security. The presence of shops, schools and local services, particularly schools, all enhance the attractiveness of a locality for home buyers, as does good public transport provision and the perception of security.

The perception that city centres are not suitable for families is a deeply engrained perception and prohibitively costly to change. The issues precluding city centres from attracting families to the central locations are inextricably linked, establishing school facilities, large outdoor spaces, enhancing amenity and public transport provision, cutting noise, pollution and providing larger houses are costly and must be developed in tandem if families are going to re-colonise city centres in significant numbers.

The current perception of urban centre re-colonisation will inform best practice within Central Reading in terms of the creation of an attractive sustainable community.

6.3 Demographic change

Population

In this section we look at population growth in Central Reading and Reading overall within the context of the wider regional area. In 2001 Central Reading (as defined above see section 5.4) had a total resident population of 25,109. Reading Borough recorded a resident population of 144,700 persons (2006 mid-year estimate), indicating a population increase of 1.1% from 143,096 in 2001, compared to 2.0% for the wider South East (ONS).

Central Reading is forecast to see a significant 21.2% population increase to 30,129 persons between 2001 and 2016. This represents an increase in absolute terms of approximately 5,000 persons. In the wider Reading area a population increase of 7.1% to 158,836 persons is expected, representing an increase of approximately 15,000 persons over the same period (CACI).

74.4% of Central Reading's population was below the age of 45 years according to the 2001 Census. This compares to 69.0% across Reading as a whole. By 2016 it is expected that this proportion will

drop within Reading as a whole but remain relatively constant within Central Reading. This is despite a national trend towards an ageing population (CACI).

In Central Reading the age category with the largest projected increase is the 45-54 year olds, which is expected to increase by 37.0% to 2016. This followed by those aged 25 to 34 at 31.7%. Reading overall is expected to witness increases within the same age category to 2016. The significant difference between the two projections is that across Reading overall those aged 20 – 24 is expected to increase by approximately 10.0%. This is not the case within the Central Reading projection where this group is projected to increase by 24.0%.

Table 6.1: Residential population Central Reading and Reading Borough

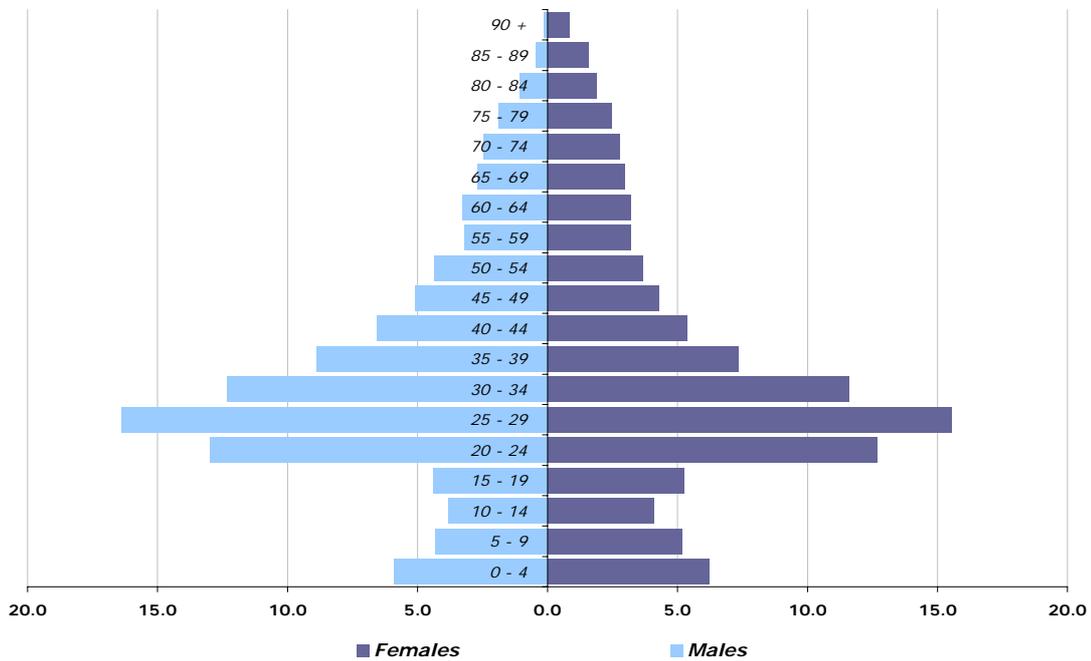
Population Age	2001 % of total		2016 % of total		% change 2001 - 2016	
	Central Reading (%)	Reading Borough (%)	Central Reading (%)	Reading Borough (%)	Central Reading (%)	Reading Borough (%)
0 - 4	6.0	6.3	5.8	6.3	16.0	8.1
5 - 9	4.7	5.9	3.9	5.2	0.4	-6.7
10 - 14	3.9	5.6	3.0	4.6	-6.9	-13.4
15 - 19	4.8	6.4	4.0	5.5	0.4	-9.0
20 - 24	12.8	10.0	13.1	10.4	24.0	10.6
25 - 34	28.0	20.2	30.4	21.7	31.7	14.8
35 - 44	14.1	14.5	13.3	13.8	13.9	2.1
45 - 54	8.7	10.6	9.9	11.9	37.0	19.7
55 - 64	6.4	8.0	6.6	8.3	24.1	10.7
65 - 74	5.4	6.4	5.2	6.5	17.1	8.0
75+	5.0	6.0	4.9	6.0	16.8	8.0
Total	100.0	100.0	100.0	100.0	21.2	7.1

Source: CACI

It is worth noting however that CACI population forecasts, as with all official forecasts are 'development neutral', in that the projections do not take into consideration recent or current development proposals. The inference of this is that official projections underestimate the potential growth of the population, which will be underpinned by new development within Central Reading and Reading overall. Therefore the population forecasts described above can be taken as a minimum or base case scenario.

The current population structure of Central Reading households is presented below. Central Reading can be seen as having a relatively young population with 60% of residents under the age of 35 years old.

Fig 6.1: Population structure of the Central Reading households



Source: CACI

Households

Household growth has outpaced population growth over recent decades as the average size of households has declined nationally. Cultural and demographic shifts such as rising divorce levels, increased student numbers and life expectancy have all contributed to the increase of single person households. The Central Reading market was recorded as having 11,660 households in 2001, an average of 2.15 persons per household, declining from 2.29 persons in 1991³. Reading Borough was recorded as having 57,877 households in 2001, an average of 2.47 persons per household (CACI).

By 2026 the number of households in Reading is projected to increase to 69,000 with a decrease in household size to 2.17 persons per household (CLG).

In terms of household type within Central Reading and Reading Borough overall it is single person (never married) households which comprise the single largest composition at 59.3% and 53.4% respectively. Compared to the South East overall the Central Reading comprises fewer married households at 27.3% of the total, compared to 33.5% across Reading Borough and 42.5% across the South East.

³ 1991 Census, ONS Local Base Statistics

If present national trends continue, in the future household size is likely to fall as single person households and childless couples become more common, therefore household numbers may increase beyond figures currently forecast. In addition these figures do not take into account the level of existing household need and should be regarded as a base case scenario.

Table 6.2: Household composition Central Reading, Reading Borough and South East

Household composition	Central Reading (%)	Reading (%)	South East (%)
Single person households	59.3	53.4	42.7
Married or remarried	27.3	33.5	42.5
Separated	2.2	1.9	1.8
Divorced	6.7	6.1	6.6
Widowed	4.4	5.1	6.5
Total	100.0	100.0	100.0

Source: CACI

Analysing the demographic characteristics it is apparent that distinct patterns exist. The distribution of particular household types across Reading Borough compared to the overall distribution of all household types identifies the Central Reading study area as recording the highest concentration of younger single person households.

6.4 Socio-economic profile

Reading is the principal commercial and retail centre of the Thames Valley region. It benefits from excellent road and rail links with London and the rest of the country as well as its proximity to Heathrow Airport. It also draws on a large and highly skilled labour pool which has helped to transform it over the past two decades from a largely industrial base into a services-led economy which has built up one of the largest concentrations of leading ICT companies in the UK, including Microsoft, Compaq, MCI, Oracle, Hewlett Packard and Cisco Systems.

GVA growth in the South East has averaged 4.8% per annum over the past five years (CEBR data) which is below the UK rate. CEBR forecasts, however, show that growth over to 2010 will accelerate to outpace the UK average at 6.9% per annum – the strongest projected regional growth performance over the period.

Stage I - ACORN analysis

The ACORN household categorisation system is one mechanism for carrying out a socio-economic analysis on a given area. Within the ACORN system households are sorted into five broad lifestyle groups that are defined by levels of income, type of employment, type of housing, level of education, lifestyle, attitude and interests (please see appendix for a detailed description of the different lifestyle groups).

In terms of relative affluence the Central Reading market and Reading Borough are classified by the first three ACORN categories with 87.9% of Central Reading households and 67.6% of Reading Borough residents represented by the 'Wealthy Achievers', 'Urban Prosperity' and 'Comfortably Off' groups. Notably 62.3% of the Central Reading residents are classified as 'Urban Prosperity'. This relatively affluent profile lies in excess of that within the regional picture. Reading overall comprises a higher proportion of households classified as 'Wealthy Achievers', compared to the local markets.

Stage II - ACORN analysis

The ACORN socio-economic household analysis further breaks down the five broad lifestyle categories as discussed above into a large number of individual, very specific and detailed household types as demonstrated in the table found below.

The residents profile across the Central Reading market and the wider Reading area does not indicate retention of a traditional less affluent urban pattern, a legacy of an earlier pattern of economic structure and development based upon the manufacturing economy. Both areas are represented by a high proportion of residents classified as 'Educated Urbanites' and 'Aspiring Singles'.

Table 6.3: Socio-economic profile: Groups

		Central Reading (%)	Reading Borough (%)	South East (%)
Wealthy Achievers	Wealthy Executives	0.3	5.4	15.8
	Affluent Greys	0.0	1.7	8.0
	Flourishing Families	1.1	3.9	9.9
Urban Prosperity	Prosperous Professionals	1.2	5.4	2.7
	Educated Urbanites	39.1	15.6	3.6
	Aspiring Singles	22.0	10.0	3.2
Comfortably Off	Starting Out	20.0	13.0	4.4
	Secure Families	3.2	9.0	17.0
	Settled Suburbia	0.1	1.7	5.6
	Prudent Pensioners	0.9	1.9	4.4
Moderate Means	Asian Communities	0.0	0.0	0.4
	Post Industrial Families	3.1	8.4	7.1
	Blue Collar Roots	0.1	2.3	5.0
Hard Pressed	Struggling Families	3.0	14.3	8.5
	Burdened Singles	3.5	3.1	2.1
	High Rise Hardship	1.7	0.7	0.8
	Inner City Adversity	0.6	0.2	0.1
Unclassified	Unclassified	0.0	3.5	1.3
	Total Households	100.0	100.0	100.0

Source: CACI

Stage III – ACORN analysis

Through this detailed socio-economic analysis it is possible to gain a very thorough and intricate understanding of social, economic and lifestyle conditions found within the borough at large and the Central Reading area.

Within Central Reading, privately renting professionals (26.0% of households, 10.5% of Reading overall), White collar singles and sharers (20.0%, 12.4% of Reading overall) form the most prevalent household types.

Table 6.4: Detailed socio-economic analysis, Central Reading, Reading and the South East

Specific ACORN household type	Central Reading (%)	Reading Borough (%)	South East (%)
Wealthy Achievers			
Wealthy Mature Professionals, Large Houses	0.0	3.0	5.0
Wealthy Working Families with Mortgages	0.0	0.7	2.4
Villages with Wealthy Commuters	0.3	1.0	4.6
Well-Off Managers, Larger Houses	0.0	0.7	3.8
Older Affluent Professionals	0.0	1.0	2.7
Farming Communities	0.0	0.0	0.6
Old People, Detached Homes	0.0	0.6	2.5
Mature Couples, Smaller Detached Homes	0.0	0.0	2.2
Older Families, Prosperous Suburbs	1.1	3.0	3.2
Well-Off Working Families with Mortgages	0.0	0.4	3.0
Well-Off Managers, Detached Houses	0.0	0.5	3.6
Large Families and Houses in Rural Areas	0.0	0.0	0.1
Urban Prosperity			
Well-Off Professionals, Larger Houses and Converted Flats	0.0	2.5	0.5
Older Professionals in Suburban Houses and Apartments	1.2	2.9	2.2
Affluent Urban Professionals, Flats	1.1	1.1	0.2
Prosperous Young Professionals, Flats	1.7	0.7	0.2
Young Educated Workers, Flats	7.3	2.2	0.8
Multi-Ethnic Young, Converted Flats	3.0	1.1	0.1
Suburban Privately Renting Professionals	26.0	10.5	2.2
Student Flats and Cosmopolitan Sharers	9.7	3.7	0.9
Singles and Sharers, Multi-Ethnic Areas	6.3	2.5	0.2
Low Income Singles, Small Rented Flats	1.0	0.9	1.5
Student Terraces	5.0	2.9	0.6
Comfortably Off			
Young Couples, Flats and Terraces	0.0	0.6	1.7
White Collar Singles and Sharers, Terraces	20.0	12.4	2.7
Younger White Collar Couples with Mortgages	0.2	0.4	3.6
Middle Income, Home Owning Areas	0.5	0.5	3.8
Working Families with Mortgages	0.0	1.9	3.0
Mature Families in Suburban Semis	1.4	3.5	3.7
Established Home Owning Workers	1.0	2.7	2.5
Home Owning Asian Family Areas	0.0	0.0	0.4
Retired Home Owners	0.0	0.2	1.6
Middle Income, Older Couples	0.0	0.9	2.5
Lower Incomes, Older People, Semis	0.1	0.6	1.6
Elderly Singles, Purpose Built Flats	0.1	0.6	1.5
Older People, Flats	0.8	1.3	2.8

Source: CACI

The profile across Reading overall is more evenly distributed. However, both the concentrations in the Central Reading market are also significant.

Detailed definitions of the specific household types finding the greatest degree of representation within the Central Reading and Reading overall, demonstrated by the above table and identified earlier, are provided in the appendix.

6.5 Employment profile

Reading unitary authority has a total resident workforce of 84,409 (2001 Census), just under 46% of which is employed in managerial, professional and technical occupations. Employment growth in the south east region over the past five years has been above the UK average at 1.7% per annum (CEBR) but is forecast to contract marginally over the next five years (-0.7% per annum) - whereas the UK equivalent figure is marginally positive (+0.2% per annum).

Table 6.5: Workforce by occupation, Reading

	Number	% of total
1. Managers and senior officials	12,823	15.2
2. Professional occupations	13,353	15.8
3. Associate professional and technical occupations	12,459	14.8
4. Administrative and secretarial occupations	12,289	14.6
5. Skilled trades occupations	8,130	9.6
6. Personal service occupations	4,437	5.3
7. Sales and customer service occupations	7,143	8.5
8. Process, plant and machine operatives	4,661	5.5
9. Elementary occupations	9,114	10.8
Total	84,409	100.0

Source: CACI

The economically active population are employed across a broad range of occupations. Within the Central Reading study area 50.4% of the population are employed within occupations that feature in the top three tiers of the Standard Occupational Classification (SOC) system (managers and senior officials, professional occupations and associate professionals and technical occupations). Across the South East the proportion of the population employed within these top three tiers is slightly lower

at 44.1%. Of the nine SOC2000 tiers the top three tiers are generally found to feature the highest level of earnings.

Workforce profile

The Central Reading market has a daytime employed population of 46,705 persons. Most were aged between 20 and 49 (75.1% of people). The Central Reading daytime employed population is greater than the actual resident population of 25,477. The daytime Central Reading employed population features a concentration of young adults aged between 20 and 29 years old, 29.1% of the population, and older adults aged between 30 and 39, 27.0% of the population. It is important to note that Reading is home to a significant student population.

Table 6.7: Daytime population by age band

	Central Reading (%)	Reading Borough (%)	South East (%)
Less than 20 Years Old	7.5	5.8	5.5
20 - 29 Years Old	29.1	25.1	19.5
30 - 39 Years Old	27.0	27.0	25.4
40 - 49 Years Old	19.0	21.2	23.2
50 -59 Years Old	13.8	16.3	20.0
More than 59 Years Old	3.6	4.6	6.3

Source: CACI

Note: the above table shows the size of employed population by age band and excludes full time students

The Central Reading employed daytime population features concentrations of persons within social grade A&B (upper middle and middle class: 29.9%) and C1 (lower middle class: 42.8% of the population), social grades C2 and D combined (skilled working class 8.9%; working class in semi-skilled: 17.6% of the population).

Table 6.8: Daytime employed population by socio-economic class

	Central Reading (%)	Reading Borough (%)	South East (%)
Social Grade A&B	29.9	30.6	24.5
Social Grade C1	42.8	39.4	37.3
Social Grade C2	8.9	11.5	15.9
Social Grade D	17.6	17.9	22.1
Social Grade E	0.8	0.6	0.3

Source: CACI

Note: the above table shows the size of employed population aged 16-74 years by social grade and excludes full time students

Social Grade definitions:-

Social Grade A – is upper middle class and the chief income earner (CIE) within the household is employed in a higher managerial, administrative or professional occupation.

Social Grade B - is middle class and the CIE is employed within an intermediate managerial, administrative or professional occupation

Social Grade C1 - is lower middle class and the CIE is employed within a supervisory or clerical and junior management, administrative or professional occupation.

Social Grade C2 - is skilled working class and the CIE is employed within a skilled manual occupation

Social Grade D - is working class and the CIE is employed in semi and unskilled manual work

Social Grade E- represents those at the lowest levels of subsistence and includes state pensioners or widows where there is no other earner within the household, casual and the lowest grade of workers.

Source: National Readership Survey

Location of employment – the travel to work journey

When studying the general employment profile of a given area it is perhaps interesting to explore how residents travel to work as this can suggest something about location of employment. For instance, a travel to work journey taken on foot suggests that employment is found close to home whilst a travel to work journey taken by train, bus or car suggests employment is found in a more distant location.

Perhaps surprisingly of all modes of travel to work considered, within the Central Reading 38.1% drive a car or private vehicle, forming the largest single mode of transport. An above average proportion of people walk to work 12.0% compared to 6.9% regionally which suggests that a higher proportion find employment close to their home. Figures presented in the Local Transport Plan also show car travel as the largest single mode of transport to work, but show walking at 27.6%. It is likely that the boundaries used in the creation of each dataset differ. However, overall both point to walking as a higher than average proportion of journeys to work.

Table 6.9: Location of employment – travel to work profile of Central Reading, Reading Borough and South East

	Central Reading (%)	Reading Borough (%)	South East (%)
Bus, minibus or coach	17.5	10.1	2.9
Driving car or van	38.1	39.9	40.4
Bicycle	3.0	2.6	2.1
On foot	12.0	8.8	6.9
Works mainly from home	1.9	3.8	6.9
Underground, metro, light rail or tram	0.3	0.2	0.1
Motorcycle, scooter or moped	0.9	0.8	0.7
Passenger in car or van	4.7	3.8	3.9
Taxi	0.2	0.2	0.3
Rail	10.2	5.5	1.7
Not Currently Working	10.9	24.1	33.7

Source: CACI

Travel to work

Reading boasts good communication links with the surrounding region benefiting from proximity to the M4 and efficient links from Central Reading to neighbouring employment centres. Utilising ONS and Census data the travel to work patterns reveal 63.5% of residents are employed within the Borough. Wokingham is the single largest employment centre for outward commuters beyond Reading, with 26.0% of Reading residents commuting there.

Table 6.10: Place of work of outward commuting Reading residents

	No of people	% of working age population
Wokingham	7,088	26.0
West Berkshire	4,948	18.1
Bracknell Forest	2,204	8.1
South Oxfordshire	2,037	7.5
Windsor and Maidenhead	1,209	4.4
Westminster	970	3.6
Slough	909	3.3
Basingstoke and Deane	835	3.1
Hillingdon	508	1.9
Wycombe	455	1.7

Source: ONS

A total of 49.2% of the workforce are resident within the Reading area. Wokingham is the single largest source of inward commuting employees comprising 30.6% of the total inward workforce. This is followed by West Berkshire at 24.1%.

Table 6.11: Residence of inward commuting Reading workforce

	No of people	% of working age population
Wokingham	14576	30.6
West Berkshire	11463	24.1
South Oxfordshire	3246	6.8
Basingstoke and Deane	2442	5.1
Bracknell Forest	1989	4.2
Windsor and Maidenhead	1171	2.5
Hart	704	1.5
Wycombe	680	1.4
Slough	676	1.4
Swindon	628	1.3

Source: ONS

6.6 Housing Needs Assessment 2007

Reading Borough Council, along with the five other Berkshire Unitary Authorities, commissioned a housing needs and demand study in May 2006. The study is based on secondary data collected through the council and government agencies.

The study found that in the context of house price inflation and issues of affordability within Berkshire that it was inevitable a sub-population of households would find themselves unable to access housing in the open market. The commissioned consultant, DTZ, provided within their methodology scope for both a minimum and upper estimate. The methodology followed that provided within Communities and Local Government Guidance.

DTZ quantified the annual requirement to meet current need as 520 additional units as a minimum estimate and 720 units as an upper estimate. This current need figure is based on housing register applicants and available stock to meet their needs. It is newly arising need that forms the predominant affordable housing requirement. This is a function of household growth and the affordability of housing within the private sector. For Reading it was estimated that 57% of new forming households would be unable to access open market housing, representing 230 out of the 400 net household growth figure derived from projections. In addition to this need, stemming from 'new' and otherwise concealed households, 610 existing households per annum are expected to form a particular housing need. The newly arising need total is therefore 840.

Overall, the gross year on year annual requirement from which the new supply of affordable housing can be subtracted totals 1,360. New affordable housing supply is estimated to be 940 units per annum and this therefore presents a shortfall of 420 affordable housing units as a minimum and 830 units as an upper estimate within Reading each year.

Taking into account proposed housing allocations for Reading, as set out within the South East Draft Regional Spatial Strategy the estimated annual average affordable housing requirement is estimated at 520 units per annum to 2026.

The DTZ report also examined the degree to which part of the affordable housing requirement can be met by intermediate tenure provision. The report concludes that there is the potential for a further 12% of households with unmet needs to enter private sector housing through shared ownership.

6.7 Conclusions on current and projected housing demand

From the borough wide and Central Reading demographic overview provided above it is possible to draw general conclusions about current housing market demand dynamics. By referring to data concerning the Central Reading age, socio-economic profile, employment profile, level of individual household income and individual earnings it is possible to make informed assumptions about the type of properties that have the greatest potential to be in demand amongst the resident population. In addition to highlighting these specific demographic derived demand sources we also highlight more generic demand sources that past research suggests are common to many urban centres:-

Occupier demand

The type of housing demand inevitably varies according to household circumstances and there is usually some compromise between what a household wants and what it can afford. In broad terms, the relatively low socio-economic profile of many of Reading's households means that a sizeable proportion of housing provision needs to be "affordable" in the broadest sense – i.e. either social, shared-ownership or low cost open market units. This has been shown in section prior to this.

Whilst families may often desire a less urbanised environment (although there will be demand from families for city centre housing), single person households and couples without children will have different lifestyle requirements and are just as likely to want to move up the housing ladder within the

city centre – especially those within the “young professionals” segment. Clearly, proximity/accessibility to work, facilities (most prominently schools, shopping and leisure facilities) and perceived quality of local environment will also influence housing location choice.

The population of city centres is generally far younger than the average age profile for the UK or even for the wider urban areas in which the centres are situated. Households in central areas are smaller than normal comprising considerably more single households than typical. Statistics point to the fact that households in city centres are more transient than in suburban and rural areas, with a high turnover of both tenants and owner occupiers. The high number of students often living in these areas is a factor which contributes to the relatively high turnover of households.

On several measures it is clear that the social and economic profile of city centres is skewed towards the more educated, aspirational and professional sections of the population, defined by CACI as the “Urban Prosperity” sector. According to government statistics the proportion of highly educated residents is over four times higher in city centres than the UK average.

A survey of major UK Central Readings conducted by Knight Frank in 2005 concluded that the largest segment of owner-occupier purchasers lies within the 30–39 age group at over 40% of all purchases. Additionally over half of Central Reading owner occupiers are single or living alone. The majority of owner-occupiers buy accommodation for short term (up to two years) use only; three quarters purchase units to live in full time and the other quarter as a working-week base only.

Almost 60% of city centre owner-occupiers are seeking two bedroom accommodation and nearly a quarter one bedroom units. Limited numbers are seeking crash pad accommodation, although this may be due to the limited size of this new market at present as it represents a more affordable entry route onto the housing ladder. However, it is not possible to quantify how many families may wish to live within city centres in larger dwellings but are excluded by virtue of either affordability or lack of suitable accommodation.

Demand for smaller one bedroom / studio type units within Central Reading

12.8% of the Central Reading population is aged between 20 and 24 and projected to experience a 24.0% increase to 2016. These young Central Reading dwellers often tend to be childless and are likely to be in the early stages of their career, or in full time higher education, and so are likely to have only a modest income. These types of individuals might express demand for small units within

the Central Reading as space for a family is unlikely to be a priority and smaller units tend to offer lower sales and rental prices.

In addition to the young adult age group, it is likely that single person households will be a further source of potential demand for smaller one bedroom units within the central market given their likely acceptance of a smaller living space (no 'extra' space needed to accommodate children or a second person).

Demand for larger two and three bedroom units within the city centre

28.0% of the city centre population is aged between 25 and 34 and 14.1% is aged between 35 and 44. Persons within these age groups are likely to be established within their careers, be on a higher level of income than the 20 to 24 year olds. Some may be considering or may have already moved in with or married a partner, may be thinking about or may have already started a family and/or may have separated from a partner and sold the family home. These older adult age groups might then have the income and the desire to purchase or rent a larger residential unit within the city centre – perhaps a three bedroom property that might include an element of private outdoor space.

Demand for mid market properties

With 24.2% of households within Reading being defined as Comfortably Off within the ACORN socio-economic analysis it is likely that mid market properties, quite possibly mid market family properties in particular, will be in especially high demand. If mid market priced properties such as large lateral apartments, townhouses or mews houses were provided within the Central Reading or near centre locations, a proportion of the comfortably off households might be interested in, and be able to afford, the units on offer.

Demand for rented Central Reading property

There is an increasing stock of evidence, outlined within the Joseph Rowntree report, 'Characteristics and functions of the private rented sector' suggesting that younger households are more willing to rent as an intermediate step, prior to purchasing their first property. Figures from the Council of Mortgage Lenders report 'The Decision to buy' show that amongst the under 25 age group aspirations of home ownership fell from 79% in 1983 to 43% in 2004.

Data gathered by the JRF supports the assertion that the private rented sector (PRS) acts as a holding stage for those waiting for the right time to buy; when they are able to afford it, settle down or purchase with a partner: the PRS is the most mobile tenure with the youngest age profile, with a bulge of private renters aged between 25 and 34.

In terms of affordability the prevalence of the private rented sector within city centres indicates an intermediate stage in the purchasing cycle of residents, remaining within the tenure until home ownership becomes a realistic option.

Young professionals in the early stages of their careers may lack the financial resources to purchase a property or may be keen to remain mobile in order to follow job opportunities. As a result they may be interested in private rented properties provided within the city centre. Within Central Reading 28.8% of the population is aged between 20 and 29 and 50.4% are employed within the top three SOC2000 occupational tiers. These factors suggest a suitable market for mid market priced properties to rent exists within the city centre.

Demand for Central Reading properties from commuters

Travel to work data reveals that the Central Reading experiences considerable commuter flow between neighbouring urban centres. A considerable proportion of this commuter population is young being aged between 20 and 29 and is classified as middle class. These persons might be interested in, and be able to afford, smaller one bedroom and larger two and potentially three bedroom apartments located within the proposed Central Reading development in order to cut out the daily commute.

Demand from new household formation

The natural processes of new household formation brought about through children leaving the family home, partners moving in together, families breaking up and divorce create demand pressures as new, and sometimes modified accommodation requirements have to be met. The 24.0% projected increase in younger household numbers suggests a substantial pent up demand source from concealed households. Communities and Local Government 2003 based household growth figures for Reading indicate an average net household formation rate of 400 per annum.

Demand from retirees and empty nesters for city centre property

There has been a growing trend amongst the early retired or recently retired generation to re-embrace urban living whilst at the same time maintaining the main family home in the country / outer suburbs. Having spent a lifetime in work many have built up a capital fund which might enable them to purchase the larger, more expensive units found within some city centre developments. Often space is a primary concern to this lifestyle group with many being unwilling to consider standard sized one and two bedroom units.

Investor demand

The importance of the private investor (both domestic and foreign) to the new build sector in major city centres is well known. Although this sector has declined in size over the last 12 to 18 months investors, led by buy to let private landlords, still form a large part of the market.

In addition to individual purchasers the market for new build residential investment stock also includes syndicate and corporate purchasers. The syndicate model is a phenomenon which has aided demand for residential property from not only UK purchasers but also from those outside of the UK. These purchasers have often led the market in terms of seeking out new products and locations.

The corporate investment sector we define as including purchases by investment funds. Whilst several funds have been active in city centres in the UK, they still only account for a very small proportion of the market. However, this sector is expected to grow in importance following the proposed introduction of UK REITS in 2006/07 and could become a considerable buying force within a relatively short period of time. There is concern that investors may retreat from the market when conditions become less attractive and seek better returns elsewhere, to the detriment of local housing markets. As capital growth has slowed, so the attitudes of investors have changed with more investors aware that rapid returns are less likely in the next few years. Investors now recognise that they need to look more closely at their ability to hold investment property for longer periods. This is consistent with the general dissatisfaction with failing pension provision and stock market volatility and is supported by recent research from ARLA who report that 44% of their surveyed membership acquires residential property in order to create a nest egg for their long term future.

Our research indicates that investors currently make up over 55% of all purchases in major city centres; this proportion increases significantly for new build stock where investors comprise 65% of the market. For conversion schemes, including conversions from industrial, warehouse or office use

to residential, the proportion of investors falls and owner-occupiers form the largest section of the market purchasing over 60% of all units.

Investors remain overwhelmingly interested in purchasing properties off plan, a sector of the market which comprises nearly 70% of all investment purchases. In the studio and crash pad sector investors form approximately 65% of purchasers. Both one bedroom and two bedroom units are primarily bought by investors, more so with one bedroom units with 65% of units going to investors compared to 52% for two bedroom units. Purchases of three bedroom units which tend to be located in either conversion schemes or provided as penthouse units are dominated by owner-occupier purchasers who form 80% of the market.

Recent analysis of the London Development Database has found that in London two thirds (66%) of new build market homes are purchased by investors, with the remaining third purchased directly by owner-occupiers⁴. The proportion of investor purchase has been found to be slightly higher at 68% within the London Thames Gateway sub-region. The research paper also identifies the buy-to-let market as the predominant destination for homes purchased as investment.

High levels of buy-to-let investment in new housing developments have raised concerns both nationally and within London. The London Development Research paper summarises these as; reduced choice for owner-occupiers, particularly at the lower end of the market; the skewing of property types developed through investor led demand and; the concentration of private renters and the negative aspects of population turnover. However, the fact remains that without investor demand many schemes would struggle to deliver. The investment sector is a key element of city centre markets.

The development of tall buildings will be attractive to investors looking to invest in the buy-to-let market. Research has shown that investors predominantly seek smaller one and two bedroom units. However, it is also apparent that the highest rental yields exist within larger three bedroom properties when rented on a per room basis. This coupled with affordability constraints within the first time buyers market may mean that larger properties are unaffordable to all but investors and therefore assuming investors will seek to maximise rent would let their rooms out on per room basis.

⁴ *Who buys new market homes in London?*, London Development Research, December 2006

Affordability is clearly important in the development of new homes in terms of access and meeting demand. Developments with greater provision of three-bedroom properties will successfully meet the requirement for them only if they are accessible.

Barriers to demand within the Central Reading Market

The apartment market in Central Reading has recorded growth of 9.5% since January 2006. Mean overall prices of apartments now average £198,918. This presents a significant affordability gap. The median gross household income in Reading is estimated to be £30,631 with an affordability ratio, based on this overall mean property price of 6.5.

Affordability represents the largest single barrier to demand for residential elements of tall buildings. Earnings, household incomes and house prices within all sectors are becoming disparate in increasing proportions. In addition to affordability constraints within the apartment market there is the added premium for buying property on the upper floors of developments.

7.0 Supply-side trends

To appreciate housing supply conditions within Reading and particularly within Central Reading within this section we review residential completions and development pipeline data, house building projections and data that profiles the present housing stock in terms of dwelling type and tenure.

7.1 Tenure

In terms of housing tenure as a proportion of stock within the Central Reading market records considerably fewer owner occupier households at 54.3%, compared to Reading overall at 64.9%, 74.0% regionally and nationally 68.3%. The notable difference from the regional profile is the proportion of households within the private rented accommodation, representing 26.4% of the Central Reading household population compared to 9.2% regionally.

Table 7.1: Housing tenure

		Central Reading (%)	Reading Borough (%)	South East(%)
Owner-occupied	Owned outright	17.9	24.2	31.3
	Owned with mortgage or loan	34.9	39.4	41.9
	Shared Ownership	1.5	1.3	0.8
Social rented	Rented from council	8.8	11.3	7.4
	Other social rented	6.9	5.3	6.6
Privately rented	Private landlord or letting agency	26.2	15.0	8.8
	Employer of household member	0.2	0.2	0.4
	Relative or friend of household member	1.0	0.7	0.6
	Other privately rented	0.3	0.3	0.4
Rent free		2.2	2.3	1.9
Total		100	100	100

Source: CACI

Both semi-detached and terraced properties account for almost two thirds of stock in Reading at 69.9%, this housing profile is in line with the wider regional stock distribution. Detached properties within the South East overall account for significantly more of the stock proportionally than that within Reading. The current housing supply is a legacy of an earlier pattern of economic structure and

development based upon manufacturing accommodation which does not meet current nor expected future needs for accommodation.

Reflecting the densification of urban centres the Central Reading housing market comprises a high proportion of terraced properties at 41.2% and flatted properties 29.1%. Terraced and flatted properties form the most prevalent housing type in Central Reading.

Table 7.2: Dwelling type

	Central Reading (%)	Reading Borough (%)	South East (%)
Detached	3.7	12.4	29.3
Semi-Detached	10.1	25.1	28.5
Terraced	41.2	34.8	23.1
Flat, maisonette or apartment			
Purpose built	29.1	18.9	13.0
Conversion	12.4	6.3	3.9
Commercial building	1.6	1.2	1.2
Shared accommodation	1.6	0.9	0.7

Source: CACI

The current spatial pattern of household composition across Reading is in part driven by the spatial distribution of property type. The distribution of household types representing families is strongly related to the distribution of larger detached and terraced properties. Whilst the relationship between families and detached and terraced properties is a strong positive relationship, the relationship between the distribution of families and flats is negative.

7.2 Historic supply

Emerging affordability problems across the English regions and greater than forecast household growth led to the Barker Review of Housing Supply, identifying mechanisms to deliver affordable housing more efficiently. The government response has been to effectively move planning policy to a more market driven responsive system of supply.

In 2004 when the Barker report was published, affordability ratios across England and Wales as a whole were 6.4, in 2007 they now stand at 7.3. In light of the Barker Review findings and growing problems of affordability the Government has undertaken significant planning reform. Key recent changes specific to the provision of housing have been the Planning Policy Statement 3 (PPS3) on

Housing and Planning Policy Statement 11 (PPS11) on Regional Spatial Strategies. PPS3 outlines the national planning policy framework for the delivery of housing.

The volume of annual housing completions in Reading has risen substantially since the early 1990s and although official data for 2006/07 are not yet available, the volume of construction starts as at end 2005/06 (384, of which 312 were private and 72 public) suggests the trend of the previous two years has continued. Since the late 1990s, the private sector has accounted for on average around 81% of new supply, reflecting the difficulty housing associations have in competing financially with private sector developers.

Table 7.3 Completions in Reading UA, 2000 - 2006⁵

Year	Private	Public	Total	% private sector
2005/2006	328	69	397	82.6
2004/2005	719	216	935	76.9
2003/2004	417	101	518	80.5
2002/2003	385	43	428	90.0
2001/2002	429	168	597	71.9
2000/2001	289	10	299	96.7
Total since 2000	2567	607	3174	80.9

Source: *Communities and Local Government*

Recent development trends with the move towards city living have seen a rapid increase in the amount of residential development in Central Reading.

7.3 Future supply

In spite of recent slower sales rates, developers do not appear to be holding supply back. We do not believe that oversupply will be an issue although there remains some concern that new supply should be more evenly balanced between housing types and not dominated by flats. In terms of planning targets, the Draft South East Plan (RSS) makes provision for an additional 10,420 new dwellings in Reading between 2006 and 2026, an average of 521 per annum.

⁵ Note: Berkshire also provide completions figures. These differ in terms of the total number of completions, stemming from a separate means of data collection. However, the private sector proportions produce similar results to that provided by Communities and Local Government.

This compares with the average of 529 dwellings delivered since 2000. The level of increase over an above that allocated within the Berkshire Structure Plan should be achievable given that completions over the past three years have averaged in excess of 500 per annum and assuming issues over site availability do not impede.

Development densities will increase which should help to alleviate possible issues regarding site availability. Historically, the South East currently has among the lowest densities in the country (25 dwellings per hectare) which has risen in recent years to reach 34 in 2002/03. The regional planning authority is seeking to raise this figure up to 40, while the Berkshire Structure Plan encourages a minimum of 30 and up to “in excess” of 50 for the unitary authorities within its boundary.

PPS3 set a national target of 60% for the amount of additional housing which should be provided on previously developed land or by converting existing buildings by 2008, which is reiterated in both RPG9 and the draft South East Plan for the region – along with the need for accessible and sustainable development.

In fact, by 2002/03 the Berkshire authorities had already achieved a figure of 71%. In terms of location, the Berkshire Structure Plan intends for major housing developments to be “primarily located in and adjoining the major existing towns and their contiguous built-up areas” - Reading being one of seven so named. Nonetheless, local plans may provide for housing in other locations where this is in support of other policies in the Structure Plan.

The future distribution of housing provision will take place in accordance with the spatial strategy. The existing levels of commitments for the Borough are split as follows:

- 40% in the Central Reading area;
- 25% along the A33 corridor, mainly at Kennet Southside;
- 35% in accessible areas immediately around the central area and through relatively small scale infill elsewhere in the Borough

The major earmarked locations for new housing development in Reading (much of it as part of mixed-use projects) are as follows:

City Centre:

- West Side & Chatham Place;

- East Side including Kenavon Drive.
- possibly also around Reading Station

The council wishes to see the regeneration of the centre and its elevation into a major city centre. Significant residential development is seen as an essential part of the strategy for Central Reading. The Reading Central Area Action Plan supports this through presenting a series of Major Opportunity Areas, as detailed above.

Reading out-of-town:

Recent residential developments are also bringing significant regeneration benefits to several other parts of the Borough. In particular a proposal for 855 homes on the former sewage works at Manor Farm has outline consent; further residential development is being promoted on adjoining sites to Manor Farm in a combined scheme known as Reading Gateway. This proposes 1,150 units and has been given planning consent by the planning authority. The redevelopment of Battle Hospital represents another significant development. The 8.36ha site is set to deliver 500 units.

A high level of development will also continue to occur in the accessible A33 corridor in addition to the existing commitments. Development will be bolstered by the development of Green Park 3 site for residential use on which 700 units are currently proposed.

7.4 Reading's supply pipeline September 2007

Tables 7.4 and 7.5 present the supply coming forward in Reading as at September 2007. 3,451 units remain outstanding from 4,428 units in total. 65% of outstanding units stem from large schemes of over one hectare in size. Major schemes (as detailed above) include the Asset Co. scheme at Kenavon Drive, the Amec Developments scheme at Chatham Street and Battle Hospital. Of major significance to development within Central Reading is the Kier Property Group scheme on Station Road, which if delivered will stand at 22 storeys and provide 103 residential units.

Table 7.4 Hard Commitments, new build at 03/09/2007

Location	Units completed	Units		Total units
		outstanding	development	
Sites over 1ha in size	559	2,256		2,814
Sites of <1ha with >10 dwellings	327	924		1,251
Sites of <1ha with <10 dwellings	92	271		363
Total	978	3,451		4,428

Table 7.5 Hard Commitments, major schemes with provision of over 50 new build units as at 03/09/2007

Location	Units completed	Units to	Units	Total	Status
		complete	not started	development units	
Napier Road	246	0	2	248	Full
Chatham Street	0	307	0	307	Full
Kenavon Drive	0	0	542	542	Outline
Friar Street	0	0	71	71	Full
Battle Hospital, Oxford Road	0	47	453	500	Full
Amersham Road	120	47	6	173	Full
Wokingham Road	0	0	95	95	Outline
Parkside Gardens	77	0	0	77	Full
Manor Farm	111	192	552	855	Outline/Reserved Matters
Friar Street, Shoesmith Crt	112	0	0	112	Full
Queens Road	82	82	0	82	Full
Battle Street	0	0	89	89	Outline
Caversham Road	60	0	0	60	Full
Station Road	0	0	103	103	Full
Kings Road	0	0	108	108	Full
Honey End Lane	59	0	0	59	Full

Source: Reading Borough Council

7.5 Supply side considerations within the market for tall buildings

There are a limited number of contractors, interested in constructing high rise residential schemes in the UK and the choice of contractors is further limited by the relatively small number with experience and expertise in constructing residential towers. The obvious consequences are that with a limited pool of contractors and sub-contractors capable of working on such schemes, there is reduced competition which almost invariably leads to cost premia.

There are however a number of steps which can be taken to mitigate these malign influences; early contractor involvement and procurement which involves partnering has a number of advantages, not

the least is that the extended design and planning consultation periods which are almost inevitable in a scheme of this type can be utilised to iron out design problems; early contractor involvement is usually beneficial to ensure 'buildability'.

A further advantage of partnering is that the repetitive design involved in a high rise tower, lends itself to standardisation of the supply chain which should bring other benefits including standardisation, modularisation and prefabrication economies.

Due to a general lack of experience and the bespoke nature of towers, there is a natural tendency for contractors to price more risk within their tenders than buildings of a simpler construction. One of the key advantages of early contractor involvement is that better knowledge of the scheme should substantially reduce any risk.

A further point which has to be considered in tall residential schemes is the period of financing. Phased completion of a tower block can be difficult to achieve and capital can be tied up for substantially longer than for low rise schemes. Excessive periods of financing can, in certain circumstances, be mitigated by selling off plan.

With all residential developments, there is a balance between the need to release units to the market, usually in a phased manner, and the need to minimise costs. This issue is magnified in tower schemes as the opportunity to facilitate phased release of apartments is restricted, in construction terms, yet vital if the scheme is to be viable. Phased completion is not, however, impossible and an early consideration should be made of both horizontal and vertical phasing. The need to facilitate phased release of units through scaffold free elevations, innovative use of lifts, etc, becomes a fundamental part of the design brief.

8.0 Review of current market activity

8.1 The UK residential market

After a strong period of growth, the UK housing market is entering a cooler phase with weaker signals becoming more apparent in terms of both pricing and demand, albeit set against a still healthy economic background.

The Bank of England held the UK Base Rate at 5.75% in September with the impact of the credit crunch and the continued easing of inflationary pressures influencing their decision. CPI has declined significantly from 3.1% in March to 1.8% in August, the lowest level since February 2005. The UK economy remains strong with solid GDP growth and positive employment creation.

The London economy continues to perform strongly, although the recent turbulence in the financial sector could negatively impact on employment and regional GDP in the near future. The financial and business services sector concentrated in the capital continue to drive the southern England economy and underpin wider economic growth.

UK house prices remain strong with most measures recording growth at or around 10% for the year to August. It is likely that there will be a discernable shift towards a lower rate of growth during the final quarter of 2007 and into next year, primarily due to affordability concerns leading to lower completion volumes. Indicators on sales volumes and market activity have shifted in recent months with lower sales and mortgage lending recorded on a year on year basis.

The most significant issue for the UK is rising affordability problems and the emergence of consumer confidence issues due to the credit crunch. With lower earnings growth and rising or stable UK interest rates, tightening affordability will need to be addressed through lower house price growth over the medium term.

On a longer term basis the fundamental supply shortage facing the UK is still not being addressed. The Government have recognised the need for many more houses to be built, the question will be how quickly this process can be completed.

Residential market summary

UK house price inflation has remained strong throughout the first half of 2007, with prices growing on average by almost 10% to August on an annualised basis. There are significant regional disparities – with growth hitting as much as 47% in Northern Ireland and only 5% in the West Midlands in the year to Q2 2007.

The most recently available statistics from the Land Registry suggest that residential transactions in England & Wales stood at 1,157,000 in the year to June, a year on year fall of 1%. There is an increasingly noticeable trend towards a decline in sales activity since the Spring.

Mortgage lending data provides a more timely indicator of housing market activity than historic transactions. The number of mortgages taken out for house purchases in July totalled 93,700, 9% lower than the same month in 2006.

Mortgage market

We have seen that mortgage lending for house purchase has fallen by 9% on a like for like basis between July 2006 and July 2007. This growth in activity is being accompanied by a shift towards fixed rate deals. The proportion of fixed rates mortgages has risen from 18% in early 2002 to 79% in July this year. Recent base rate rises have meant that the average fixed rate mortgage is being agreed at 5.71% (July), compared to only 5.12% a year ago.

The buy to let mortgage market has grown strongly over recent years with 330,300 mortgages taken out in 2006, a rise of 48% on the total borrowing in 2005. Figures for the first half of 2007 suggest the market may be slowing with 172,000 buy to let mortgages taken out as against 177,000 in H2 2006.

The strong performance of the top of the UK market over recent years is demonstrated by the fact that high value mortgage lending has expanded, with the number of £500,000+ mortgages rising by nearly 19% year on year to June 2007.

New homes

Household formation in recent years has been estimated at 179,000 per annum across England. Trends show that house building has significantly lagged behind this formation rate. Most recent completions figures indicate that net new build per annum in England is approximately 30,000 units behind the requirement for 200,000 estimated within the Barker Review.

The English regions are planning currently to deliver approximately 192,000 units per annum over forthcoming years. Although this total represents 8,000 short of the Barker Review recommendation, actual completions fall even further behind the Barker target. The new target of 240,000 homes per annum, announced in mid July will place even greater pressure on the delivery system.

In London over the year 2005/06 28,300 net additional unit completions represented 123% of the London Plan annual target (23,000 per annum) and 93% of the revised London Plan annual target of 30,500.

Across England affordable housing completions in 2006/07 totalled approximately 22,000 representing 13% of supply.

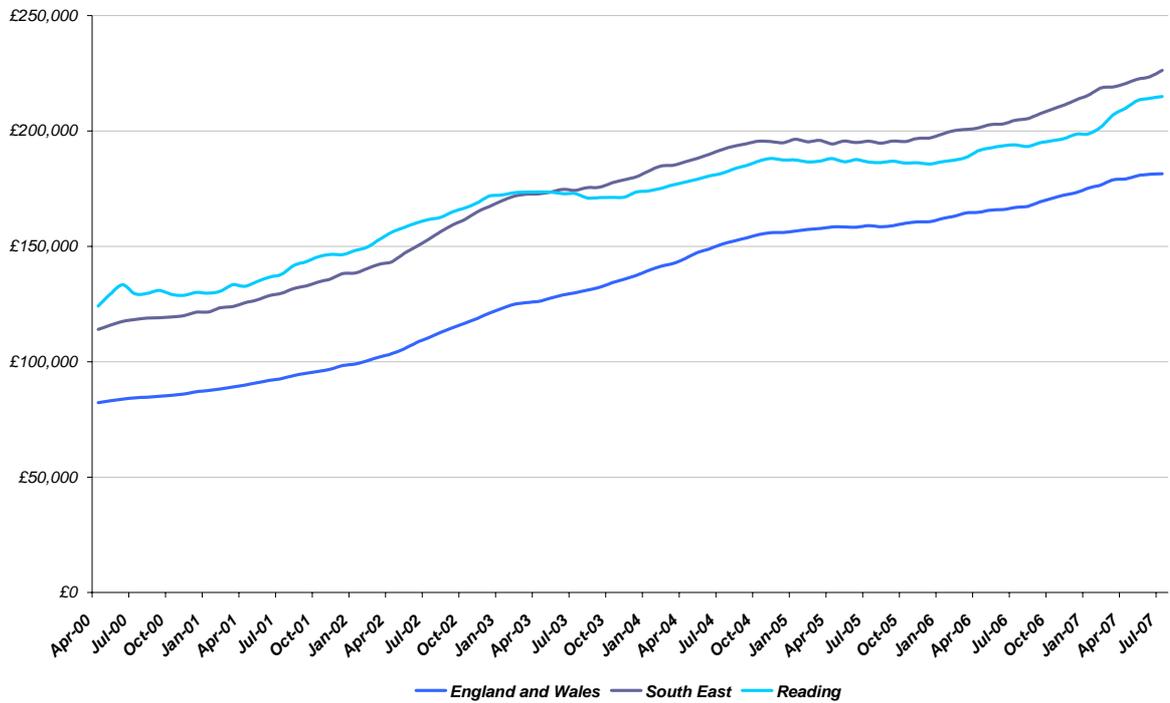
8.2 Regional and local market context – the South East, Berkshire, and Reading

Price performance

Mean overall prices for the South East indicate an increase from £118,935 in April 2000 to £227,667 in June 2007 an increase of 91.4%⁶. This is below the 120.6% experienced across England and Wales as a whole. Reading BC has also experienced significant growth rates at 67.2%. The mean overall price in England and Wales as a whole was almost £34,500 lower than that in the South East and Reading and therefore started from a lower base. The margin between Reading, the South East and England and Wales as a whole has grown. In 2007 prices are between 35,000 and £47,000 higher than England and Wales averages.

⁶ Land Registry House Price Index

Figure 8.1 House price inflation in England and Wales, South East and Reading BC April 2000 to July 2007



Source: Land Registry House Price Index

Over the past six consecutive quarters Q1 2006 to Q2 2007 average all property prices within the South East have risen by 14.6% to reach £227,667. Mean overall prices across Reading experienced a higher increase at 16.1% to £216,73.

In terms of capital appreciation by property type since Q1 2006, within the South East detached and semi-detached properties have experienced the largest proportional increase at approximately 8%, whilst significant increases in the price of detached, semi-detached and terraced properties can be reported for Reading as a whole. Within Central Reading semi-detached and terraced properties have experienced the greatest proportional price growth.

It is important to note that apartments and terraced properties represent the largest proportions of housing stock in Central Reading. Detached and semi-detached properties are under-represented. Further details on are provided within section 4.

Focussing specifically on the price performance of the apartment market we find that property prices across South East as a whole have appreciated by 3.6%. In Reading, however, prices have

recorded growth of 15.3%. It is important to note that the Land Registry price paid data averages all sales and therefore may mask sub-district variation. Central Reading for example recorded only 9.5% growth.

Central Reading has experienced comparable price increases to Reading overall at 55.0% . Mean overall prices are also similar at £198,918. Table 8.1 and Table 8.2 present the price change across the postcode sectors in Reading and then specifically within the centre.

Table 8.1 Price change, Reading 2001 to 2007

Year	Detached		Semi-detached		Terraced		Flat/apartments		Overall	
	Av Price £	Sales	Av Price £	Sales	Av Price £	Sales	Av Price £	Sales	Av Price £	Sales
2007	£415,771	109	£237,255	342	£202,992	540	£174,670	478	£217,542	1469
2006	£362,410	352	£225,055	923	£184,854	1345	£166,301	954	£207,771	3574
2005	£343,984	320	£212,321	798	£177,722	1251	£169,166	1018	£199,010	3387
2004	£345,828	352	£203,278	963	£165,179	1301	£160,283	1122	£190,535	3738
2003	£342,138	372	£189,057	930	£154,369	1350	£149,370	1085	£180,241	3737
2002	£295,268	422	£176,707	1017	£143,943	1484	£151,388	1094	£170,162	4017
2001	£314,265	404	£150,792	1052	£119,160	1498	£120,756	1045	£147,608	3999

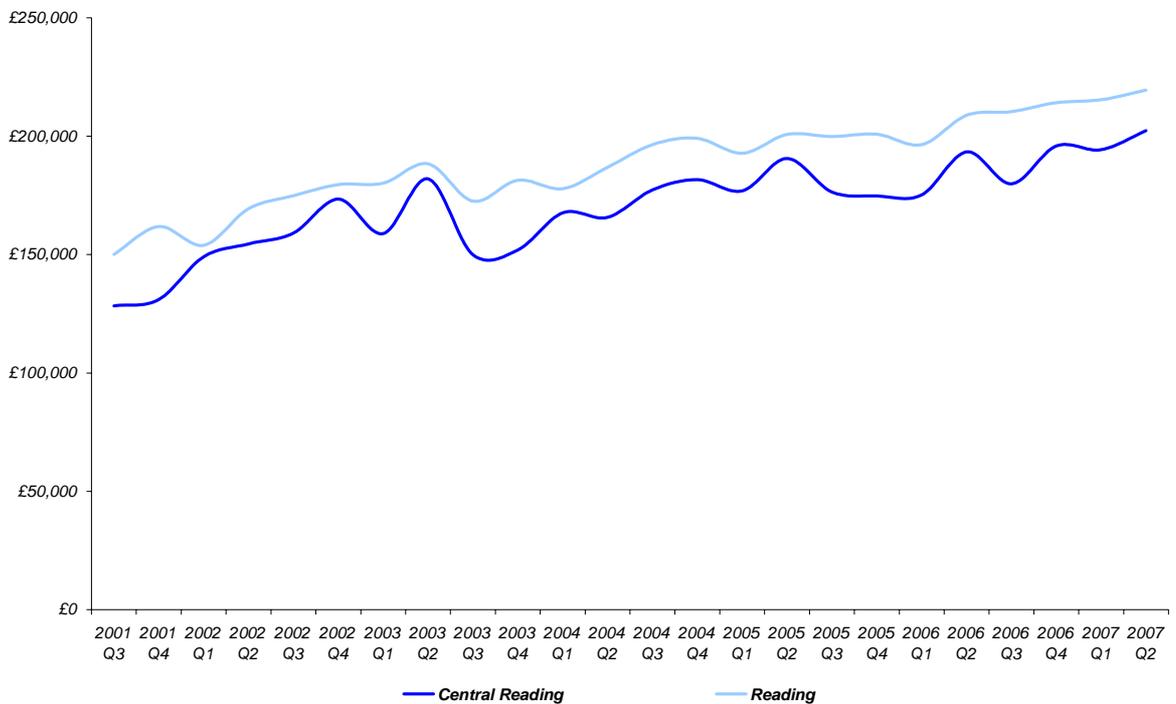
Source: Land Registry, price paid data.

Table 8.2 Price change, Central Reading 2001 to 2007

Year	Detached		Semi-detached		Terraced		Flat/apartments		Overall	
	Av Price £	Sales	Av Price £	Sales	Av Price £	Sales	Av Price £	Sales	Av Price £	Sales
2007	£349,931	8	£242,481	35	£202,456	167	£185,297	244	£198,918	454
2006	£351,712	16	£216,999	69	£181,649	381	£181,216	425	£187,234	891
2005	£260,700	10	£220,610	64	£171,157	313	£176,542	352	£179,217	739
2004	£324,125	16	£193,693	102	£165,093	366	£170,197	443	£173,424	927
2003	£254,094	26	£187,917	72	£155,082	372	£154,890	469	£160,245	939
2002	£191,210	14	£174,845	88	£141,209	374	£171,560	375	£158,884	851
2001	£226,744	8	£176,566	32	£123,426	195	£123,833	172	£129,807	407

Source: Land Registry, price paid data

Figure 8.2 House price inflation Reading and Central Reading, 2001 to 2007



Source: Land Registry, price paid data

It is apparent that both Reading and the Central Reading sub-market have experienced significant appreciation since 2001. Over the previous six quarters to Q2 2007, Reading as a whole experienced a 11.7% increase whilst Central Reading experienced a significantly higher price rise of 13.5%.

Sales activity

Across the South East there have been 436,810 sales since January 2006, representing an average monthly sales rate of 17,465 properties⁷. In Reading over the same period there were 5,726 sales⁸ averaging 318 sales per month. Sales in Central Reading accounted for 2,236 of these at 39.0%. Sales within the postcode sector RG1 7 accounted for over a quarter of sales within Central Reading.

Table 2.3 and 2.4 show the distribution of sales within each year for both the Reading and Central Reading area. Semi-detached and terraced properties dominate the sales in both areas. However, sales of flats/apartments have increased as a proportion of total sales in recent years.

⁷ Source: Land Registry House Price Index

Table 8.3 Distribution of sales by type, Reading, 2001 to 2007

Year	Detached % Sales	Semi-detached % Sales	Terraced % Sales	Flat/apartment % Sales	Overall % Sales
2007	7.4	23.3	36.8	32.5	100.0
2006	9.8	25.8	37.6	26.7	100.0
2005	9.4	23.6	36.9	30.1	100.0
2004	9.4	25.8	34.8	30.0	100.0
2003	10.0	24.9	36.1	29.0	100.0
2002	10.5	25.3	36.9	27.2	100.0
2001	10.1	26.3	37.5	26.1	100.0

Source: Land Registry

Table 8.4 Distribution of sales by type Central Reading, 2001 to 2007

Year	Detached % Sales	Semi-detached % Sales	Terraced % Sales	Flat/apartment % Sales	Overall % Sales
2007	1.8	7.7	36.8	53.7	100.0
2006	1.8	7.7	42.8	47.7	100.0
2005	1.4	8.7	42.4	47.6	100.0
2004	1.7	11.0	39.5	47.8	100.0
2003	2.8	7.7	39.6	49.9	100.0
2002	1.6	10.3	43.9	44.1	100.0
2001	2.0	7.9	47.9	42.3	100.0

Source: Land Registry

Historic buying activity by price band in Central Reading

Table 2.5 illustrates the prices properties have sold for in Central Reading. There has been an upward shift in buying activity to higher price bands in line with price inflation. During 2004, 35.4% of transactions were recorded within the £150,000 - £200,000 price band, during 2005 and 2006 the proportions of transactions within this band and those lying higher in the overall distribution have increased. In 2006 28.7% of all transactions were for properties of value in excess of £200,000.

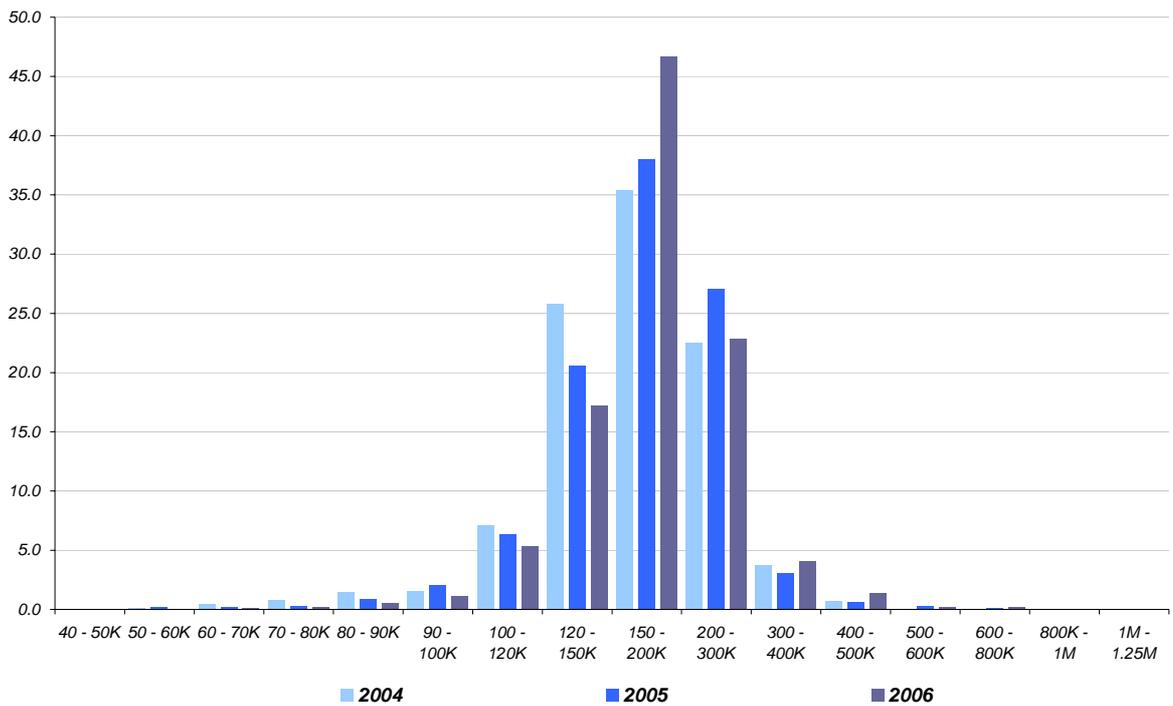
⁸ Source: Land Registry House Price Index. Note, months of June and July unavailable.

Table 8.5 Buying activity by price band Reading

	2004 (%)	2005 (%)	2006 (%)
Under 50k	0.3	0.0	0.0
50 - 80k	1.4	0.8	0.3
80 - 120k	10.1	9.4	7.0
120 - 150k	25.8	20.6	17.2
150 - 200K	35.4	38.1	46.7
200 - 300K	22.5	27.1	22.8
300 - 400K	3.7	3.1	4.1
400 - 500K	0.7	0.7	1.4
500k +	0.1	0.4	0.4
Total	100.0	100.0	100.0

Source: Land Registry

Figure 8.3 Distribution of transactions by sale price, Central Reading, 2004, 2005 and 2006



Source: Land Registry

New build price performance in Central Reading

Household formation in England & Wales is projected to be at least 190,000 per year up until 2021; net house building is currently running at around 170,000 units per year. The government have stated that their objective is to see new housing supply to rise above 200,000 units between 2006

and 2016. The Government's Green paper on housing supports this drive for a greater housing supply.

There is increasing speculation over the price performance of new build flats compared to new build houses; the driver for the debate has been the growing proportion of new build stock which is composed of flats compared to the declining number of detached and family houses being built.

In the late 1990s new build flats saw price growth at above the level experienced by established flats and new detached houses. Since mid-2000 this trend has reversed with higher rates of price growth experienced by established properties generally and also by new build detached houses.

The average two bedroom new build city centre apartment in the UK saw a price fall of -0.7% in the 12 months to the end of December 2005. At the same time investors achieved a rental return (gross yield) equating to 4.9%.

Table 8.7 presents the new build price data for Central Reading split by property type for those new builds sold in 2007 to date. New build property sales data for apartments in Central Reading indicate a mean transaction price of £186,089. These new build prices are approximate to the total all sales prices.

Table 8.7 New build sales activity 2007 to date – mean prices

Postcode sector	Detached	Semi-detached		Terraced	Flat/apartment	
RG1 1					£172,854	6
RG1 2	£315,000	5		£330,000	1	£92,000
RG1 3					£185,000	1
RG1 4	£305,357	7	308,333	3	£207,146	44
RG1 6					£158,975	2
RG1 7	£485,000	1	302,000	1	£215,714	7
RG1 8	£438,714	24	289,988	4	£275,369	13
					£190,750	4

Source: www.nethouseprice.com, Land Registry price paid data

The largest number of apartments sold in 2007 to date are within the postcode sector RG1 4 at 44 units, 14 of which are on the 'Q' development on Kennet Street.

8.3 The rental market

Within this sub-section we consider the rental market within Reading and specifically within Central Reading. Information on the rental market combined with that above highlighting the relative success of new build development in Reading, may help indicate the level and nature of investor interest for any proposed tall building developments that Central Reading may attract.

Table 8.8 below utilises data collected through an online internet survey of private rented tenure supply with the mean and entry level rents across Reading. Private rents in Central Reading are approximate to those within Reading as a whole. Communities and Local Government data on the private renting sector indicates that rent within Reading are below that for England and Wales as a whole at £534 per month⁹. However, latest regional data¹⁰ on private rents from the Survey of English Housing places rent in Reading above that for the South East as a whole at £588 per month.

Table 8.8 Mean and entry level rents Reading, October 2007

	Reading	
	Mean (£ pcm)	Entry-level (£ pcm)
Studio apartment	525	500
1 bed apartment	656	550
2 bed apartment	978	650
2 bed house	800	725
3 bed apartment	1,040	795
3 bed house	911	775
4 bed house	1,173	895

Source: Knight Frank Residential Research

The private rented sector offer has increased substantially in Reading. In recent years supply in Central Reading has been dominated by the delivery of a number of apartment schemes. This trend is set to continue with developments such as the Chatham Place and Luscinia View in the pipeline. According to the Annual Monitoring Report 2006/07 all completions in the city centre have been flats in the past year. Private rents within the Central London are considerably higher than those within Reading and as such are therefore less affordable. Opportunities to rent in comparable

⁹ Assured tenancy, table 734 Rents, lettings and tenancies: private tenancies and rents, by type of tenancy 2005/06, Communities and Local Government, Survey of English Housing.

¹⁰ 2005/06 information is the latest available at regional level

developments within London's travel to work area with good transport links to the City are therefore relatively attractive in terms of price.

In recent years there has been a significant increase in the private rented sector in Reading. Demand for private sector accommodation within Reading is growing. The most recent Housing Needs and Demand Study for Reading indicates a shortfall in supply relative to demand for private rented provision. However, findings of the Housing Needs and Demand Study also suggest that access to the private rented housing market is significantly restricted to the local population by cost.

The most recent Association of Residential Letting Agents (ARLA) review (Q3, 2007) indicates that the demand for rented residential properties has continued to outstrip supply, particularly for those managing properties in Prime Central London with nearly two thirds of these (65%, albeit down from 72%) now saying there are more tenants than there are properties available for them. Meanwhile, those managing properties in the rest of the South East who say there are more tenants than properties has increased from 52% to 57% and the proportion of those in the Rest of the UK who say this has increased from 35% to 44%.

8.4 Affordability

Earnings, household incomes and house prices are becoming disparate in increasing proportions. The result is an affordability gap that is increasingly affecting a growing number of households.

To examine the issue of house price affordability within Reading, we have explored the ease with which an average household can access the local Reading property market and compared this to the South East and England & Wales as a whole. Household income can be estimated from the Annual Survey of Hours and Earnings data above by utilising a methodology used by the Joseph Rowntree Foundation in a study analysing affordability constraints. The methodology assumes that a gross household income can be calculated by applying the coefficient 1.26 to that for a full time earner. Table 8.9 presents the income distribution for households in Reading and neighbouring local authorities.

Table 8.9 Reading average gross annual earnings (£) single full time earner

	Median	10	20	25	30	40	60	70	75	80	90
Reading	24,310	12,295	16,996	18,902	19,924	22,289	27,604	31,184	34,056	36,658	-
Basingstoke and Deane	25,581	14,374	16,864	18,281	19,324	22,626	29,509	34,372	37,593	-	-
Bracknell Forest	29,310	14,996	18,448	20,004	21,229	25,450	32,894	37,576	-	-	-
West Berkshire	28,961	-	17,897	20,120	21,285	25,000	32,638	38,907	41,635	-	-
Windsor and Maidenhead	34,366	16,166	20,598	23,392	25,990	29,482	38,399	44,871	-	-	-
Wokingham	33,279	14,504	19,685	21,633	24,102	28,965	37,823	45,159	48,964	-	-
South East England	26,001	13,397	16,692	18,150	19,656	22,749	29,883	34,535	37,429	41,077	55,289
and Wales	23,824	12,600	15,438	16,766	18,102	20,838	27,150	31,179	33,648	36,583	47,500

Source: ASHE 2006

The median gross household income in Reading is therefore estimated to be £30,631 with an affordability ratio, based on the overall mean property price of 7.1.

Earnings data specific to Central Reading is not readily available so earnings data for the Reading Borough has been used instead. In 2006, a full time employee resident within Reading had median gross annual earnings of £24,310 and lower quartile earnings of around £18,902. Figure 8.10 analyses the results and provides a comparison of each area.

Table 8.10: House price affordability: Central Reading, Reading, the South East and the England and Wales average, 2007

Description	Property price	Gross annual earnings ¹¹	Ratio of earnings to property price	10 % deposit	Mortgage required	Annual mortgage repayments	Cost of mortgage as % of earnings
Central Reading av full time earnings, av property price	£198,918	£24,310	8.18	£19,892	£179,026	£13,477	55.4%
Central Reading lower quartile earnings, av property price	£198,918	£18,902	10.52	£19,892	£179,026	£13,477	71.3%
Reading av full time earnings, av property price	£216,731	£24,310	8.92	£21,673	£195,058	£14,684	60.4%
Reading lower quartile earnings, av property price	£216,731	£18,902	11.47	£21,673	£195,058	£14,684	77.7%
South East av earnings, av property price	£227,606	£26,001	8.75	£22,761	£204,845	£15,420	59.3%
England & Wales av earnings, av property price	£181,460	£23,824	7.62	£18,146	£163,314	£12,294	51.6%

Source: ASHE 2006, Land Registry, Knight Frank Residential Research

A full time employee on average earnings within Reading would need to spend 55% of their earnings on annual mortgage repayments in order to fund the purchase of an average priced property compared to the South East average of 59%.

The repayment proportions found within Central Reading are comparable to those found within Reading, the South East and England and Wales indicating that Reading offers a comparatively more affordable product for local residents than certain neighbouring locations and the national and regional averages.

Table 8.11 illustrates the difficulty with which a Reading resident on full time average earnings could purchase a property within Central Reading, Reading, the South East and wider England & Wales property markets.

¹¹ Note: the median income is used

The exercise demonstrates that average full time earnings within Reading are likely to be too low to reasonably finance the purchase of an average priced property within Reading, and comparable areas within the South East and the wider England and Wales property markets since upwards of 50% of earnings would need to be spent on mortgage repayments – a very large proportion.

Table 8.11 House price affordability within the wider area for Reading residents on average earnings, 2006

Description	Property price	Gross annual earnings ¹²	Ratio of earnings to property price	10 % deposit	Mortgage required	Annual mortgage repayments	Cost of mortgage as % of earnings
Central Reading av property price	£198,918	£24,310	8.18	£19,892	£179,026	£13,477	55.4%
Reading av property price	£216,731	£24,310	8.92	£21,673	£195,058	£14,684	60.4%
South East av property price	£227,607	£24,310	9.36	£22,761	£204,846	£15,421	63.4%
England & Wales av property price	£181,460	£24,310	7.46	£18,146	£163,314	£12,294	50.6%

Source: ASHE 2006, Land Registry, Knight Frank Residential Research

The most recent housing needs and demand study through survey research methods found that the ability of concealed households within Reading to access open market housing is severely restricted.

8.5 High rise development and pricing

There has long been an assumed premium for buying property on the upper floors of buildings. Basement flats are discounted because they offer no outlook, ground floor flats are liable to get broken into and top floor flats benefit from light and wide ranging views. However, what may be true of flats in a converted house, laid out over three or four floors, becomes significantly more complex when we increase the numbers of floors to 20 or 30 or even more.

There is no doubt that purchasers are willing to pay more to live on the upper floors of blocks of apartments. The pricing list for new developments will make this factor clear. But there is a limit to this price uplift. Prices will not keep rising in line with ever higher floors. For example, is a flat on the

¹² Note: the median income is used

28th floor worth more than a flat on the 27th floor? The case studies presented below give examples of the marketing and pricing of tall building schemes within the UK.

The issue for tall building residential provision in Reading given the trend in price growth over the recent period is whether a 'tall buildings' premium can be supported by the current central market. It is to this that our attention now turns.

Case study 1

No. 1 Deansgate, Manchester

Development detail

- No. 1 Deansgate, is a mixed use development, which has been undertaken by Crosby Homes. The development formed part of the City's Shambles redevelopment. This development formed a central element of the Manchester City Centre rebuilding strategy following the IRA bomb explosion in 1996.
- The glazed residential tower is 'lifted' above the retail podium by a "raking transfer" structure. The tower contains 88 apartments over 14 floors including duplex and triplex penthouses with terraces allowing views across the city.
- Each apartment has access to a semi-external space formed between the inner and outer skins of the glazed cladding.
- To some extent the No. 1 Deansgate development could be said to have led the market in terms of high quality high-rise development, especially outside of London.

Marketing history

- Marketing commenced in summer 2001, and by late spring 2002 approximately 76 of the units had been sold. The marketing strategy was to hold back the penthouse apartments for a slow release into the market. We understand that at the current time all units have sold with the exception of one penthouse unit.

Pricing detail

- Prices for the earliest units released, averaged around £280 – £290psf in 2001. At the current time resales of these units are achieving c£350psf. We are aware that flats on higher floors are achieving upwards of £400psf.
- It is difficult to assess the price premium experienced by No.1 Deansgate over local comparable developments, as the scheme is set slightly apart from the main area of city living developments. However the nearest comparables, along the banks of the River Irwell, are currently achieving c£290 - £325psf as an average.

Case study 2

GN Tower, Deansgate / Windmill Street, Manchester

Development detail

- Wimpey are developing this residential scheme in central Manchester. When completed the development will comprise 257 apartments, duplexes and penthouses located over 25 floors. We understand that the development will be in the form of a single tower, 72m (236ft) high.
- The development forms part of the wider regeneration and development which has taken place in the area around the former Central Station (now GMEX) area. We understand that construction will commence on site in 2005.

Marketing history

- Marketing commenced in 2004, and we understand that the initial release of around 120 units was fully pre-sold. This first phase of units comprised units located on the lower floors of the development.

Pricing detail

- We are advised that prices achieved in the initial unit release have equated to an average of £280psf. It is apparent that this figure is higher than average prices achieved for "standard" (ie lower rise) in the locality. 2004 prices for new build stock in the immediate area currently lie in the region of £250 to £260psf.
- In broad terms a like for like comparison suggests that a price premium has been attached to the development equating to approximately 10%. We would note however that the more expensive units, those on upper floors, have been held back and we would expect prices for these units to be significantly higher than those achieved in the initial release, suggesting that the price premium could be even higher.

Case study 3

Beetham Tower, Deansgate, Manchester

Development detail

- The Beetham Tower is a development of 219 apartments, located on 47 floors. The total development forms a single tower with a maximum height of 171m (561ft). We understand that the £150M development will include the highest living space available in the UK.
- The development has been designed by Ian Simpson Architects and takes the form of a glass tower and will be the tallest structure in the city centre, the highest residential unit will be located at 157m, the development's glass 'blade' increases the height of the building to 171m.
- The tower will include a five star 285 bedroom hotel, to be run by Hilton International, the hotel will be located between the ground floor to the 22nd floor, inclusive. The "Sky Bar and Restaurant" will be located on the 23rd floor and the remaining floors will be dedicated to residential use.

Marketing history

- The Beetham Organisation co-ordinated the marketing of the whole scheme in 2003 and 2004. Limited information has been released to date however we understand that the scheme is now sold out, bar the penthouses.
- Knight Frank and other agents in Manchester have instructed on the resale of units as the initial investors decide to trade their units into the second-hand sales market.

Pricing detail

- From the information released to us to date we understand that average prices achieved through the development equate to £330psf. From the units we are now offering to the market as resales pricing appears to have increased steadily from the launch with flats on the 30th floor achieving £360psf and flats on floor 40th floor achieving £400psf.
- Pricing data for new build development in the Deansgate core of Manchester averages c£280psf. It would appear that the Beetham Tower has achieved a premium over and above the standard new build market of c18% to 25%.

Case study 4

Beetham Tower, 111 Old Hall Street, Liverpool

Development detail

- The Liverpool development by Beetham is a 30 storey mixed residential and hotel development. The development includes 126 apartments and nine penthouses, and also includes a 200 bedroom Radisson SAS hotel and a health spa. An underground car park is provided for the use of both the hotel and occupiers of the residential units.
- The construction of the development was undertaken by Carillion PLC and we understand will be completed for occupation in late 2004.

Marketing history

- The Beetham Organisation arranged the marketing of the units directly and all units within the development were sold off plan approximately 12 months ago.
- Following the initial off-plan sales several units have come back to the market and are achieving prices in excess of the initial sales level.

Pricing detail

- The units in the development were offered to the market off-plan in mid 2003 at an average of £230 - £240psf. As we noted above all units were sold at this price level. At the time similar prices for new build units in the area to the north of the city fringe averaged £210 - £220 psf.
- Over the past 12 months strong price inflation has been experienced in central Liverpool. Prices for resales within Beetham have increased to £260 - £280 psf currently, an increase of 15%.
- Some recent examples of resales indicate how the price profile of the development reflects the premium attached to higher floors: -
 - 3rd floor = £231psf
 - 6th floor = £280 psf
 - 9th floor = £290 psf
 - 23rd floor = £360psf

8.6 The market for tall buildings within Central Reading

It is clear that within Reading there is a relatively established city living market. This is supported by demographic data which presents relatively high proportions of younger smaller households in the

top three socio-economic groups within the Central Reading area. Of note is the particularly high concentration of those categorised as 'Urban Prosperity' at 62.3%.

Labour market indicators also point at positives within the Reading economy. The city is gaining weight in terms of financial and business service sector employment. Reading is part of a substantial travel to work area which takes in Oxford and central London. However, it is clear that those living within London are not commuting to work within Reading in as many numbers as those commuting to London from Reading. This is to be expected given the notable difference in price between central London and Reading.

Population projections indicate that Reading's population is growing. This is due to both natural and migration led growth. Important to the success and development of the central Reading market is that growth in younger demographic is significant, not just for the central area but for Reading as a whole. Reading is attracting those priced out of the London market and other more expensive areas of the South East.

The result is that Reading has experienced significant price increases in the post-2000 period. This has led to a thriving buy-to-let market and private rented sector, as first-time-buyers and other would be purchasers are forced out of the buyers market. Investor led demand for schemes has been substantial and would be for any large tall building development.

In terms of location within the Reading market, the construction of a tall building scheme must form the focus of a specific area of the town rather than be seen as an individual scheme in isolation. Sites to the north and south of the station present the most potential.

A maximum of one tall building should be considered in sites around the station over the medium-term. This is largely due to the volume of development already with full planning permission within the town centre. As with the office market the proximity to the station will continue to underpin the viability of schemes, the number of storeys constructed and the density.

Over the longer-term there is likely to be a growth in potential for tall buildings in other sites around the town centre, most notably the current Civic area. As discussed within the market for office provision, for this to succeed the Civic area will require regeneration in order to improve infrastructure and perception of the area.

The role of the investment market is likely to be critical in supporting the development of a tall building scheme within Reading. The market for tall building schemes is growing within Reading as the population of younger, smaller households with relative affluence increases. This household demographic does not reflect the 'optimum' market that the population of central London represents. Affordability issues may impact upon the ability for investors to glean sufficient rental yields to support a similar investment made within the City. Investors are likely to seek mixed use developments over purely residential.

9.0 Thematic issues in tall building development

9.1 Introduction

Knight Frank LLP are currently working on a number of high rise residential town schemes throughout the UK and beyond. This section provides a detailed overview of this rapidly developing sector and in particular provides an analysis of the sustainability of high rise development.

The UK experience of high-rise living has long been in the shadow of post-war regeneration projects. High rise living from the 1950's to the 1970's was dominated by local authority housing schemes with towers between 10 and 20 storeys scattered across towns and cities. The perceived failures of the post war developments contributed to a reaction in the 1980's which together with increased attention being paid to conservation and heritage issues, led to a rejection of high rise towers in both the residential and commercial sectors for over a decade.

There has been something of a renaissance over the past two to three years with a noticeable revival in the development of high rise buildings. Prompted by the growth in 'city living' high rise apartments have become increasingly acceptable to developers, planners and importantly purchasers.

9.2 Drivers in tall building development

There have been a variety of factors which have combined to drive the increased interest in high rise development. The first and probably the most important factor, has been the rising profile of city living over the past decade allied to the push from government for development of previously developed land with higher development densities and for more apartment led developments.

Second in importance has been the impact of rapidly increasing house prices over recent years, growth which has outpaced build cost inflation. In addition, other factors such as the growing international profile of London together with increased rivalry experienced between other core UK cities.

The development of high-rise residential buildings, as with most construction trends, has been led by London. London's status as the de facto capital of Europe and its increasingly consolidated position

as one of the world's leading financial centres gives the city a presence and a profile which attracts developers, architects and more recently planners with vision and enthusiasm.

Residential property in London is also some of the most expensive in the world. Most cities in the UK can only report values of £300psf or above in a handful of their very best developments. In London whole swathes of central and even outer boroughs lie well above this level. Higher development costs means there is more opportunity for high quality well designed buildings to be completed economically.

Ken Livingstone's tenure as Mayor of London, whilst having some notably mixed results in terms of aiding the residential development sector in London, has at least seen greater support from the planning authorities for statement buildings and development on a more ambitious scale than has been the case in previous years.

The desire to build high in London is not restricted to the residential sector. The completed Swiss Re building, in the City and the proposed 66 storey London Bridge Tower, are only two examples of schemes which demonstrate perfectly the ambition to build high and in Swiss Re's case the ability for schemes to be completed.

Rivalry in the provinces

One of the unusual facets of the high-rise building boom has been the strength of the main provincial centres such as Manchester, Liverpool, Newcastle, Glasgow and Birmingham where several residential towers are being constructed, and many of the most striking proposals have been made.

There has always been rivalry between the UK's largest cities, but in recent decades as the traditional distinctive economic base of each city has been replaced by a more homogeneous service economy this rivalry has been intensified.

A more development friendly approach to town and country planning was embraced in Manchester during the 1990s. This model has been developed to a greater or lesser extent in Liverpool, Leeds, Birmingham and Newcastle. The struggle between the UK's main provincial centres to the title of the UK's second city has seen support from councils for increasingly bold schemes which would have been almost unimaginable a decade earlier.

The modern council leaders are continuing the tradition of their Victorian forebears, although the symbols of civic pride and economic progress now are displayed by claims to the highest residential and mixed use tower, rather than ornate town halls and corn exchanges.

The development of the city living market has provided the impetus to developers to build dense city centre schemes. But why have developers moved on from this position to seek to build very high buildings?

Competition within the city living market has intensified in recent years. In the more mature markets of Canary Wharf, Manchester and Birmingham developers have long appreciated the need to differentiate their production stand out from other attractive developments. Building high provides an obvious method of attracting attention to development. In addition to the creation of impact for marketing purposes, building high also has a fundamental benefit to the developer. It provides the potential for a higher return. However, this is a complex issue. The viability of any development depends primarily on an assessment of cost versus revenue. The particular issue relating to high rise buildings is that the relationship becomes increasingly complex as ever higher buildings are considered. As the height of buildings increase so does the cost of construction. However, at the same time there is recognisable potential in uplift in sales price from units on upper floors. This is especially the case in iconic or well designed buildings.

9.3 Guidance on tall buildings

In July 2007 English Heritage and CABI published a guidance document on the development of tall buildings. The guidance presents the methodology that CABI and English Heritage use to evaluate tall building proposals.

The guidance advocates that the planning and design of tall buildings should take into account many components of national, regional and local planning policy. These include;

Planning Policy Statement 1 (PPS1): delivering sustainable development – underlines the importance of good design in securing high quality, inclusive, safe and sustainable developments;

Planning Policy Guidance 13 (PPG13) – outlines guidance in terms of transport issues;

Planning Policy Statement 3 (PPS3): housing – this specifies that new housing provision will need to adhere to high quality design in locations with good access to social and physical infrastructure;

Planning Policy Statement 6 (PPS6): planning for town centres – this planning policy statement is integral to the development of mixed use development.

Planning Policy Statement 22 (PPS22) renewable energy – setting targets for carbon emissions and renewable energy.

Both CABE and English Heritage strongly endorse the policy led approach and recommend that local planning authorities should now identify appropriate locations for tall buildings in their development plan documents. They instruct that this best-practice approach will ensure tall buildings are properly planned as part of an exercise in place-making informed by a clear long-term vision, rather than in an ad hoc, reactive, piecemeal manner. A formal part of this process would be to complete an urban design study.

9.4 Issues of sustainability in the development of tall buildings

Against a background of proposals to increase the level of house building in the UK, whilst also attempting to meet its target of 60% reduction of CO₂ emissions by 2050 established in the Kyoto protocol, a core element of Government housing strategy looking forward is the concept of sustainability. This includes a strong reference to environmental considerations which relates to both the location of new housing development and its build quality and design.

In July 2007, the Housing Green Paper set ambitious targets of house building to deliver three million homes by 2020 that must also be zero carbon by 2016, a target some within the industry have labelled 'science fiction'. To meet these targets will demand an unprecedented integration not only of building, design and supply chain industries but of land use planning and transport policy not yet experienced within the UK.

A sustainable development must acknowledge and adhere to policy relating to both environmental and community elements. A sustainable building is one which strikes a balance between environmental, economic and social issues at all stages from design, construction, operation and changes of use/end of life.

In the purist sense, a truly sustainable building would be one that emits no pollution to the environment, is economically viable its entire life and has positive impacts upon the local community. The challenges to meet these criteria within a high rise residential building are complex. There are a priori losses and gains to be made such as the additional energy requirement for vertical transportation versus the saving made in the utility of land in densely populated urban areas.

The sustainable community is at the heart of the Government's strategy on sustainable development. Any new development is perceived as providing the opportunity to add to and support facilities within the local community. In addition, the development of significant schemes can be an opportunity to employ, train and contribute to delivering the building's primary function. Specific to tall buildings is the opportunity to capitalise on the development of a prime location in terms of establishing a centre of excellence, transport links and amenity.

Environmental sustainability and the residential sector

Emissions of greenhouse gases, namely carbon dioxide, are the principal cause of climate change. The UK emitted more than 150 million tonnes of carbon dioxide in 2004 (carbon equivalent) (MtC). Energy use within buildings accounting for nearly one half of these emissions, with the residential sector accounting for 41 million tonnes (27%) of total emissions. The residential sector is therefore a principal target for change, within which the government has highlighted performance targets as a key area to reduce emissions. Communities and Local Government estimates that new homes will account for 30% of housing stock by 2050, saving 7MtC per year, yet this is still less than a quarter of the reduction needed if the residential sector is to meet the proportional share of total emissions targets. Enhancing the energy performance of existing stock, currently replaced at a rate of 1% per annum, appears an equally pressing concern.

The residential sector accounts for 27% of total carbon emissions, of which 21% are behavioural, relating to post occupancy factors such as cooking and appliance use and therefore out of the hands of the developer. However the remaining 79% is accounted for by space and water heating and lighting, the requirements and specification of which will be impacted throughout the design and build process. Therefore given the drive for increased housing supply and the ability of each dwelling to impact upon CO₂ emissions, the immediate concern for regulators is the prevention of increased emissions from new build stock.

What does zero carbon mean?

Zero carbon means that over a year the net carbon emissions from energy use in the home would be zero. Carbon neutrality - Through a process whatever it may be, the amount of carbon emitted into the environment equals the amount of carbon consumed at the start and throughout the process involved.

Energy efficiency

In recent years the UK house building industry has been affected significantly by regulation concerning energy efficiency and sustainability. These demands mean that at no time since the post-war construction boom has the new build market been the focus of such attention. At a European level, the EU Directive on the Energy Performance of Buildings require Energy Performance Certificates (EPC) issued attesting that the building complies with regulations pertaining to required levels of energy efficiency. The requirements are being phased over the three years to January 2009. Within the residential sector all three and four bedroom homes marketed require an EPC, the certificates provide a rating on the energy efficiency and carbon emissions of a property on a scale of A to G, A grading regarded as the most efficient and G the least. During the last five years UK policy driven regulation has established new benchmarks for energy performance, tightened Part L and building regulations enhancing energy efficiency of new build homes now 40% above those built before 2002.

Given the lifetime, cost and emissions of the built environment, policy makers are faced with the immediate concern of reducing further increases within new build stock. The Code for Sustainable Homes, launched in December 2006 and planned for mandatory compliance for new homes by April 2008 is part of the policy drive to actively promote the transformation of the building industry towards more sustainable practices.

The Code builds upon the performance levels proscribed in existing Building Regulations Part L and BRE EcoHomes standards, assessing the sustainability of homes on a scaling of one to six, across nine categories including energy/CO₂, water, materials, surface water run-off, waste, pollution, health and well-being, management and ecology. As the single national standard for sustainable building, achieving compliance with each level of the Code will require minimum performance standards to be met for energy and water efficiency together with a minimum number of flexible Code credits.

Introduction of the planned targets set for the Code for level three by 2010 (25% improvement on current building regulations), level four by 2013 (44% improvement on current building regulations)

and level six, zero carbon by 2016. Meeting level six will demand a step change in design, construction methods and energy efficiency, meeting zero carbon emissions from all energy uses in the dwelling when fully operational and provision of renewable energy sources either from on site micro generation or district accredited source such as Combined Heat and Power (CHP) unit.

For tall buildings hours of occupation impact on the suitability of different energy saving strategies. CHP may well be suited to a 24 hour operation building, but such occupancy may prohibit natural ventilation with night time purging. Indeed natural ventilation of offices and residential will be harder to achieve in taller buildings due to increased wind speeds and noise associated with openable windows at height.

A tall building can take advantage of renewable energy sources in the same way that a low rise structure can, but the choice of source may differ. There are more opportunities to use wind energy and unrestricted access to solar energy. Bill Dunster's SkyZED prototype eco-tower makes an interesting and pioneering example. Dunster has conceived the tower as working like a 'living machine'. The first six floors at the base of the tower house workspace and community facilities, including schools, nursery facilities and a car-pool, while the residential units occupy the floors above. Park and sports facilities are placed in the 'shade zone' of the tower. Views, daylight and privacy are optimised by a four-petal shaped floor plate. The combination of wind devices and photovoltaic (solar panels) components mounted in the cladding and at roof level will allegedly meet the scheme's annual electric demand. Heat would be generated by either woodchip boilers (for smaller schemes) or through the incorporation of a biomass fuelled CHP plant in larger tower developments.

A more conservative but none the less significant example is The Green Building in Manchester. This building at Macintosh Village sets new standards in ecological home design and is one of the most environmentally advanced residential buildings in the country. Features include:

- A roof-mounted wind turbine that will generate electrical power for communal areas;
- Solar energy for hot water generation will be harnessed using roof-mounted panels;
- The building is designed to achieve a 60% reduction in CO2 emissions compared to that of an average apartment building;
- Highly efficient communal gas boilers serve the underfloor heating system;
- Facilities throughout the building will separate waste to maximise recycling;
- Energy bills will be significantly reduced by a SAP rating of at least 100 and with the majority of appliances being A-rated.

There are considerable savings in water consumption, around 40% compared with the average home, whilst the central atrium allows plenty of natural light and ventilation into the apartments and a state of the art computerised system will optimise the control of active elements such as the atrium windows. In addition, on the ground floor of the building there will be a doctor's surgery and a nursery school.

9.5 Considering all sustainable development principles in new build activity

The BEQUEST Network (Building Environmental Quality Evaluation for Sustainability through Time) is a European Union initiative which aims to produce a common understanding and language for discussions concerning sustainable urban development. This objective is tackled through a multi-disciplinary network of practitioners and academics that have an involvement or interest in the delivery and/or maintenance of the built environment. The second key objective of the network is to establish a system for assessing the sustainable qualities of activities, processes and methods associated with the delivery, use and maintenance of the built environment through the creation of the 'BEQUEST toolkit'.

The BEQUEST toolkit provides a framework through which developers can assess the sustainability of any proposed new build development project. The toolkit itemises, in a type of checklist format, all aspects of the new build development process that need to be assessed for their sustainability credentials and offers advice about how each aspects can achieve a maximum sustainability rating. To aid understanding the toolkit divides the various aspects into four 'issue areas' – environmental, economic, social and institutional. The following checklist by issue area is taken from the University of Salford managed BEQUEST toolkit website: <http://research.scpm.salford.ac.uk/bqtoolkit/index2.htm>.

Environmental issues

- Natural resources
- Select materials and components with high renewable material, renewable energy and/or high recycled material content.
- Reduce construction solid waste by a minimum of 75% below current practice and, as much as possible dispose of the unavoidable waste remaining by recycling the inorganic or composting the organic material.
- Minimise fossil fuel use in construction and transport.
- Minimise water use in construction processes.

Environmental Pollution

- Assess and minimise pollution outputs to air, land and water from all construction processes, including suppression of dust and noise.
- Select materials and components of low fossil fuel energy content and low pollution impact.

- Reduce construction solid waste by a minimum of 75% below current practice and, as much as possible dispose of the unavoidable waste remaining by recycling the inorganic or composting the organic material.
- Minimise packaging of materials and components consistent with adequate protection in transit and prior to installation in buildings

Land Use

- Minimise the area required for temporary works and accommodation.
- Seek compact construction process plant designs and technologies.
- Minimise excavation, earth movement and destruction of landscape.

Bio-diversity

- Minimise the impact of construction activities on local flora and fauna.
- Minimise excavation, earth movement and destruction of landscape, especially natural habitats
- Reinstate habitat disturbed by temporary works and accommodation.
- Where necessary arrange for temporary support for Flora and Fauna during construction process and reintroduce to re-instated habitat.

Economic issues

Production

- Purchase all materials, components and services from local sources.
- Use local trade contractors and local labour for construction works.
- Develop systems of production and partnering with suppliers and waste disposal contractors that seek to maximise resource use efficiency and recycling of unavoidable site waste.
- Apply methods of construction that will facilitate disassembly at end of life.
- Advise the designers of any anticipated disassembly problems resulting from design decision making and seek to ameliorate such problems.

Building Stock

- Use recycled materials and components from existing buildings as a source of raw material.
- Protect adjacent heritage buildings during the construction phase.

Transport and Utilities

- Use rail or water based transport for bulk material supplies.
- Seek to maximise material and component transport efficiency through supplier and haulage co-operation and load sharing.
- Seek excavation reductions through co-operation between utility network installers.
- Provide incentives for car sharing, public transport, cycling for all members of the construction workforce and management personnel.

Finance

- Consider the potential dislocation to normal commerce and other negative influences arising from the construction project and processes may have on the economic sustainability of neighbouring areas.
- Avoid unnecessary costs such as landfill levies and pollution penalties through good environmental practices.

Social issues

Access

- Consult transport agencies, local community groups and local associations for the disabled, blind and the elderly about the anticipated disruption to transport and other services during the progress of the works.
- Ensure access for fire and other emergency services can be maintained during the progress of the works.
- Provide temporary, safe viewing areas so members of the community can follow the progress of the works.
- Provide a single point service for handling complaints from local inhabitants.

Safety and Security

- Ensure compliance with all regulations concerning safe working practice, materials handling and site and structural safety.
- Ensure material, components and equipment conforms to regulations on safety and fire protection requirements.
- Ensure the works are adequately protected (with security fencing?) to prevent unauthorised entry, particularly by children and adolescents.
- Provide adequate illumination at the perimeter and in other appropriate places to ensure the safety of members of the public at night.
- Ensure access for fire and other emergency services can be maintained during the progress of the works.
- Consult adjoining owners, police and other highways and traffic agencies over the protection of public safety during the construction works, transport and crane-age operations.

Health and Well Being

- Select materials and components of low toxicity with minimum hazard to health.
- Ensure compliance with all health and safety regulations covering the workforce.
- Minimise risk to health of those living and working in the local area from dust, noise, toxic and other noxious fumes.
- On a regular basis clean streets and pedestrian walkways soiled by construction activities.
- Use local trade contractors and local labour for construction works.
- In larger projects of long duration contractors should provide facilities for local employment agencies on site.
- Provide a single point service for handling complaints from local inhabitants.

Community

- Consult the community over the nature of the works, the time-scale and phasing of operations in order to minimise disruption and disturbance.
- Provide and publicise appropriate communication systems to enable full interaction with the local community.
- Disseminate information locally on the progress of the works, in the local media and possibly, in larger projects of long duration, through local schools and community groups such as the civic trust and chamber of commerce.
- Provide temporary, safe viewing areas so members of the community can follow the progress of the works.

Institutional issues

Governance

- Set up environmental management processes and procedures (e.g. ISO 14001) with clear sustainable development objectives and lines of responsibility for all those involved in the project within the main contracting and all subcontracting organisations. This responsibility is to embrace the social and economic development objectives as well as the environmental

resource minimisation and efficiency objectives in terms of energy, materials and water management strategies.

Justice

- Ensure fair reward for effort for all employees involved in the works.

Ethical Systems

- Select material, components and services from suppliers who have sound sustainable development policies and practice.

Delivering the sustainable development agenda at a competitive / affordable price

As the BEQUEST tool kit demonstrates multiple processes are involved in delivering a new build project according to sustainable development principles, and, usually these processes will have a site and development specific cost. Costs which are complicated further within the development of tall buildings.

One part of the sustainability agenda, producing buildings that are environmentally friendly in terms of energy efficiency, can be associated with certain 'standard costs' – although the available data is constrained by limited evidence. Various accreditation systems have been developed to indicate and assess how environmentally friendly a building is. Within the UK the most prominent existing system in use is the Building Research Establishment's (BRE's) EcoHomes Standard. Launched in 2000, this assesses the environmental impact of house building and renovation according to seven criteria - energy, transport, pollution, materials, water, land use & ecology, health & well-being. Developments are rated either as Pass, Good, Very Good or Excellent.

This system of assessment will be succeeded by the Code for Sustainable Homes, launched in December 2006 and planned for mandatory compliance for new homes by April 2008. The Code builds upon the existing building regulations Part L and EcoHomes standards, assessing the sustainability of homes according to nine design categories including energy/CO₂, water, materials, surface water run-off, waste, pollution, health and well-being, management and ecology. The Code will introduce minimum standards to be achieved for energy, water, materials, surface run-off and waste. Developments are rated on a Code level one-six, standards being improved incrementally, Code three by 2010 (25% improvement on current building regulations), Code four by 2013 (44% improvement on current building regulations) and Code six being zero carbon by 2016. Meeting level six requires zero carbon emissions from all energy uses in the dwelling and provision of on site renewable energy sources either from micro generation or district accredited source.

Whilst it is desirable to achieve the highest rating, there are usually increased costs associated with higher ratings and the developer will need to assess whether it is ultimately beneficial to attain them. This will boil down to whether a “green premium” is achievable and/or whether a green product is more marketable than a standard product. In terms of tall buildings and pricing information in section 4 of this report, these costs to the household are compounded by a ‘tall buildings’ premium.

9.6 Other thematic issues in the development of tall buildings

The development of major schemes offer opportunities to enrich and the public realm of a certain locale in terms of external and internal space. In terms of the proposal of tall buildings it is often required that substantial parts of lower floors are dedicated as public spaces to perform public roles such as exhibitions or leisure activities. In addition, where possible the views enjoyed from the top of very tall buildings should also be open to the public. It may not be possible to achieve all of the desired aspects within the confines of the planning site. Nevertheless, it is crucial that a tall building is integrated within its immediate surrounding.

As per the CABE/ English Partnerships guidance on tall buildings applicants seeking planning permission for tall buildings should ensure therefore that the following criteria are fully addressed:

The relationship to context – including natural topography, scale, height, urban grain and panorama;

The effect on historic context – the need to preserve and or enhance historic buildings. Tall buildings proposals must address their effect on the setting of and views to and from historic buildings;

The effect on preservation areas and the local environment – to include issues concerning microclimate, over-shadowing, night time appearance, vehicle movements and the environment and amenity of those living and working in vicinity of the building;

The relationship to transport infrastructure and access to the site – the capacity of public transport and the links between access points to the transport system and the site;

The architectural quality and credible design of the building – both technically and financially. Tall buildings are expensive to construct. It is therefore paramount that when complete that design is not compromised;

The sustainable design and construction of the building – tall buildings should set exemplary standards in design because of their high profile and local impact;

- **The contribution to public space and facilities through a well designed overall environment** – the development should interact with and contribute to its surroundings at street level. It should contribute to safety, diversity, vitality, social engagement and 'sense of place'.

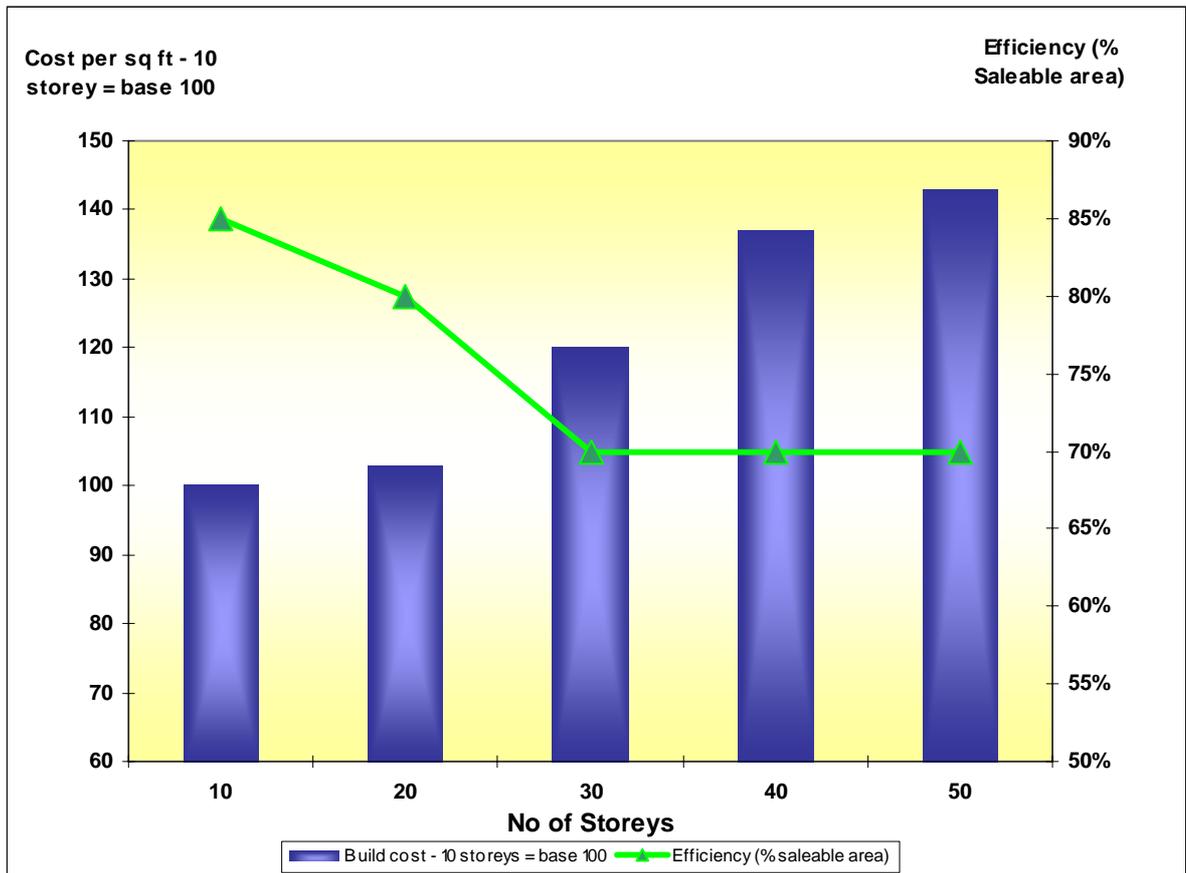
If residential new build in Reading is delivered within a 'tall' building the above should be addressed and acknowledged. There is evidence from urban centres across the UK that show that tall buildings can have a significant positive impact on the residential 'city living' market. The legacy of tall buildings developed in the post-war period have been surpassed and largely over-turned by modern development. This has been most evident within the capital, Manchester and Birmingham. Lessons learnt from these areas indicate that for tall buildings to be truly successful they must be impressive, iconic and foremost be integrated and embraced by the local community.

10.0 Cost Drivers for Tall Buildings

In order to analyse the relationship between cost and the height of buildings, Knight Frank and EC Harris developed a model which examines the relationship between these variables. The model is able to plot the typical cost per sq ft of constructing a tall tower at different heights. The graph below shows how construction costs rise as the height of buildings increase, although it is noted that costs tend to level off after 50 storeys. The major rise in build costs is between the 20th and 40th floors.

This is largely a result of the increased complexity of building at height which only really benefits from economies of scale from 40 storeys onwards.

Figure 9 - The Relationship between building height and cost



Benchmark data confirms that there is inevitably a cost premium payable due to shape and design that is intrinsic to tower buildings. There is an extra cost invariably payable because many of the developments are very high quality schemes in desirable inner city locations. In an increasingly competitive market design needs to be attractive, if not cutting edge, to secure planning consent and attract buyers.

10.1.1 Specification and costs

The structural cost of towers stems from elements resisting gravity loads and stability against lateral loads. Typically, the floor unit weight is relatively constant with height while the column unit weight

slowly increases. Approximately 25% of the column weight used for gravity can be used to resist lateral loads. The remaining material is required to provide structural stability against lateral loads.

Key design criteria such as height, shape and slenderness ratio are important because tall towers are intrinsically less efficient and more expensive than lower rise schemes. Net to gross area ratios are lower since the percentage of space taken up by the cores and services provision are comparatively high; effectively towers provide less revenue generating space than lower rise buildings.

Some of the key aspects of costs are:-

External envelope costs – With the cost of the external envelope on a high-rise scheme costing approx. 22-26% of the total project cost, it is essential to understand what drives these costs.

In broad terms, the costs of cladding increase as the height and the slenderness ratio of the building increases. In high-rise schemes the wall to floor ratios are generally inefficient compared to lower rise buildings meaning that the external walls have a disproportionately high cost.

On particularly slender buildings the wall to floor ratio will be extremely inefficient. At the same time, as the height of the building increases, specification has to be increased to withstand high levels of wind loading; the detailing required to withstand large movements means that the quality of materials need to be of a high specification.

Mechanical and electrical engineering services installations – For M & E installations, a height of 100 metres represents a barrier beyond which costs start to increase disproportionately. However, there are a number of interrelated factors which drive these cost differentials, which can be engineered out by careful attention to the detailed design to provide substantial cost benefits:-

- Cold water boosting requirements. In any high-rise scheme, the cold water supply needs to be boosted. One of the more economic design solutions is to provide break tanks at 100 metres with further booster pumps.
- Heating presents similar problems in schemes over 100 metres high as there are additional costs involved in designing a system to cope with these higher pressures, including high pressure radiators which can add 30% to the costs.

- Fully ventilated schemes are expensive on a unit basis primarily because of the size of the ducting which considerably reduces the net floor area. From 100 metres upwards, detailed design solutions, which reduce the area of ducting, will provide real cost benefits. Over 100 metres it may be advantageous to include intermediate plant floors but this creates a loss of net area. Mechanical ventilation also has to be vented and consideration must be given to structural requirements in order to allow exhaust ducts to penetrate the façades.
- Dry risers can be used to protect scheme of up to 60 metres height, with hose reels provided on each landing for schemes above 60 metres. Above this level sprinklers may be required at a cost increase of approximately £25 per sq m.
- The type of cooling installation requires careful weighing up of the relative importance of cost and space. A Variable Refrigerant Flow (VRF) system, which uses minimal floor space is an inexpensive system to install and eats into less net floor area. At the other end of the scale, a water-based system could cost double the price of a VRF/VRV system and needs large diameter pipes for cooling and as a result, will take up 2-3% of expensive floor area.
- The cost of lift installations is linked to the number of storeys within a completed building. Lifts within both commercial and residential towers need to move large numbers of people at peak times. The preferred solution is to increase lift speed rather than the number of lifts thereby safeguarding the useful net space.
- The requirement for very fast lift speeds and high quality engineering leads to a cost premium for lifts and longer lead-in times for delivery. In addition, there must be provision for fire-fighting control on lifts over 18 metres in height. Benchmark figures for lifts indicate that they can be expected to contribute approximately 3% to the contract sum.

It is clear from the model that there are economies of scale to be enjoyed with the construction of tall buildings after 30 storeys, although the major rise in build cost is between 20 and 30 storeys and overall construction of tall structures is inherently expensive. Data also confirms that there is a cost premium payable due to shape and design that is intrinsic to tower buildings. There is also an cost invariably payable because many of the developments are very high quality schemes in desirable inner city locations. This is particularly important given that in an increasingly competitive market design needs to be attractive, if not cutting edge, to secure planning consent and attract buyers.

Therefore while tall buildings may add a positive vibrant edge to inner city locations in terms of property development they remain a very costly venture.

Appendix 1 Regional Development Pipelines

This section details the schemes currently under-construction or within the development pipeline of Birmingham, Bristol, Manchester and Liverpool.

Birmingham

Table 4 - Tall Building Development in Birmingham under construction

Address	Developer	Agent	Size (Sq ft)	Notes
Colmore Plaza		GSD and Cushman & Wakefield	307,000	Major Grade A development. Partially under-offer.
Eleven Brindleyplace	Argent	GVA Grimley	110,000	
Snow Hill	Ballymore	Colliers CRE/CBRE	255,000 (Phase 1)	
Snow Hill	Ballymore	Colliers/CBRE	350,000	
The Cube, Mailbox Phase II	Mailbox Ltd	DTZ/GBR	100,000	
Arena Central, Broad Street	Miller Developments/Birmingham City Council/Chester Properties	CB Richard Ellis/GVA Grimley/Jones Lang	650,000	
45 Church Street	Saxon Securities	DTZ/GBR	125,000	Demolished existing building and now under-construction offering floor plates of 10,000 sq ft.
Total			1.9m	

Table 5 - Planned Development in Birmingham

Address	Developer	Agent	Size (Sq ft)	Timing (Years)	Notes
Great Charles Square	Abstract Land/Dandara		200,000	2-5	Mixed-use development including a major office building, residential element and car park.
Massshouse	David McLean/Nikal and Royal Bank of Scotland	Jones Lang LaSalle/GVA/GBR	170,000	2-5	A major mixed-use scheme; offices, hotel and leisure.
The Jewellery Box	St Bernard's Property		+70,000	2-5	Mixed-use scheme to include offices, housing, restaurants and fitness club.
Great Charles Street/Ludgate	Euro Car Parks	DTZ	50,000	5	Long-term development. Currently an open air car park.
Colmore Centre, Colmore Row	British Land	GCA Grimley/DTZ	220,000	5	Understood to be rights of light issues.

Paradise Circus	Birmingham City Council	Jones Long LaSalle	1.5m	2-5	Currently the site of Birmingham Central Library.
The Grand Hotel, Colmore Row	Connex (Hortons)	DTZ	tbc		Development has been postponed.
No. 2 Snow Hill Plaza	Kenmore		120,000	Tbc	No firm plans to build speculatively.
Cumberland House, Broad Street	Fordgate	Knight Frank	280,000	Tbc	Currently re-evaluating the scheme.
Colmore Plaza, Phase II	Abstract Land	Knight Frank	240,000	Tbc	Potential for large floor plates of 33,000 sq ft.
1-9 Waterloo Street	Frontier/Opus	GVA Grimley	125,000	0-2	
Edgbaston Galleries, Fiveways			160,000		
City Park Gate, Eastside	Countryside/Quintain		250,000	2-5	Phase I residential and retail due to complete 2010. Proposed office element to start mid-2008.
Priory & Canon House	Nurton Developments		150,000	Tbc	
Calthorpe	Calthorpe Estates	DTZ	100,000	Tbc	Existing

House, Calthorpe Road					building being demolished.
Chamber of Commerce Site, Harborne Road	Chamber of Commerce		230,000		
Curzon Park Estate	Development Securities/Grainger	Savills/Knight Frank (Residential)	120,000		Major mixed-use site (800,000 sq ft). Phase I starts January 2008 to include 120,000 sq ft of offices and 120 bedroom hotel.
Martineau Galleries, Corporation Street	Birmingham Partnership		250,000		Leisure, retail and offices. Pending planning.
Auchinleck House, Fiveways	Birmingham Properties Group		150,000		Mixed-use development.
Venture East, Eastside	Arlington	GVA Grimley/Cushman & Wakefield	550,000		Mixed-use Development, potentially 900,000 sq ft.
Total			8.312m		

Bristol

Table 6 - Taller Building Development in Bristol under construction

Address	Developer	No. of storeys/Expected Completion Date	Size (Sq ft)	Notes
Portwall Place, Portwall Lane	Deeley Freed/Anglo Irish Insurance	5/December 2007	170,000	Part speculative development and part pre-let to Beachcroft Wansbrough
Edison House, Templeback	LTG Real Estate	6/March 2009	123,000	Speculatively developed offices. Two buildings 70k and 50k
2 Redcliff Street	Scottish Widows	5/tbc	80,000	To be occupied by the Court Service.
Hartwell House, 55/61 St Thomas St.	Oakhill Group	6/December 2007	53,400	Speculative development with space available floor by floor. Quoting £26.50 per sq ft.
Plot ND8, Temple Quay, 2 Avon Street	Castlemore Securities	5/July 2008	53,100	Speculative development.
St Catherine's Court, Park St.	Ashfield Land	5/February 2009	31,600	Speculative development with ground and first floor under-offer.
Total			511,100	

Table 7 - Planned Development in Bristol

Address	Developer	Agent	Size (Sq ft)	Notes
Temple Quay Central, Temple Quay 2 (North of TQ) Avon St.	Castlemore Securities		491,000	Full Planning Permission Granted (FPPG). 6 storey scheme. Main building part pre-let to Burges Salmon
Finzels Reach, Scottish Courage Site, Georges Square	HDG Mansur		402,100	FPPG. 6 storey scheme recently revised.
Glassfields, Temple Way, Old Bread Street	Royal London Asset Management (RLAM)		315,000	FPPG. 7 storey scheme, currently a 70k sq ft building on site to be demolished.
Building 5, Harbourside, Canons Way	Crest Nicholson (South West)		132,600	FPPG. 6 storey scheme, pre-let under-offer to Hargreaves Landsdowne.

Cabot Circus (12a & 12b), Broadmead, Newfoundland St	Strategic Partners Ltd		121,300	FPPG. 6 storey sheme.
Cabot House, Deanery Road	Westmark		100,000	S106. 6 storey scheme.
Redcliffe Village, St Mary Redcliff Church/Bristol Bridge	Midshires Estates		82,700	FPPG. 5 storey scheme.
Total			1.645m	

Liverpool

Table 8 - Taller Building Development in Liverpool under construction

Address	Developer	No. of storeys/Expected Completion Date	Size (Sq ft)	Notes
The Plaza, 100 Old Hall Street	Bruntwood Estates	14/April 2008	264,000	Speculative at start date on the former Littlewoods offices. The scheme includes a full refurbishment and 50k extension.
Phase 2, St Pauls Square, Old Hall St	English Cities Fund (EP/AME/Legal & General)	8/May 2008	136,000	Speculative at start date. Scheme will include car park, flats, leisure and public square.
Phase 1, St Pauls Square, Old Hall Street	English Cities Fund (EP/AME/Legal & General)	8/July 2007	125,000	Pre-let for Hill Dickenson. Scheme will include car park, flats and leisure.
The Capital (Sandcastle Building) 39 Old Hall St	Downing Developments	17/Autumn 2007	121,000	Phase 1. Speculative development.
West Tower, King Edward Street	Beetham Group	40/December 2007	7,500	Pre-let. Tower includes 127 flats and small office element.
Total			653,00	

Table 9 - Planned Development in Liverpool

Address	Developer	Agent	Size (Sq ft)	Timing	Notes

Commercial District, Pall Mall	Liverpool Vision/National Car Parks/English Cities Fund		900,000		OPPG
Central Docks, West of Regent Road	Peel Ports Investments		242,300		OTPA for B1; also residential, leisure and conference centre.
Kings Waterfront, Kings Parade	Liverpool Vision		145,300		Offices; also residential, retail and leisure.
Plot 3A, Princes Dock, Waterloo Road	Mersey Property Group		140,000		Application.
Mann Island (Fourth Grace Site), Pier Head	Countryside Properties/Neptune Developments		109,000		FPPG. Offices, conference centre and museum.
Tithebarn House, Tithebarn Street	Dunedin Properties		100,000		FPPG
Stanley Rock, Regent Road	Kitgrove Developments		87,000		Application
Kingston House, Strand Street	Langtree Developments		85,000		Pre-application. Proposed 13 storey scheme.
41 Moorfields	NWDA		75,000		FPPG. 8 storey office

					building
Ralli House, 60 Old Hall Street	Nestron		75,000		Pre- application
Rumford Court, Rumford Place	Vermont Developments		60,000		FPPG. 8 storey office scheme
Total			2.0m		

Manchester

Table 10 - Taller Building Development in Manchester under construction

Address	Developer	No. of storeys/Expected Completion Date	Size (Sq ft)	Notes
Three Piccadilly Place	Argent	/Q2 2008	192,000	Average floor plate size 18,000 sq ft. Car parking ratio 1:700. Anticipated quoting rent £25.00 per sq ft.
BT Building One Central Spine	Ask	/Q3 2008	180,000	Average floor plate size 23,000 sq ft. Car park ratio 1:500. Anticipated quoting rent £23.50 per sq ft.
Belvedere Booth Street	Wilson Bowden	/Q4 2008	103,000	Average floor plate size 15,000 sq ft. Car park ratio 1:1839. Anticipated quoting rent £28.50 per sq ft.
3 Hardman Street, Spinningfields	Allied London	/Q3 2008	350,000	Average floor plate size 8,000 -40,000 sq ft. Car park ratio 1:2000. Anticipated quoting rent £30.00 per sq ft.
Chancery Place	Chancery Place SARL	/Q3 2008	101,995	Average floor plate size 7,800 sq ft. Car park ratio 1:4076. Anticipated quoting rent £27.50 per sq ft.
1 New York Street	Bruntwood	/Q2 2009	100,000	Average floor plate size 8,000 sq ft. Car

				park ratio 1:5555.
Total			825,000	

Table 11 - Planned Development in Manchester

Address	Developer	Agent	Size (Sq ft)	Timing (Years)	Notes
Axis Albion Wharf	Alliance		73,348	0-2	Set to start on site Q3 2007. Anticipated quoting rent £27-35.00 per sq ft.
57 Spring Gardens	Bruntwood		83,000	0-2	Set to start on site Q2 2008. Anticipated quoting rent £27-35.00 per sq ft.
Origin Princess Street	West Properties		62,000	2-5	Scheduled to commence construction 2010.
The Landmark Building Oxford Road	Manchester & Metropolitan		175,000	2-5	Scheduled to commence construction 2010.
Eider House Piccadilly Basin	Town Centre Securities		86,522		Proposed not confirmed.
Whitworth	Ask		102,000		Proposed not confirmed.

Street					
Albany Tower Aytoun Street	Albany		158,000		Proposed not confirmed.
Grand Island II Southern Spine	Ask		160,000		Proposed not confirmed.
Elisabeth House St. Peter's Square	GMPVF		300,000		Proposed not confirmed.
2 Great Bridgewater Street	Beetham		60,000		Proposed not confirmed.
City Park Green Quarter	Development Securities		115,000		Proposed not confirmed.
Fish Dock Site	AMEC/Morley Fund Management		800,000		Proposed not confirmed.
Canopus Greengate Salford	Ask / SCC		515,000		Proposed in planning.
75 Mosley Street	Benmore Properties		120,000		Proposed.
Stevenson Square	Argent		80,000		Planning submitted.

Island Site	Reflect / Blue Mantle		c. 120,000		Scheme being drawn.
London Scottish House	PJ Walls		c. 150,000		Scheme being drawn.
Former Boddingtons Brewery Site	Ask / Reality Estates		c. 750,000		Scheme being drawn.
Total			3.9m		