

# **Land Economy Part II Dissertation**

Would a dynamic assessment of the viability of developments with affordable housing requirements result in a higher level of overall provision?

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## Introduction

Affordable Housing provision receives much political attention, largely due to the impact it has on many lives as the key response to housing need, and the levels of public involvement in its provision. This study seeks to address the issue of the impact of affordable housing obligations on the viability of residential developments, and answer the research question 'Would a dynamic assessment of the viability of developments with affordable housing requirements result in a higher level of overall provision?' An extensive literature review was undertaken, assessing previous work in this area, and current affordable housing policy, both nationally and at a local level. It investigated the issue of affordable housing through a comparison, within the same county of Cambridgeshire, of Cambridge City and Fenland governed by their respective District Councils. Through the comparison of two different jurisdictions within a narrow geographical area, it highlights the market and locational economics of residential development and affordable housing provision. The study investigated if current policy is effective and if there is a need for a more dynamic approach. It addressed the issue through three stages of research:

- A) To review the current policy and provision of affordable housing in Fenland and Cambridge City
- B) To establish whether current developments in these areas are viable under current policy
- C) To analyse whether an alternative more dynamic policy would result in a greater overall provision

By completing each area of research, and analysing the evidence each provides, it was intended to gain an understanding of the current market conditions experienced in these jurisdictions and investigate the potential effects of alternative policies.

## Literature Review

### The Issue

The definition of affordable housing has changed over time with different attempts of policy implementation, during a range of political regimes. The latest definition of affordable housing is provided by the Coalition Government through the National Planning Policy Framework (NPPF) as:

'Social rented, affordable rented and intermediate housing, provided to eligible households whose needs are not met by the market.' (DCLG 2012a, p50)

In an economic climate still suffering following the 2007 economic collapse, many housing developments have been severely affected. The economic conditions have in many cases dramatically reduced the potential profits developers can hope to make and the viability of many developments. 'The downturn in the housing market, the squeeze on mortgage credit, and the consequent slowdown in house building, all make the Government's housing programme more challenging than ever' (MacDonald, Newton 2008, p3). The current economic climate has compounded the existing problems with the delivery of affordable housing and increased housing need in many areas. Waiting lists for social housing are at record levels and many families are currently in unsuitable homes. A Shelter report concludes that the case for more affordable homes is stronger than ever (MacDonald, Newton 2008). Affordable housing obligations are another cost, affecting developers' profit margin, with obligations to provide affordable housing impacting on the viability of many developments. The Local Housing Delivery Group (LHDG) defines viability in relation to development as such:

'An individual development can be said to be viable if, after taking account of all costs, including central and local government policy and regulatory costs and the cost and availability of development finance, the scheme provides a competitive return to the developer to ensure that development takes place and generates a land value sufficient to persuade the land owner to sell the land for the development proposed. If these conditions are not met, a scheme will not be delivered' (LHDG 2012, p6).

The concept of development viability has come to the forefront of policy in recent years, especially since the recession, with more development sites affected by falling profit margins and unable to be delivered. A dynamic assessment of the viability of developments, where Local Authorities regularly consider and assess important market factors such as land value, house prices and build costs, may help Local Authorities to implement a flexible policy, able to adjust to changing market conditions, and promote the continual efficient provision of affordable housing. Dynamic assessments are an alternative to the schemes currently implemented by many Local Authorities, where policy targets are determined by Local Plans, containing policies fixed for 10 to 20 years, with little regard to fluctuations of the economic variables described above. 'Dynamic Viability results permit the overarching affordable target to be sensitive to market fluctuations while not requiring expensive new Core Strategy consideration' (Fordham Research 2009, p27).

The impacts of planning policy are wide ranging on economic, social and environmental levels, and it is vital to ensure that policy is appropriate for an area, working positively and not hindering growth and development. Planning policy nationally has experienced reform in recent years, especially since the 2010 election of the Coalition Government. The NPPF provides a comprehensive approach to planning, revoking the former individual Planning Policy Statements, with an underlying theme of encouraging both absolute and sustainable growth and the creation of a single framework document allowing for greater clarity and ease of use for planning officials and the public. The NPPF recognises the issue of viability in relation to planning obligations generally and affordable housing specifically:

'173 - The sites and the scale of development identified in the plan should not be subject to such a scale of obligations and policy burdens that their ability to be developed viably is threatened. To ensure viability, the costs of any requirements likely to be applied to development, such as requirements for affordable housing, standards, infrastructure contributions or other requirements should, when taking account of the normal cost of development and mitigation, provide competitive returns to a willing land owner and willing developer to enable the development to be deliverable' (DCLG 2012a, p41).

This seems to promote issues of viability and deliverability above that of affordable housing obligations and it lends the idea that Local Authorities should adopt policies that encourage flexibility in policy decisions and day-to-day operations.

The need for flexibility is further recognised; '205 - local planning authorities should take into account changes in market conditions over time and, where appropriate, be sufficiently flexible to prevent planned development being stalled' (DCLG 2012a, p47) and by Eric Pickles, Secretary of State for the Department for Communities and Local Government (DCLG), in his 6th September Statement (Pickles 2012). 'It is vital that the affordable housing element of Section 106 agreements negotiated during different economic conditions is not allowed to undermine the viability of sites and prevent the construction of new housing'. He states that allowing section 106 agreements to prevent development simply results in a situation of no development, regeneration or community benefits, and that the Government estimates that up to 75,000 new homes are currently stalled due to site viability. If these figures are accurate this is a level higher than the overall annual provision in recent years, and is an issue that, if addressed, could have a significant impact on affordable housing provision. The recognition of the problem by the Minister responsible for these issues strengthens the need for research in this area, to highlight the current problems with the system, and provide a sign post to a potential range of solutions the Government and Local Authorities may attempt to implement in the future.

A key change in policy, underpinning the modern approach to affordable housing, is the way it is provided, moving away from the creation of large social housing estates to the modern approach of integrating affordable housing into wider residential developments to create mixed communities. 'Best practice sees the affordable housing, both social rented and 'intermediate' pepper-potted amongst the private open-market properties and effectively indistinguishable from them' (Taylor 2008, p160).

The 'Review of Housing Supply', by Barker in 2004, along with her 2006 'Review of Land Use Planning', have been a key influence on the assessment of the UK housing market by both policy makers and academics. The 2006 Review highlighted the expected future increase in demand for housing, predicting 209,000 new households to form annually from 2003-26, and rising incomes continuing to increase demand for larger homes and improved services, leading to increased demand for land (Barker 2006). The report highlighted the levels of supply necessary to meet growing housing need in this country. 'It

is estimated that, over the next ten years, the number of social and affordable houses provided will need to be increased by at least 17,000 per year, requiring annual investment building up to around £1.2 billion, in order to meet the flow of new needy households' (Barker 2004, p8). It predicts that both of these figures could increase if the current backlog is not tackled. When compared with current supply figures for affordable housing, this creates a worrying picture of a market unable to supply a sufficient number of new homes to meet demand. The acknowledgment of the backlog effect is important; if changes are not implemented the mountain to climb for future policy makers will be larger.

The Barker Review (2004) also discusses further imperfections in the planning system and housing market. Barker argues that increasing supply per se will not necessarily improve the market; improvements in the responsiveness of the market to changing conditions are needed and improving the elasticity of supply in relation to price and cost factors. She highlights the striking lack of any reference to price signals throughout the local planning process, citing work by Cheshire, who emphasises the subjective nature of decision making processes regarding local housing need, rather than assessments of real incomes or relative prices. Cheshire's main grievance is the exclusion of price information and signaling from the majority of planning policy making decisions. He argues that the planning system in the UK has developed without account being taken of price information or other economic indicators, and that development of policy in this way has resulted in large price distortions on a par with those experienced by the Soviet Bloc in the 1970s and 80s, both between regions, and within areas because of land use prescriptions (Cheshire and Sheppard 2005). He states that this has led to substantial house and land price increases in the post war period, and to greater price volatility, proposing a system, to replace the current development controls, where land premiums are calculated for a potential development site using independent valuations. This premium is then compared to a threshold level taking into account community and infrastructure costs and, if higher, there should be a presumption in favour of development, regardless of previously defined land uses. He argues that giving price information a greater role in land use decisions makes it possible to eliminate many imperfections and price discontinuities existing in the current market (Cheshire 2009).

Evans and Hartwich (2007) offer similar arguments, but also highlight the impact this has had on UK economic competitiveness, arguing that the steady decline in the manufacturing sector is partially due to the uncompetitive nature of land prices in the UK.



In some of their earlier work (Evans and Hartwich 2005) they also conducted a comparison between the planning systems and housing stocks of the UK, Germany, Switzerland, Ireland and Australia, finding the housing stock in the UK was older, new homes on average smaller, and house prices generally higher and increasing. These arguments all illustrate imperfections in the current planning system, but specifically the relative exclusion of price information and signaling in current decision making processes and policy setting, and call for a greater inclusion of such factors to improve the planning system.

The DCLG released figures in November 2012 summarising the supply of affordable housing over recent years; 57,950 gross additional affordable homes were supplied in England in 2011-12, a decrease of 4% from the previous year's figures of 60,430 (DCLG 2012b). This is a worrying decrease considering that demand for affordable housing is unlikely to have changed dramatically in one year. Such figures make the issue of affordable housing provision topical and important. The Barker Review illustrated the need for Government policies able to increase affordable houses provision. Current figures show a contraction in homes added for the first time since 2001-02, suggesting the current Government policy may have reached its maximum level of provision. This issue may be exacerbated by the Government's funding for the Affordable Homes Programme 2011-15, compared to the National Affordable Housing Programme (NAHP) 2008-11. The NAHP had a financial commitment of £8.4bn in an attempt to supply 155,000 new homes. However the Affordable Homes Programme only had an investment of £4.5bn from the Government, a significant reduction in funding considering it covers a longer period of time (HCA 2013).

### District Policy

The sample jurisdictions for this study, Fenland and Cambridge City, have relatively different affordable housing targets, despite being in the same county. In Cambridge affordable housing is targeted on all residential developments of 0.5 hectares or of 15 or more dwellings (CCC 2008, p11). The need for flexibility and negotiation in some cases to allow a development to move forward is acknowledged; however the responsibility of providing evidence of a project being unviable is put onto the developer, 'There will be a presumption that development will include full and appropriate provision for affordable housing unless it is demonstrated that it cannot be provided at a rate of 40% or more of

the dwellings in a development. The onus is therefore on the developer to demonstrate that viability would be jeopardised' (CCC 2008, p14).

Consultation on the next Local Plan is currently underway in Cambridge, following the changes to planning policy brought about by the Localism Act (2011) and the Government plans regarding the Community Infrastructure Levy (CIL), to set out policy for the area until 2031. The 'Issues and Options Report' (CCC 2012) looks at the issue of housing need generally and affordable housing targets specifically. The affordable housing need is for 19,580 affordable homes for the period to 2031, compared with a total housing capacity of 12,700. The report highlights that the need for affordable housing is greater because of the backlog from previous under provision. 'The affordable housing need in Cambridge is therefore much greater than the level that can ever be fully met' (CCC 2012, p184). According to Live Table data, 430 net additional affordable homes were added in 2010-11, but only 30 in 2011-12 (DCLG 2012c). Some of this variation may be explained by the nature of much of the development in the Cambridge area, where significant amounts of development are larger sites, reaching the market in sizeable groups. Attempting to meet the above targets, the 'Issues and Options Report' proposes retaining the affordable housing target for new developments at 40%, whilst considering alternatives of 50% or 30%, and whilst acknowledging 'a lower proportion of affordable housing may allow other sites that were not previously considered by developers to be viable to be brought forward' (CCC 2012, p185). However they conclude that a reduction in level would not provide additional affordable housing overall. Also considered is the threshold for affordable housing; by lowering the threshold from its current level the Council may be able to encourage affordable housing on viable smaller sites, increasing overall provision. The Council recognises the potential for the contribution from smaller sites and that a lower threshold could potentially increase the overall supply of affordable housing, but that such an approach must be subject to viability (CCC 2012). The Future Local Plan is obviously still in the development stage, but the inclusion of such options, and recognition of the possible need for flexibility provides encouragement for this study.

Housing targets for Fenland were formerly set out in the Regional Spatial Strategy (Government Office for the East of England 2008), which 'included growth targets for Fenland District of approximately 11,000 new homes' (FDC 2013a, p3). The RSS has been revoked under the reformed planning system but Fenland have retained the target of 550 per annum. The revised Strategic Housing Market Assessment published in 2010,

indicated annual housing need for the Fenland District at 790 dwellings based on figures at the end of 2008/09, an increase from 694 the previous year (Cambridgeshire Horizons 2010); a worrying trend when only 20 affordable dwellings were provided in Fenland in 2011-12 (DCLG 2012c). Housing need demand is far outstripping supply, with housing need higher than the overall proposed housing growth figures, and there would appear little prospect of these figures falling in the short term.

Fenland District Council has adopted a different approach to affordable housing provision, with affordable housing targets phased in at lower levels. According to the Fenland Affordable Housing Statement 2012, there is a 20% target for sites of 5 to 9 dwellings, made up by the provision of one unit on site plus a cash contribution, a 30% target for all sites of 10 to 99 dwellings, and a target not exceeding 35% for Greenfield strategic allocations for 100 or more dwellings (FDC 2012). The Fenland strategy attempts to gain affordable housing contributions from all but the smallest residential developments, including financial contributions in lieu on some developments. Such a strategy may help to prevent developers from adjusting their plans to work within the boundaries of the planning targets, as seen sometimes in Cambridge, where there are large differences in cost to the developer between developments of 14 and 15 units. This study aims to investigate the relative effectiveness of the differing strategies and potential alternatives.

The Fenland Affordable Housing Policy described above is the result of intervention from the Council to introduce new policy rather than wait for the new Local Plan to be adopted like Cambridge. Whilst this is the policy that was initially submitted for consultation with the new Local Plan (FDC 2011), in the latest Core Strategy Proposed Submission (FDC 2013b), the following affordable housing targets have been proposed: for sites of 5-9 units, the provision of 20% affordable housing, for sites of 10 or more dwellings, 25% of the dwellings should be affordable. This change appears to be recognition of the current market in Fenland, and the unviable nature of many sites with an affordable housing target of 30 or 35%. The question remains as to whether this is enough of a change in Fenland.

Table 1 - Affordable Housing Obligations Used

Cambridge		Fenland	
No. Units	Affordable Housing %	No. Units	Affordable Housing %
0-14	0	0-4	0
15+	40	5-9	20
		10+	25

Fenland District Council commissioned research into the area of affordable housing viability with three neighbouring Local Authorities, via an Affordable Housing Viability Assessment 2009/10 (Adams Integra 2010). To be representative of market conditions in the districts studied, each geographical area was allocated a value point from 1-7 dependent on the average property values in that area. Fenland was found to fall within value points 1 (lowest value) and 2. The viability assessment calculated Residual Land Values for a range of site sizes and levels of affordable housing provision from 0-50%. Even with no affordable housing provision the majority of Fenland sites had a £nil Residual Land Value; sites simply weren't viable, even without affordable housing obligations. However the report recommended levels of affordable housing provision up to 35% for sites over 100, and even 20% for development sites of 5-9 dwellings, levels subsequently used by the Local Authority. This appears unrealistic target setting, given the calculated results, and perhaps reflects that in 2010 economic recovery was anticipated in the near future.

### Guidance and Academic Work

The LHDG report (2012) provides guidance for Local Authorities preparing new Local Plans in relation to the NPPF and specifically viability testing. The report, known as 'The Harman Report', provides interesting insights into the way Local Authorities approach these issues during the formulation of their Local Plans and recognises the challenges faced by Local Authorities attempting to produce a plan within the National Framework:

'This viability advice recognises there are significant challenges for planning authorities seeking to make plan policies that both provide for acceptable development and avoid placing unrealistic pressures on the cost and deliverability of development. These challenges are exacerbated when market conditions

reduce the scope for delivering plan policies through lack of development value' (LHDG 2012, p8).

An interesting acknowledgement by the Report is in relation to the practicality of viability testing on a large scale, recognising that viability testing for Local Plans cannot anticipate every potential site over the plan period, and recommending the creation and testing of a range of 'appropriate site typologies reflecting the mix of sites upon which the plan relies' (LHDG 2012, p11). The Report recognises that no two development sites are the same, and that to attempt to conduct site specific analysis on all potential future sites, when preparing a Local Plan, would be time consuming, expensive, and somewhat counterproductive. By using a range of 'appropriate site typologies' it is possible to isolate the issue of viability under potential policy conditions; when it then comes to the negotiation of site specific planning obligations it is possible to compare additional costs a site may have to these typical sites in assessing suitable provision levels.

'The seventeenth century French statesman Jean Baptiste Colbert defined the art of taxation as: "plucking the goose so as to obtain the largest amount of feathers with the least possible amount of hissing". This provides a pretty good description of the history of attempts at taxing land value in the UK' (Dobson 2012, p2). Section 106 Agreements, involving the negotiation of contributions from the developer towards the additional demand for infrastructure and local services created by a new development, have been the main tool used in recent years in an attempt to 'pluck the goose'. Dobson reports that at the height of the economic boom in 2007/8, section 106 obligations worth £4.9 billion were negotiated, with £2.6 billion directed towards affordable housing and Barclay (2012) finds that there has been an increase in the number of major and minor development projects successfully negotiating s106 agreements since 2005-06. Much of the attraction of s106 agreements for developers and Local Authorities alike are their flexibility. 'Local Authorities may be able to permit a higher density than they would otherwise have granted in return for the inclusion of a higher proportion of affordable housing' (Monk 2010, p125). However the issue remains that the additional financial obligations imposed by s106 payments can in some cases be a factor in the viability of a potential development. It may not be feasible for a developer to provide the required level of affordable housing and meet its s106 obligations, and it may be necessary for Local Authorities to use their discretion and this flexibility to negotiate levels that allow a site to move forward.

## **Methodology**

### Viability Assessments

The viability of residential developments in this study was assessed for a range of site sizes in two sample jurisdictions. Assessments were conducted using the Homes and Communities Agency Development Appraisal Tool (DAT) (HCA 2013). The HCA DAT is used widely by agents, developers and Local Authorities when assessing potential developments. 'The HCA's Development Appraisal Tool is designed to appraise in detail the viability of an individual site. It takes into account local assumptions for costs and value, and records the dates at which these assumptions impact on a project cash-flow over the life cycle of the development... It also allows estimation of the level of affordable housing and other s106 requirements that can be supported by a scheme' (HCA 2013) The advantage of using such a tool is the ability to draw on expertise and information from professionals using the DAT, the ease of use of the tool, and the comparability of the outputs from the DAT. The outputs indicate a surplus or deficit figure for the potential development, representing viability, allowing for comparison between different size sites, levels of affordable housing, and allows the isolation of variables, such as land values, to highlight the effects of changes in the market. Other Viability Assessment Tools are used in industry; the Greater London Authority promote the use of the 'Development Control Toolkit Model' (DCTM); however this model has received some criticism. A 2012 review of the model raised criticisms that the DCTM route, 'is most appropriate for schemes built over a two year period (due to its crude finance calculation) whereas the HCA's Development Appraisal Tool and Argus are more adept at longer term and phased developments' (BNP Paribas Real Estate 2012, p5). The report elaborates that the financial calculations at the core of the DCTM are unable to reflect the impact of interest and finance costs on long term schemes and is therefore unsuitable for larger sites. For these reasons, and reflecting support for the DAT, this study used the DAT to assess site viability.

### Typical Sites

Data was collected from historical and current planning applications for developments in these two areas of over 5 units, on purely residential development sites, over the past five years. From this and consultation with local developers and agents 'typical sites' were

created for each jurisdiction as recommended by the LHDG report. These sites were 'typical' in terms of their size, dwelling mix and dwelling size; it was assumed that the sites had no exceptional problems that would require additional financial outlay. This was to attempt to isolate the impact of affordable housing provision rather than allowing for site-specific factors to influence the results, and why this approach was chosen rather than using actual developments. It is recognised that in reality many sites demand additional costs, commonly due to contamination or demolition. Using this method simply requires such costs to be applied to the results produced, while initially allowing the isolation of affordable housing obligations impacts. For both Cambridge and Fenland viability was assessed for three different site sizes of 9, 25 and 100 units, thereby ensuring viability was assessed over a range of development types.

Conducting calculations using sample sites that accurately represent the local market allows for an assessment to be undertaken within the practical constraints of this dissertation, whilst producing meaningful information. It is recognised that such an approach relies on certain assumptions and that, when dealing with land, no two pieces of land or property are identical, but that this method is recommended by the LHDG Report (2012). The 'Typical Sites' used in this study are set out below; representing for each jurisdiction typical densities of such projects. For both jurisdictions five sample property types were used, and the type and tenure mix varied across the size sites, to best represent sites actually created in the current market. The sensitivity analysis undertaken acted to reduce the potential impact of some of the assumptions used in this study, discussed below. In Cambridge the two smaller sites of 9 and 25 units were assumed to be in central locations; with the site of 100 units assumed to be part of the Southern Fringe urban extension, reflecting the lack of large city centre sites remaining and that major development in the city is greenfield.

Table 2 - Typical Sites Fenland

Site	Size (ha)	Units	2 Bed Terraced (65 sqm)	2 Bed Semi Detached (65sqm)	3 Bed Semi Detached (85sqm)	3 Bed Detached (95sqm)	4 Bed Detached (140sqm)
A	0.2	9	3	6	-	-	-
B	0.8	25	9	-	12	4	-
C	4	100	12	8	50	20	10

Table 3 - Typical Sites Cambridge

Site	Size (ha)	Units	1 Bed Apartment (45sqm)	2 Bed Apartment (60sqm)	2 Bed Townhouse (75sqm)	3 Bed Townhouse (100sqm)	4 Bed Townhouse (125sqm)
X	0.05	9	3	6	-	-	-
Y	0.12	25	8	17	-	-	-
Z	1.25	100	15	30	15	30	10

### Input Data

The input data required for the DAT is extensive, ranging from basic information regarding development site size, to more extensive data regarding specific costs and values. The data used regarding site values was gained from correspondence with agents and developers, and information gathered from Land Registry price data and websites such as Rightmove (2013). Market based estimates of land values were used, but having regard, particularly in Fenland, to threshold levels below which agents advised that land was unlikely to be brought forward for development. Data on house prices and market rents was calculated from a combination of Land Registry sold price data, information from local agents and Rightmove. The Cambridge 'Issues and Options Report' (CCC 2012) also provided information on average house prices and affordable rent levels; all of this information was used to make calculated estimates for the input data. In relation to building cost information, data was used from developers, the BCIS database for Cambridgeshire, and SPON'S Architect and Builders Price Book 2013 (Langdon 2013), recognised sources of information on development costs. Specific cost data in relation to elements such as site preparation cost, legal and agent fees and management costs, was collected by correspondence with agents and developers working in this sector, and gathered from previous studies such as the Fenland Affordable Housing Viability Study 2009/10 (Adams Integra 2010). Officers from each Local Authority were consulted with regard to affordable housing targets and contributions and s106 requirements, providing an accurate representation of the financial obligations imposed on developers by Local Authorities, with much of this data available in policy documents and published guidance. A summary of the inputs used can be seen in Appendix A (p33).



## Outputs

The DAT was used to calculate the potential profit or loss of typical sites, assuming affordable housing provision at current policy levels. Affordable housing levels were then varied, depending on the initial results, to ascertain either a reduced level of affordable housing that is viable, if the initial calculation resulted was a deficit, or the maximum level of affordable housing attainable, if the initial calculation was a surplus. This process was repeated for all typical sites in an attempt to calculate the optimum level of affordable housing provision for each site size and jurisdiction, thereby providing analysis of the affordable housing policies currently in place. This will enable conclusions from the comparison of the results with the proposed policy in each Council's Draft Local Plan.

## Sensitivity Analysis

Guidance by RICS suggests the use of sensitivity testing in relation to viability testing 'It is strongly recommended that financial appraisals are sensitivity tested as a minimum and with more complex schemes further scenario/simulation analysis should also be undertaken' (RICS 2012, p21). The guidance states that such analysis allows for sound judgements with regard to viability to be made. In an attempt to widen the application of the results some sensitivity analysis has been undertaken. 'When the assumptions underlying the baseline scenario might vary as a result of external factors, you need to do a sensitivity analysis to assess whether the impacts of the policy options differ significantly for different values of the key variables' (European Commission 2009); such analysis is therefore useful to test the robustness of the model, and increase the understanding of the relationships between a range of input and output variables. By conducting analysis in relation to core input variables such as land value, house prices, build costs and developer profit margins, the results may indicate the impact of changing market conditions or levels of developer risk aversion.

## Outputs and Analysis

### Results

The DAT produces a number of outputs, but the central figure in determining the viability of a Development Appraisal is the Surplus/Deficit figure which represents the potential profits or loss a developer will receive beyond the required developer profit margin. The results for the typical sites are portrayed in the two tables below (Tables 4 and 5). In each case the DAT was first used to calculate viability at the existing policy level (represented by sites A1, B1, C1 for Fenland, and X1, Y1, Z1 for Cambridge). Additional calculations were then completed with varied policy targets to investigate viability for each site. In Fenland, Site A1 with a policy provision level of 20% affordable housing produced a deficit of -£101,010. A2 represents the same site with no affordable housing provision, where the deficit reduces to -£37,196. This process was repeated for the range of typical sites across both Fenland and Cambridge. Sample outputs from the DAT are shown within Appendices B and C (pgs 35-36).

Table 4 - Summary of Fenland Viability Appraisal Outputs

Site	Land Value (£)	Units	% Affordable	Surplus/ (Deficit) (£)
A1	125,000	9	20	-101,010
A2	125,000	9	0	-37,196
B1	200,000	25	25	-191,111
B2	200,000	25	10	-120,594
B3	200,000	25	0	-58,990
C1	1,000,000	100	25	-1,084,899
C2	1,000,000	100	10	-753,986
C3	1,000,000	100	0	-514,906

Table 5 - Summary of Cambridge Viability Appraisal Outputs

Site	Land Value (£)	Units	% Affordable	Surplus/ (Deficit) (£)
X1	600,000	9	0	257,141
X2	600,000	9	35	30,366
X3	600,000	9	40	-74,642
Y1	1,300,000	25	40	234,421
Y2	1,300,000	25	50	24,207
Z1	6,000,000	100	40	887,239
Z2	6,000,000	100	45	365,014
Z3	6,000,000	100	50	-201,428

The results indicate a number of findings. Firstly, residential development in Fenland appears to be unviable at current market levels. All sites calculated at existing policy levels produced results that were significantly unviable, and even removing all affordable housing obligations failed to make developments viable. It would appear that, at current market levels, affordable housing policy targets are unrealistic. Market conditions will be examined later in this study in an attempt to understand how the results may change if the market were to improve or other variables were to change.

The results for Cambridge indicate two clear findings. In contrast to Fenland, housing development in Cambridge appears viable at existing policy levels. However the most startling result is the size of the surplus on Site X1, a site of 9 units, with no affordable requirement. This represents significant funds that could have been directed to affordable housing provision. Even at a level of 35% affordable housing, almost the policy level for sites over 14 units, the site is still economically viable. This appears to be an untapped resource for the local council. For Site Y of 25 units, at levels of both 40% affordable housing provision (the existing policy level) and 50% the site is still viable. Site Z of 100 units again projects a significant surplus at policy level and 45%, but becomes unviable at 50%. It demonstrates that it is possible in Cambridge to achieve high levels of affordable housing provision on large development sites (an important factor given the number of large sites that are proposed in the City) and paints an optimistic picture that a large number of affordable units will be delivered from these developments, but demonstrates that the Council are not necessarily maximising that delivery.

## Sensitivity Analysis

In order to assess the impact of a number of key variables on outputs, it is necessary to perform sensitivity analysis with; land values, house prices, building costs and developers' profits. These four variables are likely to have the greatest influence on the outputs in a changing market. Studying this variation allows for a better understanding of policy implications; important in the preparation of Local Plan policies which are robust and effective under a range of market conditions. To establish the levels of developer return achievable in Fenland, with other inputs unchanged, profit margins were adjusted to 17.5% and then 15%, the profit level at which viability was achieved was also calculated. The effect of this can be seen below.

Table 6

<b>Fenland</b>		<b>Profit Margin</b>		
<b>Site</b>	<b>15%</b>	<b>17.5%</b>	<b>Current (20%)</b>	<b>Viable at:</b>
<b>A1</b>	-58,051	-79,530	-101,010	8.2%
<b>A2</b>	11,506	-12,845	-37,196	16.1%
<b>B1</b>	-93,217	-142,164	-191,111	10.2%
<b>B2</b>	-7,880	-64,237	-120,594	14.6%
<b>B3</b>	67,500	4,255	-58,990	17.6%
<b>C1</b>	-659,300	-872,100	-1,084,899	7.2%
<b>C2</b>	-254,288	-504,137	-753,986	12.4%
<b>C3</b>	33,217	-240,844	-514,906	15.3%

The profit margin figure is included as part of the cost structure within the DAT, but has a bearing on the viability of the site as a relatively large part of the cost structure. The table above shows that between 15% and 17.5% profit margin sites A2, B3 and C3 become viable with no affordable housing, and could on that basis be delivered if developers are willing to accept a lower rate of return. However a number of sites are not viable unless the developer is willing to accept a return lower than 15%. It seems unrealistic that such sites would be delivered, not least because of the practical problems of negotiating finance at such rates of return. In relation to some of the marginal sites, a Local Authority may be

prepared to reduce other s106 requirements to improve viability, to allow sites with some affordable housing provision to be delivered.

This analysis highlighted the marginal nature of many sites in Fenland at lower profit margins and reduced affordable housing levels; a lower profit margin in the Fenland area of 17.5% was therefore used for the other sensitivity analysis. For Fenland, sites with some provision of affordable housing were used in an attempt to establish conditions for some viable sites contributing towards affordable housing supply. The Cambridge market previously supported a profit margin of 20% and this was therefore retained for the sensitivity analysis.

The tables below represent the performance of specific sites under a range of market conditions, with the other three variables to be studied changing by +/- 10% from the original value used. Six sites were chosen for sensitivity analysis, representing each typical site in both regions. Sites were selected where viability was likely to be influenced by changes in the inputs, at levels where some affordable housing was provided in an attempt to meet some housing need. In Cambridge policy level sites were used for the two larger sites and X2 (9 units 35% affordable) which had shown it was able to support affordable housing was used, to represent the smaller site.

Table 7

Site A1(17.5% RRR)	Land Value					
	-10%	Current	+10%			
House Prices		-86,691	-99,410	-112,128	-10%	Build Costs
	-10%	-146,784	-159,503	-172,221	Current	
		-206,877	-219,596	-232,315	+10%	
		-6,838	-19,496	-32,156	-10%	
	Current	-66,812	-79,530	-92,249	Current	
		-126,905	-139,624	-152,342	+10%	
		72,736	60,079	47,421	-10%	
	+10%	12,931	273	-12,385	Current	
		-46,933	-59,651	-72,370	+10%	

Table 7 shows the results of the sensitivity analysis for site A1 (9 units, 20% affordable) in Fenland. Green cells show viable sites and yellow cells represent those sites which are marginal (within £2,000 per unit of becoming viable). The analysis alludes to the fact that the most important determinant of site viability is house price levels, with all viable sites requiring significant house price increases. Build costs also have a large bearing, with an increase in build costs negating the benefit of house prices rises in achieving site viability. Land values have only a small impact on site viability; however this appears to be a 'level effect', with the surplus or deficit adjusting by approximately the level the land values changed. House prices and build costs impact each unit individually, and therefore a relatively small change in these levels can have a large impact overall when multiplied by the number of units built as part of the development.

Table 8

Site B2 (17.5% RRR)	Land Value					
	-10%	Current	+10%			
House Prices		-100,701	-121,054	-141,408	-10%	Build Costs
	-10%	-262,388	-281,902	-302,452	Current	
		-423,184	-443,734	-464,284	+10%	
		112,271	92,685	73,100	-10%	
	Current	-44,079	-64,237	-84,467	Current	
		-204,021	-224,472	-244,924	+10%	
		321,267	301,944	282,546	-10%	
	+10%	167,326	147,835	128,265	Current	
		11,940	-8,026	-28,078	+10%	

Site B2, (table 8) shows levels of viability being achieved at increased house price levels as well as at existing levels if build costs are reduced. The results for site B2 show the possibility of affordable housing provision in Fenland under appropriate market conditions, but also show the larger impact on viability that market changes in key variables can have. Table 9 shown below indicates a similar variation for site C2 (100 units, 10% affordable) as seen in Sites A1 and B2, and again demonstrates that some affordable provision would be possible in Fenland under improved market conditions. The key determinant in all scenarios appears to be that an increase in house prices is required to make some affordable housing provision viable. House prices have decreased by about 17.1% from the fourth quarter of 2007 to the fourth quarter of 2009 in the East Anglia region generally; since then levels have been relatively stable (Lloyds Banking Group 2013). There seems to be some scope for house price recovery in the future to a situation where some affordable housing provision is viable. However these results indicate it is unlikely to be to full current policy provision levels. There appears to be little scope for coping with additional site specific costs in the Fenland market.

Table 9

Site C2 (17.5% RRR)			Land Value			
		-10%	Current	+10%		
House Prices		-627,535	-732,273	-837,197	-10%	Build Costs
	-10%	-1,345,398	-1,451,148	-1,556,898	Current	
		-2,066,815	-2,172,565	-2,278,315	+10%	
		302,694	201,418	99,186	-10%	
	Current	-399,630	-504,137	-608,875	Current	
		-1,115,014	-1,220,256	-1,325,499	+10%	
		1,211,233	1,111,413	1,011,411	-10%	
	+10%	523,425	422,640	321,591	Current	
		-173,843	-277,395	-381,272	+10%	

Table 10

Site X2 (20% RRR)			Land Value			
		-10%	Current	+10%		
House Prices		14,332	-48,511	-111,585	-10%	Build Costs
	-10%	-46,138	-109,198	-172,425	Current	
		-106,812	-170,025	-233,475	+10%	
		153,003	90,554	27,994	-10%	
	Current	92,912	30,366	-32,477	Current	
		32,730	-30,104	-93,053	+10%	
		291,110	228,869	166,628	-10%	
	+10%	231,214	168,973	106,536	Current	
		171,317	108,895	46,353	+10%	

The Cambridge results show similar trends to Fenland, with higher house prices and lower build costs improving viability with house prices the predominant factor and land values



only impacting viability at marginal levels. However compared to Fenland, Cambridge is able to support development at a wider range of market situations. Site X2 at affordable provision (35%), above policy levels, is viable in the majority of cases other than reduced house price levels. Again a similar situation is seen for sites Y1 and Z1, (Tables 11 and 12 below), both providing affordable housing at policy levels of 40% and showing that this is viable at the majority of levels unless there is a substantial decrease in house prices. These results show the robustness of the Cambridge market to a range of market conditions, and highlights the potential opportunity for higher levels of provision when the market is more favourable. These levels of provision also provide some form of ‘viability cushion’ as recommended by the LHDG Report (LHDG 2012, p30), and are therefore able to cope with situations where additional site specific costs occur.

Table 11

Site Y1 (20% RRR)			Land Value			
		-10%	Current	+10%		
House Prices		168,879	33,373	-102,420	-10%	Build Costs
	-10%	3,548	-132,357	-268,530	Current	
		-162,294	-298,604	-435,420	+10%	
		533,483	399,015	264,159	-10%	
	Current	369,277	234,421	99,099	Current	
		204,684	69,274	-66,308	+10%	
		896,640	762,884	628,675	-10%	
	+10%	733,210	599,001	464,585	Current	
		569,327	434,848	299,992	+10%	

Table 12

Site Z1 (20% RRR)			Land Value			
		-10%	Current	+10%		
House Prices		451,819	-171,039	-796,784	-10%	Build Costs
	-10%	-323,729	-950,175	-1,578,951	Current	
		-1,103,567	-1,733,048	-2,364,891	+10%	
		2,272,379	1,656,937	1,038,932	-10%	
	Current	1,505,539	887,239	266,211	Current	
		735,546	114,088	-510,263	+10%	
		4,079,878	3,469,325	2,856,815	-10%	
	+10%	3,318,115	2,705,579	2,090,931	Current	
		2,554,342	1,939,534	1,322,453	+10%	

Site Z1 (100 units, 40% affordable) again shows similar trends but reinforces the point that in more favourable market conditions, with higher house prices, higher levels of affordable housing could be achieved. It seems odd that, with fixed requirements, the same site under different market conditions is expected to produce the same level of provision, which would support the rationale of a dynamic policy.

### Dynamic Viability Assessment

A dynamic policy for affordable housing provision could enable obligations to be related to current economic factors, within a set range of predetermined considerations. A dynamic approach to this area of planning permits the inclusion of price information and signaling at the policy negotiation stage, as recommended by Barker (2004) and others (Cheshire and Sheppard 2005). Such policy would enable the important sensitivity variables to be used to calculate the levels of provision development sites can support, at any point in time. By allowing policy to alter with market conditions, Local Authorities may be able to implement variable policy targets perceived as reasonable by both the developer and the Authority, therefore avoiding the delays and negotiations currently experienced in relation to affordable housing targets.

A potential practical example of a dynamic viability model is in the Affordable Housing Site Viability study commissioned by King’s Lynn and West Norfolk Borough Council in 2008 (Fordham Research 2008). The initial report was later updated to implement a dynamic policy in the 2009 report (Fordham Research 2009). The 2009 report states that ‘The economics of housing development has changed so accordingly we have been asked to review the findings of the 2008 study and set them in the current context and report how these changes may have affected the viability of delivering affordable houses’ (Fordham Research 2009, p6). The indices used by the council included three key variables; House prices, construction costs and alternative land values, to assess viability for residential development sites.

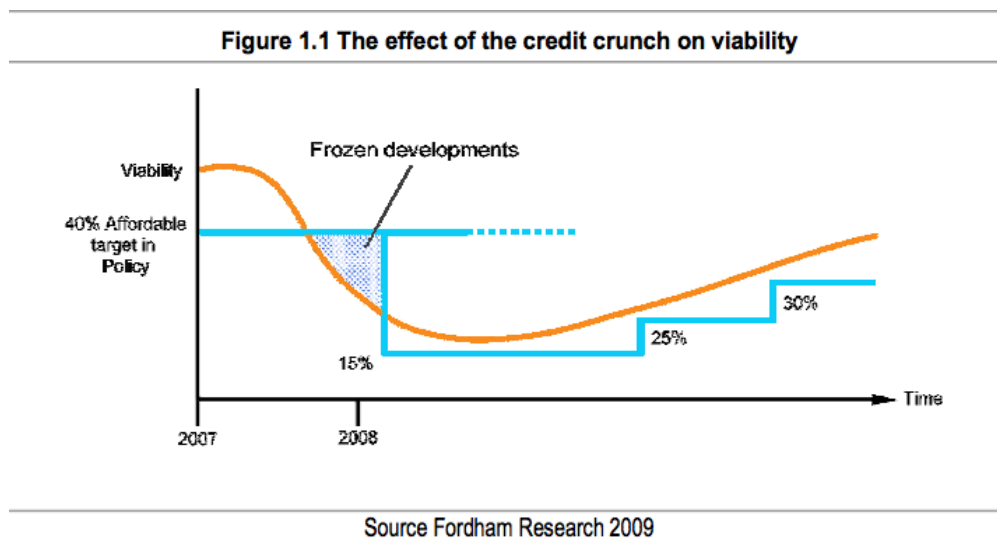


Fig 1 (Fordham Research 2009, p7)

Fordham Research who conducted the study for the Council state that ‘The Dynamic Viability model was constructed by Fordham Research to provide a third option: affordable targets that are both deliverable, and provide a reasonable maximum of affordable housing’ (Fordham Research 2009, p8). Using the indices, policy targets could be adjusted in an attempt to achieve more viable levels of affordable provision. The process of dynamic viability was implemented in the 2011 Core Strategy, ‘The Borough Council will vary this percentage and/or threshold(s) in line with a model of dynamic viability. The levels will be reviewed annually in consultation with a stakeholder group informed by the following factors: Market land values; House prices; Level of contributions sought overall; Index of build costs’ (King’s Lynn and West Norfolk Borough Council 2011, p38). Similar

policy has been implemented by other District Councils across the country such as by the City of York Council (2013), Croydon London Borough Council (Fordham Research 2010a) and Pendle Borough Council (Fordham Research 2010b) after similar studies were conducted; showing the range of jurisdictions the policy is suitable for.

King's Lynn and West Norfolk provided 190 additional affordable homes in 2009/2010, 200 in 2010-2011 and 160 in 2011-12, a higher level of provision than in Fenland, a neighbouring District experiencing similar market conditions (DCLG 2012c). These levels of provision cannot necessarily be attributed entirely to this approach to affordable housing provision, but must be appreciated when compared to the levels experienced by Cambridge and Fenland. The LHDG Report recommends the regular review of policy levels, and the possible use of threshold indicators that may pressure early review when external economic changes are significant. It goes on to acknowledge the use of dynamic models by a number of Local Authorities (LHDG 2012).

'A dynamic model is better as it can enable local authorities to obtain the best outcome in terms of sustainable development whilst still keeping developer risks low: both parties (and for that matter landowners) can expect to benefit from the increments in value that may occur over the baseline; whilst the local authority can afford to set a low baseline to encourage development secure in the knowledge that its position is protected if economic circumstances improve' (Gibbens 2012).

The example of King's Lynn and West Norfolk may not be the final answer with regard to dynamic policy implementation, but highlights the positive impacts the inclusion of price and market information can have in determining viable levels of affordable housing targets, and therefore creates support for future policy to be implemented in this way, especially in areas currently experiencing marginal viability on residential development sites.

## **Limitations**

There are some limitations to viability testing generally and this individual study specifically. The LHDG Report (2012) highlights those related to viability testing generally. 'A plan-wide test will only ever provide evidence of policies being "broadly viable"' (LHDG 2012, p18). The assumptions made in viability testing mean that site specific costs are somewhat ignored; a site experiencing large additional costs may be unviable. It is rare in

practice for a development site to be in a satisfactory state to commence development without demolition work, contamination clean up, or other site specific costs. However there is no realistic way to build such additional costs into viability testing for a Local Plan. The contrary point to this issue is that such analysis allows the isolation of the impact of planning obligations on a development site without the interference of additional costs; such a result can then be applied to a specific site by adjusting the result to reflect the additional costs. The LHDG report recommends the use of a 'viability cushion' when conducting viability testing to allow to a certain extent for site to site variations (LHDG 2012).

The report raises the issue that the results of an assessment outputs rely heavily upon the nature and quality of assumptions made. In this study, informed assessments on typical sites were made using information from past planning applications, and the opinions of agents and developers. Although the information utilised was a consensus, resulting from a wide ranging data collection exercise, studies such as this will be open to criticism that an organisation with greater resources may be able to conduct more extensive research, to improve the quality of inputs. If practical and time constraints had permitted, this study would have extended the number of typical sites studied, encompassing a wider range of site sizes, and to vary the property mix within each typical site.

The final limitation highlighted by the LHDG relates to the timing of the viability assessment. 'Assessments are carried out at a specific point in time and are therefore limited by the data and information available at the time' (LHDG 2012, p18). This can mean that the results of a study are limited to that time period and may be unsuitable to inform longer term planning policy. Although for this study information collected was of current values and costs, the sensitivity analysis conducted reflects the potential impact on viability of fluctuations in the key input variables over time. By analysing these results it is therefore possible to examine the potential viability of sites under different market conditions, and re-testing at different points in time, and adjusting policy accordingly, is a fundamental part of the idea of dynamic viability testing.

## Conclusions

Having conducted an extensive literature review, and undertaken a case study of two jurisdictions, the results of this study have assisted in reaching conclusions in the stages of research established to inform the overall research question:

- A) To review the current policy and provision of affordable housing in Fenland and Cambridge City
- B) To establish whether current developments in these areas are viable under current policy
- C) To analyse whether an alternative more dynamic policy would result in a greater overall provision

By addressing stage A), this study has highlighted the levels of housing demand and affordable housing need in the two areas. Existing policy with regard to affordable housing provision has been examined, and used to analyse the impact this policy has had on levels of provision. The evidence shows that the number of affordable dwellings provided annually in each area is substantially less than the levels of need acknowledged by the respective draft Local Plan documents. This has significant impacts on social, economic and environmental levels in each district, likely to have a substantial bearing on the performance of these areas in the future. The evidence creates a strong argument for some form of further intervention to improve the situation in both districts, but especially in Fenland where the evidence paints a relatively bleak picture.

Stage B) formed the basis of the quantitative research in this study. The results enabled conclusions that in Fenland, at current policy levels of affordable housing provision, residential development in the vast majority of cases is not viable. Removing the affordable housing obligations does not achieve viability for many sites unless developers are willing to accept a lower profit margin. The sensitivity analysis conducted shows the impact of changing market conditions, and importance of price information on the viability of the typical sample sites utilised, and indicates that significant house price increases are the factor most likely to create conditions where a level of affordable housing provision, albeit below current policy levels, can be achieved, therefore meeting some housing need.

The Cambridge residential development market provides a stark contrast to that of Fenland, able to support residential developments on a range of site sizes whilst fully meeting affordable housing obligations. The results have also shown that smaller sites, currently not subjected to affordable housing obligations, are potentially able to provide some level of affordable housing provision. This indicates opportunities for higher delivery of affordable housing by reducing the policy thresholds for affordable housing in Cambridge. This is an issue considered by the Cambridge City Council in their 'Issues and Options Report' (CCC 2012), the results of which are likely to be seen in the near future.

Regarding alternative dynamic policies (Stage C) both districts show a certain level of inefficiency with the current policy obligations, and the potential for different levels of provision under an alternative policy. However the problem may lie deeper than just the levels of affordable housing provision set by Local Plans, but in the rigid nature of policy, and lack of acknowledgement of changing market conditions over Local Plan time frames. These issues have been highlighted by the Barker Review and a number of other academics; the exclusion of price and market information in the negotiation of policy is resulting in a system where policy targets don't match practical market conditions. The current Local Plans being prepared in both Districts aim to govern policy until 2031, implementing blanket policy levels, regardless of changing market conditions over the period. The experiences of dynamic policy by a number of Local Authorities, including a neighbouring district to Fenland, have highlighted the potential for the implementation of dynamic policy targets. Such policy allows for the inclusion of market forces into target setting; as demonstrated by the sensitivity analysis of this study, changing market conditions can have large impacts on site viability. Policy that is able to adjust to such changes has the potential to result in more efficient levels of affordable housing provision. The implementation of dynamic policy may allow Local Authorities to avoid the current negotiations that often result from s106 obligations, as the calculation of viable levels of affordable housing targets would allow for sites to proceed whilst still maintaining full s106 payments.

The current policy in both Fenland and Cambridge City is not providing the most efficient level of provision of affordable housing as part of residential developments. In Fenland the policy levels fail to take into account current market conditions and land values, leaving most development unviable. In Cambridge the current policy fails to take account of potential areas for higher provision, particularly on smaller sites below the current

threshold. However the current local plan process of both Local Authorities seems set to implement future policy along a similar trajectory. The impacts on viability of changing market conditions, as shown by the study, show the unsuitability of a static policy in changing economic conditions in establishing efficient policy targets. The concept of dynamic assessments may not be the only solution to the problem of balancing affordable housing provision with viability, but its flexibility in respect to changing market conditions, inclusion of previously neglected price and market information, and the relative success in delivery by Local Authorities who have implemented such policy, creates a strong argument for dynamic assessments as an alternative to current policy, in an attempt to improve overall provision of affordable housing.



## Appendix A - Summary of Inputs

Input	Fenland	Cambridge
<b>Build Costs £ per sq m Gross area</b>	Open Market: 800 Shared Ownership: 800 Affordable Rent: 780	Open Market House: 900, Flat:1000 Shared Ownership House: 900, Flat: 1000 Affordable Rent House: 850, Flat: 900  Net to gross adjustment flat 15%
<b>Property Values</b>	2B Mid Terrace £100,000 2B End Terrace £105,000 2B Semi-Detached £105,000 3B SD £125,000 3B Detached £150,000 4B D £180,000	1B Apartment £200,000 2B Ap £270,000 2B Townhouse £320,000 3B TH £360,000 4B TH £440,000
<b>Timings (Months)</b>	Site A - 12 Site B - 18 Site C - 24	Site X - 12 Site Y - 18 Site Z - 24
<b>Design and Professional Fees</b>	8%	
<b>Contingency</b>	2.5%	
<b>Management Costs</b>	Shared ownership - 2% Affordable Rent - 5%	
<b>Cost of Finance</b>	7%	
<b>Site Preparation</b>	Site A - £5,000 Site B - £15,000 Site C - £50,000	Site X - £10,000 Site Y - £20,000 Site Z - £100,000
<b>Roads and sewers</b>	Site A - £25,000 Site B - £200,000 Site C - £800,000	Site X - £15,000 Site Y - £50,000 Site Z - £750,000
<b>Service Connections</b>	£4,000 per unit	
<b>Landscaping Costs</b>	Site A - £2,000 Site B - £10,000 Site C - £50,000	Site X - £2,000 Site Y - £10,000 Site Z - £200,000
<b>Market/Disposal Costs</b>	Sales Fees 1.5% Legal Fees per unit £500	
<b>Affordable Rent</b>	80%	60%

<b>S106 Obligations</b>		
	<b>Fenland</b>	<b>Cambridge</b>
<b>Education</b>	<p>Threshold - 10 units</p> <p>Preschool - all units at 0.05 places per unit each costing £8400</p> <p>Primary - 2 Bed £350, 3 Bed £1,350, 4+ Bed £2000</p> <p>Existing secondary capacity</p>	<p>Primary - £1350 per unit</p> <p>Secondary - £1520 per unit</p> <p>Pre-school - £810 per unit</p> <p>Lifelong learning - £160 per unit</p> <p>1 Bed units - lifelong learning only</p>
<b>Community Facilities</b>	-	<p>£1256 per 1/2 Bed</p> <p>£1882 per 3+ Bed</p>
<b>Public Open Space</b>	<p>Threshold - 15 units</p> <p>60 sq metres per unit provision, or £1200 per unit in lieu</p>	<p>Cost/person</p> <p>Outdoor Sports - £238</p> <p>Indoor Sports - £269</p> <p>Provision for children/teenagers - £316</p> <p>Informal Open Space - £242</p> <p>1 Bed units assumed 1.5 people</p>
<b>Transport</b>	Site specific	
<b>Waste</b>	£180 per household	£75: house, £150: flat

## Appendix B - HCA DAT Output - Fenland C1

### Scheme Results

'GLA toolkit' style Scheme Results

Site Reference Details	
Site Reference	FC1
Local Planning Authority	Fenland
HCA Investment Partner	Developer

Site Details	
Site Address	Fenland C1
Scheme Description	100 Units 25% Affordable

TOTAL NUMBER OF UNITS	
Dwellings	100

AFFORDABLE UNITS		
	Quantity	% all units
Total	25	25%
Social Rented	0	0%
Affordable Rent	18	18%
Shared Ownership	7	7%

DENSITY (per hectare)	
Dwellings	25.0

Surplus/(Deficit) <i>Present Value</i>	
Whole Scheme	-1,084,899
Per net hectare	-271,225
Per dwelling	-10,849
Per market dwelling	-14,465

REVENUES AND COSTS		
Total Scheme Revenues		11,860,001
Total Scheme Costs	13,159,410	

Alternative Site Value	
Purchase Price Paid	1,000,000

Contribution to Revenue from		
Market Housing		10,195,000
Affordable Housing		2,187,548
Social Rent	-	
Shared Ownership	550,452	
Affordable Rent	1,637,095	
Other Contributions		-522,547
Non Residential Values		0

Contribution to Costs from		
Market Housing		5,524,000
Affordable Housing		1,527,400
Social Rent	-	
Shared Ownership	412,000	
Affordable Rent	1,115,400	
Other Construction costs		2,237,500
Planning Obligations		177,000
Fees		199,925
Non Residential Costs		-
Finance and Acquisition Costs		1,408,763
Developer's return for risk and profit		2,084,822

## Appendix C - HCA DAT Output - Cambridge Z1

### Scheme Results

'GLA toolkit' style Scheme Results

Site Reference Details	
Site Reference	CZ1
Local Planning Authority	Cambridge
HCA Investment Partner	Developer

Site Details	
Site Address	Cambridge Z1
Scheme Description	100 Units 40 Affordable

TOTAL NUMBER OF UNITS	
Dwellings	100

DENSITY (per hectare)	
Dwellings	80.0

AFFORDABLE UNITS		
	Quantity	% all units
Total	40	40%
Social Rented	0	0%
Affordable Rent	30	30%
Shared Ownership	10	10%

REVENUES AND COSTS		
Total Scheme Revenues		24,717,158
Total Scheme Costs	23,678,188	

Surplus/(Deficit) <i>Present Value</i>		
Whole Scheme	887,239	
Per net hectare	709,791	
Per dwelling	8,872	
Per market dwelling	14,787	

Contribution to Revenue from		
Market Housing		19,370,000
Affordable Housing		5,347,158
Social Rent	-	
Shared Ownership	1,930,067	
Affordable Rent	3,417,091	
Other Contributions		0
Non Residential Values		0

Alternative Site Value	
Comparator	6,000,000

Contribution to Costs from		
Market Housing		4,834,853
Affordable Housing		2,743,529
Social Rent	-	
Shared Ownership	685,588	
Affordable Rent	2,057,941	
Other Construction costs		3,367,887
Planning Obligations		1,154,077
Fees		340,550
Non Residential Costs		-
Finance and Acquisition Costs		7,280,986
Developer's return for risk and profit		3,956,306

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