

ROTHERHAM METROPOLITAN BOROUGH COUNCIL

Housing Viability Study Affordable Housing Requirements on Large Sites [>0.5 hectares]

Prepared by Professor Stephen Walker

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EXECUTIVE SUMMARY

Study Context

1. Professor Stephen Walker was commissioned by Rotherham Metropolitan Borough Council in April 2010 to produce financial appraisals on thirteen residential development sites in Rotherham. All thirteen sites were classed as large sites [i.e. they were larger than 0.5 hectares].
2. The purpose of the appraisals was to assess the value and potential of these thirteen sites to deliver affordable housing and other requisite planning requirements by way of planning obligations [typically called S106 obligations].
3. The findings from these viability studies are intended to inform future planning and affordable housing policies and, in particular, to ensure that such policies do not render forthcoming housing developments unviable as prescribed by national Government guidance [i.e. PPS1, PPS3 and PPS12].
4. The approach in testing viability involves a standard valuation method – a Discounted Cash Flow method of Residual [Land] Valuation – which has been tailored to reflect local circumstances in terms of prices and costs. The modelling, with some training, can be conducted by Borough Council personnel; it is a skill that should be seen to complement the Borough's other work on other forms of assessment.

Viability Testing

5. At the core of this study is development economics and in particular subjecting housing [and other sites] to the rigour of viability assessment prior to plan making. The imperative of viability is a market concept. However, plan making is now required to take development economics and viability into account. PPS3 Housing [DCLG, 2006], Circular 05/2005 on Planning Obligations [ODPM, 2005], Planning Obligations, Practice Guidance [ODPM, 2006], PPS12 Local Spatial Planning [CLG, 2009] and HCA [March 2010], all emphasise the need for and importance of robust viability assessments.
6. Additionally, funding changes in supporting the provision of affordable housing through the Homes and Community Agency has placed greater reliance on the ability and capacity of private developers to deliver affordable housing through planning obligations and as a consequence has further highlighted the significance of development viability *per se*.
7. The Borough Council wanted the appraisals to be “ground clearing” in testing the impact of alternative affordable housing quota options in a variety of market development situations. Crucially, it was keen to update its knowledge of viability since the publication of an earlier study in 2007, especially as market conditions now are materially different.
8. The study sites were carefully selected so as to reflect different market circumstances i.e. geographical locations – town centre, suburban, edge of town, rural; site size and attributes; allocated and unallocated housing sites; green-field and brown-field. In respect of development conditions, pressure to ensure an adequate future supply of housing land has meant that this 2010 study includes a much higher proportion of green-field sites compared to the 2007 study.
9. We determined a series of standard housing costs and market price levels, which were then applied according to development type and site category.

Affordable Housing Quotas: Stress-Testing Options

10. The viability of the thirteen study sites was stress-tested for **eight** options relating to:

- Zero affordable housing i.e. all market housing as a baseline.
- Current affordable housing policy¹:
 - 25% of total units on sites, with a split of 14% social rented and 11% shared ownership
- Prospective affordable housing policy:
 - 15% of total units on sites, with the affordable proportion split 8.4% for social rented and 6.6% for shared ownership
 - 20% of total units on sites, with the affordable proportion split 11.2% for social rented and 8.8% for shared ownership
 - 30% of total units on sites, with the affordable proportion split 16.8% for social rented and 13.2% for shared ownership
 - 35% of total units on sites, with the affordable proportion split 19.6% for social rented and 15.4% for shared ownership
 - 50% of total units on sites, with the affordable proportion split 28% for social rented and 22% for shared ownership
 - 100% of total units on sites, with the affordable proportion split 100% for social rented and 0% for shared ownership.

In liaison with the Borough Council, we assumed that no social housing grant was available.

Planning Obligations and other Costs

11. As part of our modelling approach we included a standard planning obligation charge to cover a mix of planning requirements that might be paid in the future by housing developers. For consistency we assumed a standardized charge of £7,000 per dwelling on all thirteen study sites.
12. Where appropriate, we have also included in the appraisals a sum for abnormal costs, equivalent to a sum of £1,000 per dwelling. However, for two of the three brown-field sites, we adopted a different approach because of known site conditions. Specifically, the Croda site is known to be highly contaminated and we have apportioned £1m per hectare for remediation; the Ivanhoe site contains a large number of existing structures and we have apportioned £0.75m per hectare for site clearance and restitution. Both sums are in accordance with best practice advice. Crucially, the green field sites are not affected by these additional costs.
13. Local market conditions showed that house prices across the Borough varied considerably and these were reflected in the new build prices applied in the modelling to reflect mix, density and situation.

¹ See *Affordable Housing*, Interim Planning Statement, Forward Planning, Rotherham Metropolitan Borough Council, January 2008.

14. Comparative land values were considered, showing the existence of wide differences according to land uses [e.g. agricultural, industrial].
15. The modelling also required us to specify a number of other important development assumptions relating to professional fees, stamp duty land tax, interest rates and discount factor, as well as the pace and phasing of development. In respect of the latter, these were important in modelling the RLV using the cash flow approach.

Developers Profits

16. Critically, in all our appraisals we set the developers rate of profit at 20% on costs for the market units and 6% on costs for the affordable units; this is lower than the rate applied in the Borough's 2007 report on viability.

Residual Land Value [RLV]

17. Financial appraisals were conducted for each of the eight affordable housing options for each of the thirteen study sites using specially prepared spreadsheets. The appraisals use the Discounted Cash Flow method of calculating the Residual Land Value.
18. The RLV is by definition a residual. It is the sum of money available to buy the land needed for the development to proceed. It is a derived sum based on the final development value, an accurate estimate of building costs and a sum of money to meet the developers target rate of profit. The RLV is the maximum budget available to the housing developer to buy the land.
19. For a proposed development to pass the test of viability, it is necessary for the land value for housing to exceed the land value from any valid alternative use [i.e. requiring planning permission]. In Section 5, we showed that, in and around Rotherham, land values for industry and agriculture were around £400,000 per hectare and £50,000 per hectare respectively.
20. For virgin land or a green field site, where its current use is agricultural, its land value will be typically low. In contrast to the previous viability report [in 2007], the majority of the study sites are green-field sites, with only 3 sites [Sites 7, 8 and 11] having been in a previous use [typically as a factory or warehouse]. Thus, where such sites have been cleared, or are known to be contaminated or where derelict structures are evident, these sites' land values are likely to be substantially lower, even negative.
21. Efficient market hypothesis contends that markets ought to reflect all the relevant costs and values, so that a developer's land bid offer price reflects in a clear and true way the full costs of providing affordable housing and other planning requirements.
22. In the context of affordable housing requirements *a priori*, these requirements will lead to lower land values. As a general principle there is an inverse relationship between the level of affordable housing and land values; as the requirements for the former increase the latter decrease. It is also important to record how the cost of mitigating a planning objection affects the RLV, and whether the RLV is abnormally low or appears to be negative.

Results of Financial Appraisals

23. In this Report, Table 6.2 summarizes the results of the viability appraisals. With **NO** affordable housing requirement, the thirteen study sites deliver a residual land value

[RLV] of just under £1m per hectare on average. The green-field sites located in suburban and other urban/edge of town locations deliver the highest of the land values averaging £1.1m per hectare. The brown-field sites deliver the lowest values with an average of nearly £0.53m per hectare. These lower values are explained by the significantly higher costs associated with developing out these sites and the lower outturn prices on these sites.

24. Taking into account developer contributions and some abnormal costs, the financial results points to a market valuation for green-field housing land free of planning and development costs [with an assumed developers profit of 20% on costs] typically approaching £1.2m per hectare. This figure is slightly lower than the Valuation Office Agency data of around £1.3 to £1.4m per hectare [see The Property Market Report, January 2010]; this indicates that the appraisals marginally underestimate profitability.
25. The position of the brown-field sites is clearly very different from the green-field sites; specific site conditions drive their land values considerably below the above figures and comparables [which are referencing small, green-field sites in any case].
26. As expected as increasing amounts of affordable housing are sought, the residual land values are reduced and on some sites substantially so.
27. A key reference point is the RLV inclusive of 25% affordable housing [see Column 4 in Tables 6.1 and 6.2]. At this point, the RLV on average is driven towards £0.62m per hectare, representing an average fall of 36% in the baseline RLV.
 - For the ten green-field sites, their RLV inclusive of the 25% affordable housing has declined on average by nearly 32% to £0.75m per hectare, however all these sites remain viable relative to their comparables. Indeed, all the green-field sites remain viable if affordable housing was sought at 50% of total units built. This finding is in the absence of sensitivity analysis which needs to inform and confirm that the Borough Council's affordable housing policy is sustainable and enduringly viable.
 - For the three brown-field sites, their RLV inclusive of the 25% affordable housing has declined on average by nearly two-thirds to less than £0.18m per hectare. Once sensitivity analysis is conducted, these sites are highly vulnerable to small rises in costs and small falls in house prices, which renders them very unattractive propositions and effectively unviable.
28. The only situation where all the study sites' RLVs are negative is if all the homes to be built were affordable [which is extremely unlikely].
29. In practice, the threshold of viability is not fixed. Viability will depend on the value from existing uses or any valid alternative. Also, if in the future the planning authority intends to secure contributions from non-residential developments as part of their review of their current approaches, then any such contributions made by developers will also reduce the alternative use values which are used to benchmark viability.

Sensitivity Testing

30. To reiterate, a site is viable when a developer has enough money in their budget to buy the land, build out the scheme and meet their assumed target rate of profit. This means the developer's land bid budget must be large enough to compete away other land uses that planning would permit at today's market prices and costs [i.e. at the time of the valuation (now)].

31. Sensitivity analysis has been conducted across all the affordable housing iterations, but our reference point is to test whether viability is maintained at the Borough Council's extant affordable housing policy requirement of 25% of all dwelling units.
32. *A priori*, viability is a relative and thus a dynamic concept. To accommodate changes in market conditions, we have conducted sensitivity analysis – a kind of stress testing of viability when price/rents and costs of building change. We have been guided by the fact that there are four key variables that affect the RLV and hence ultimately viability. According to Ratcliffe et al [2009], price [rents and yields], cost, time and interest rates are the most important of all variables. For housing viability, price and cost are the most important of the four variables.
33. We have also been guided by market changes and recent forecasts so that the testing is realistic as far as it can be.
- For price changes we have modelled the effects of 2.5% and 5% per annum rises and falls;
 - For build cost changes we have modelled the effects of 2.5%, 5%, 7.5% and 10% per annum increases.
 - If the build out time is longer than 12 months, then such changes will be compounded, affecting the larger sites' viability position most [e.g. Sites 3, 6, 7, 10, 12].
34. We have also modelled the effects of stepped increases in build costs per unit of £10,000, £20,000 and £30,000 per unit. With regard to this stress test, such one-off increases in build costs per unit emulate the consequence of trying to achieve higher rating as envisaged by the Code for Sustainable Homes. We also reveal the level of such a rise in build cost at the point when viability is compromised. Again, the viability benchmark is the Borough Council's current affordable housing policy of 25% of all units built on the sites.
35. The results are set out in summary form in Tables 6.1, 6.2, 6.3a, 6.3b and 6.3c in this Report. A fuller set of results of the sensitivity analysis for each site is presented in a separate Volume.

Site-by-Site Results

36. In order to simplify the presentation and to ease understanding of the analysis, we have presented the results in the form of uplift multipliers. The uplift multiplier measures the size of the rise in land value due to developing the site for housing relative to a current use value. This means, irrespective of the comparator land use value and the particular sensitivity test [at the head of each column], that so long a site's uplift multiplier is greater than 1, then the site is viable.
37. The results from the sensitivity analysis are presented for each of the study sites separately, starting with the green-field sites and then the brown-field sites.

GREEN-FIELD SITES

Site 1: Land, Westfield Road Brampton: this is a 3.91 hectare green-field site, with a capacity of 166 homes, and total project duration of 36 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 2-3.]

Site 2: Arundel Park, off Rother Crescent, Treeton: this is a 3.12 hectare green-field site, with a capacity of 92 homes, and total project duration of 30 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 4-5.] The house-builders are currently on site.

Site 4: Dalton Lane Allotments, Dalton: this is a 4.6 hectare green-field site, with a capacity of 198 homes, and total project duration of 42 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 6-7.]

Site 5: Land off Gill Close, Wickersley: this is a 0.86 hectare green-field site, with a capacity of 29 homes, and total project duration of 18 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 8-9.]

Site 6: Land off Sawn Moor, Thurgroft: this is a 12.94 hectare green-field site, with a capacity of 605 homes, and total project duration of 96 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 10-11.]

Site 9: Land to north of Upper Wortley Road, Rotherham: this is a 6.65 hectare green-field site, with a capacity of 283 homes, and total project duration of 48 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 12-13.]

Site 10: Land off Wentworth Road, Dinnington: this is a 8.69 hectare green-field site, with a capacity of 369 homes, and total project duration of 72 months. The site passes all the stress tests, regarding both build cost rises and house price falls, except if build costs rise by 10% per annum. Despite the failure on this last test, we judge that the site to be viable. [See Tables in Appendix B, pp 14-15.]

Site 11: Land north west of Munsbrough Lane, Rotherham: this is a 5.42 hectare green-field site, with a capacity of 230 homes, and total project duration of 42 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 16-17.]

Site 12: Land to rear of Haugh Green, Upper Haugh: this is a 19.68 hectare green-field site, with a capacity of 753 homes, and total project duration of 96 months. The site passes all the stress tests regarding both build cost rises and house price falls, except when build costs rise by more than 7.5% per annum. Since the build out period is long, compounding the rise in build costs at more than 7% per annum, the overall build costs at the end of the 8 years' period will be some 90% higher [close to double current build costs]. Thus, despite this failure on this test, we judge the site to be viable. [See Tables in Appendix B, pp 18-19.]

Site 13: Land off Keeton Hall Road, Kiveton Park: this is a 3.16 hectare green-field site, with a capacity of 94 homes, and total project duration of 30 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 20-21.]

BROWN-FIELD SITES

Site 3: Timber Yard, off Outgang Lane, Dinnington: this is a 7.71 hectare brown-field site, with a capacity of 295 homes, and total project duration of 60 months. This site is only viable at today's costs and prices for the delivery of the Borough's current affordable

housing [i.e. 25%] policy. However, viability is compromised when build cost rise by more than 2.5% per annum or if house prices fall more than 2.5% per annum. Since the project duration is 5 years, the compound effect of these tests are quite considerable i.e. by the end of the project prices would be 16% lower or build costs higher by 16%. This site passes all the stress test so long as only market homes are built. [See Tables in Appendix B, pp 22-23.]

Site 7: Croda Site, Carlisle Street, Rotherham: this is a 12.64 hectare brown-field site, with a capacity of 591 homes, and total project duration of 84 months. This site is only viable at today's costs and prices for the delivery of all market homes; no affordable housing could be delivered. The site fails all the stress tests and is thus unviable. [See Tables in Appendix B, pp 24-25.]

Site 8: Ivanhoe Works, Kimberworth Road, Masbrough: this is a 4.39 hectare brown-field site, with a capacity of 217 homes, and total project duration of 48 months. This site is only viable at today's costs and prices for the delivery of all market homes; no affordable housing could be delivered. The site fails all the stress tests and is thus unviable. [See Tables in Appendix B, pp 26-27.]

38. We sought to demonstrate how viability is affected by predicted increases in building costs arising directly from meeting the Code for Sustainable Homes. New homes are expected to generate lower carbon emissions as a result of the Code for Sustainable Homes. The consequential effect of this objective will be to increase overall build costs.
39. Thus, to embrace a range of build cost increases, we have modelled the effect on viability of three different stepped increases in build costs of £10,000, £20,000 and £30,000 per unit. This modelling has been carried out for all the study sites when 25% of the housing units are affordable.
40. For the ten green-field sites, Tables 6.3a and 6.3b shows that the uplift multipliers are all high enough to achieve viability if build costs rise by £10,000 per unit. If build costs rise by £20,000 per unit, then viability is compromised for 5 sites [Site 1, Site 4; Site 11; Site 12 and Site 13]; the remaining sites are comfortably viable. However, if costs rise by £30,000 per unit, then only 2 of the ten green-field sites [Sites 2 and 14] remain viable.
41. The bottom row of figures in Tables 6.3a and 6.3b shows the upper limit of the increase in build costs that would render the sites unviable. The figures show that this ranges from £16,500 per unit on Site 13 [at Haugh Green] to £32,000 per unit on Site 2 [at Arundel Park, which is presently under construction by Jones Homes]. Crucially, the lower figure compare well with the forecast cost increases relating to meeting possible future home energy efficiency standards made by consultants and others.
42. For the three brown-field sites, Table 6.3c shows that the uplift multipliers are all very low [or negative]. Only Site 3 is viable, but this is quickly compromised if additional building costs of £5,000 or more are incurred. Site 9 is marginally unviable if 25% of the housing units are affordable; so with additional building costs the position quickly deteriorates. Site 8 is unviable from the outset.

Implications for Future Affordable Housing Policy Requirements

43. In our view, **the Borough Council is justified in maintaining its current affordable housing policy that seeks 25% of all dwelling units being affordable homes.**

44. **Our appraisals demonstrate that all the green-field study sites are viable and lead to satisfactory financial outcomes.** The fact that some of our study sites are currently under-construction attests to these sites' viability.
45. **The position of the three brown-field sites is quite different.** Given the specific site constraints of such sites, we suggest that the Borough Council adopts a more open-approach which would involve seeking to work with applicants and balancing the range of planning issues in trying to conceive viable schemes.
46. **We have stress tested the sites' viability, where increases in build costs or price falls have been modelled. In particular, the tests on the green-field sites demonstrate that the Borough Council's affordable housing policy retains its viability and can withstand adverse market conditions.**

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1 ROTHERHAM'S HOUSING VIABILITY STUDY: S106 REQUIREMENTS

Preamble

- 1.1 Professor Stephen Walker was commissioned by Rotherham Metropolitan Borough Council in April 2010 to produce financial appraisals on thirteen residential development sites in Rotherham.
- 1.2 The purpose of the appraisals was to assess the value and potential of these study sample sites to deliver affordable housing, open space and transport provision by way of planning obligations [typically called S106 obligations]. The findings from these viability studies are intended to inform future planning and affordable housing policies and, in particular, to ensure that such policies do not render forthcoming housing developments unviable as prescribed by national Government guidance [i.e. PPS1, PPS3 and PPS12].

Brief for this study

- 1.3 At the core of this study is development economics and in particular subjecting housing [and other sites] to the rigour of market assessment prior to plan making. The imperative of viability is a market concept. However, plan making is now required to take development economics and viability into account. PPS3 Housing [DCLG, 2006], Circular 05/2005 on Planning Obligations [ODPM, 2005], Planning Obligations, Practice Guidance [ODPM, 2006], PPS12 Local Spatial Planning [CLG, 2009] and HCA [March 2010], all emphasise the need for or the importance of robust viability assessment.
- 1.4 Additionally, funding changes in supporting the provision of affordable housing through the Homes and Communities Agency has placed greater reliance on the ability and capacity of private developers to deliver affordable housing through planning obligations and as a consequence has further highlighted the significance of development viability *per se*.
- 1.5 The Borough Council wanted the appraisals to be “ground clearing” in testing the impact of alternative affordable housing quotas in a variety of market development situations. Crucially, it was keen to update its knowledge of viability since the publication of an earlier study in 2007, especially as market conditions now are materially different.
- 1.6 The study sites were carefully selected so as to reflect different market circumstances i.e. geographical locations – town centre, suburban, edge of town, rural; site size and attributes; allocated and unallocated housing sites; green-field and brown-field. In respect of development conditions, pressure to ensure an adequate future supply of housing land has meant that this 2010 study includes a much higher proportion of green-field sites compared to the 2007 study.
- 1.7 Importantly, this range of attributes would also enable more general conclusions to be drawn about the viability implications locally for policy formulation.
- 1.8 The approach also needed to be able to model additional sites and make comparisons as required. The approach in testing viability involves a standard valuation method – a Discounted Cash Flow method of Residual [Land] Valuation – which has been tailored to reflect local circumstances in terms of prices and costs. The modelling, with some training, can be conducted by Borough Council personnel; in any case, it is a skill that should be seen to complement the Borough's other work on planning and design assessments.

Other Viability Studies

- 1.9 In the last two years, Professor Stephen Walker has conducted and led similar housing viability studies in North Devon, North Cornwall, Torridge and West Somerset and The Exmoor National Park Authority. In 2010, he completed a large study of twenty-six small sites [i.e. <0.5 hectares] jointly commissioned by North Devon and Torridge Councils. Additionally, in the last few years Professor Walker has been involved in planning obligations and property development economic studies for central Government and for local planning authorities. The focus of these studies has been to improve practice and to raise awareness of viability and how viability is affected by different planning and affordable housing requirements.

Structure of this report

- 1.10 The rest of the report covers the following:
- Section 2: Individual Sites for Housing Development. This Section simply describes the sites' attributes and some of the key assumptions made.
Section 3: Affordable Housing and Other Planning Obligations and Developer Contributions. This Section focuses on Rotherham's approach towards affordable housing and other planning obligations that might affect the study sites' development and hence their viability.
 - Section 4: Modelling Housing Viability: This Section sets out the methodology adopted in conducting viability and in testing the impact of a range of affordable housing quota options. We also describe in some detail our approach towards developers' profits.
 - Section 5: Assumptions of Viability Analysis. This Section explains those costs and values used in the viability analysis and the range of other variables and parameters applied in modelling viability, including finance, pace of development and information on comparative land values.
 - Section 6: Results of Viability Analysis. This Section presents the results of the viability where baseline land values are compared against land values affected by affordable housing quotas, sensitivity testing and alternative use values.
 - Section 7: Conclusions and Implications of Results.

2 INDIVIDUAL SITES FOR HOUSING DEVELOPMENT

Preamble

- 2.1 In liaison with Rotherham Metropolitan Borough Council [RMBC] a total of thirteen sites were identified for study. This Section specifically considers the main characteristics of the individual sites for housing, and the principal assumptions made about proposed development for the purposes of generating financial appraisals and for testing for viability.
- 2.2 All the individual sites were subject to site visits and appraisals.

Current Data and Information

- 2.3 The planning status of the sites was known. In two cases, development is currently underway, confirming that extant planning requirements [including affordable housing contributions] have not rendered the developments unviable. Some sites have allocated status in the local plan for housing. For a number of the larger green-field sites located in the green-belt, however, there is no presumption in favour of any type of development in the future. In this respect, the financial analysis is simply modeling hypothetical developments. Other information regarding costs and profits has been informed by housing developers and locally operating housing associations.
- 2.4 This information has been taken into account in formulating development assumptions for individual sites and for shaping the modelling approach.

Individual Sites for Housing Development

- 2.5 Basic data on the thirteen sites identified by the Borough Council is set out in the Table 2.1.
- 2.6 The sites provide a good mix of development situations: town and suburban; village and rural settings [see Figure 1 overleaf]. There is a predominance of green-field sites [10 out of the 13] and, being geographically spread across the Borough, the sites selected mirror, in a realistic and practical way, different planning and development pressures and opportunities. For example, a small number of the sites are currently allocated for residential development in the local plan.

Figure 1: Study Site Locations

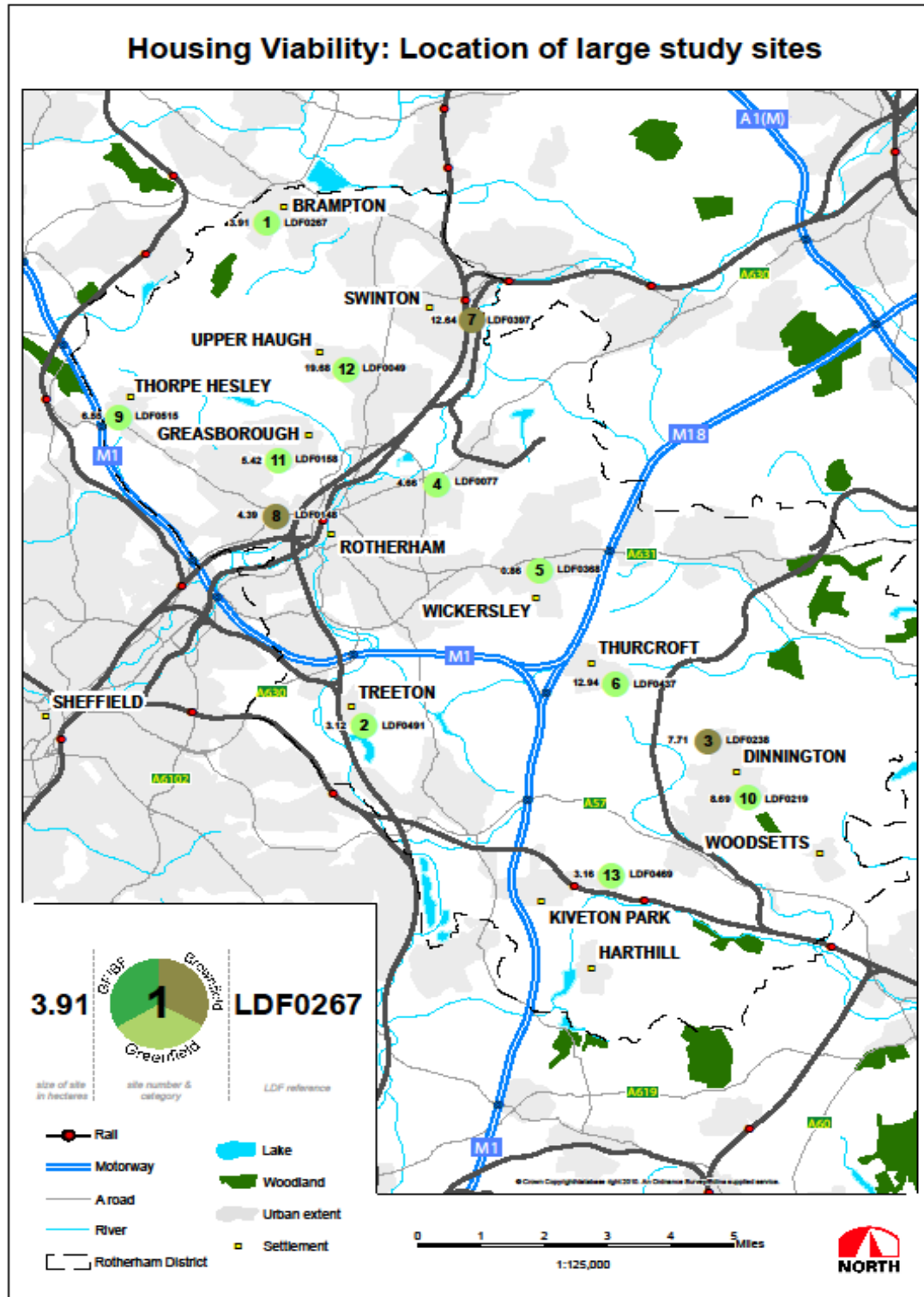


Table 2.1 Individual Site Details: Large Sites [>0.5hectares]

Site Number	Site Name	Site Type	Site Area [hectares]	Site Attributes and Planning Status
1	Land to the North of Westfield Road, Brampton	Green field	3.91	Agricultural land; a gap site separating 1960s housing from a later urban extension built in the 1990s. This is an allocated site with planning permission for housing, including the provision of 15% affordable housing.
2	Land off Rother Crescent, Treeton	Greenfield	3.12	Agricultural land; the site is contiguous with recently built housing over the last 4 years. This is an allocated site. A planning application has been granted for 92 dwellings to form Arundel Park. Developers, Jones Homes, are currently on the site.
3	Timber Yard Dinnington	Brownfield	7.71	This is an employment site comprising a mix of industrial buildings and storage areas, that is partly operational [about 20% of the site fronts Outgang Lane] but with open land and derelict structures on the rest of the site. An outline application for residential development and open space was granted in 2010.
4	Dalton Allotment Site, off Dalton Lane, Dalton	Greenfield	4.66	Disused/derelict allotment grounds that originally served established neighbourhoods accessed from Laudsday Lane, Hardwick Street and Dalton Lane. No applications have been lodged to date.
5	Land off Gill close, Gill Close,	Greenfield	0.86	The site comprises a flat area of grass land, which is enclosed by housing in an established neighbourhood, with accessible

	Wickersley			community facilities [e.g. schools and church] and local services. It is contiguous with Site number 5.
6	Land off Sawn Moor Road, Sawn Moor, Thurgroft	Greenfield	12.94	The site is currently open farmland. The site was previously an allocated housing site [H23]. A previous planning permission has lapsed. It is an allocated site.
7	Croda Site, Carlisle Street, Rotherham	Brownfield	12.64	This is a cleared site that was once the base of a large manufacturing company. The site is flat but is adversely affected by contamination and access issues. Contiguous to its southern boundary is a large modern recycling facility; to the south of that is a partially completed new housing development by Ben Bailey Homes [1709 591536], which is currently mothballed. There was an application for housing in 2006 which remains undetermined, which included remediation measures.
8	Ivanhoe Works, Kimberworth Road, Masbrough	Brownfield	4.39	This is an employment site, which is partially operational; the site has a number of large industrial and office buildings some of which are derelict and under-used. To its west and south, public open space and playing fields are located serving an established neighbourhood comprising a mix of terraced housing [to the south east, south west] and some more modern and larger homes to the west on the Wilton Gardens. The site is likely to be affected by contamination [from manufacturing processes].
9	Land to the North of Upper Wortley Road, Thorpe Hesley, Rotherham	Greenfield	6.65	This site comprises an area of open grass land, which may have served the local schools of Thorpe Hesley. The site is just off Junction 35 of the M1 and the A629 road to Rotherham. Bloor Homes are currently onsite at Thorpefield Farm, just off the Wentworth Road in Thorpe Hesley. The site is located in the Green Belt. There are no applications or permissions.

10	Land off Wentworth Way, Dinnington	Greenfield	8.69	This site comprises a flat area of open land laid to rough grass and scrub. The site is situated behind well-established housing located on the south-side of Swinston Hill Road. To the west of the site is 1970/80s estate-type housing, from which this site will be accessed. The site is located in the Green Belt. There are no applications or permissions.
11	Land northwest of Munsbrough Lane, Munsbrough, Rotherham	Greenfield	5.42	This site comprises a reasonably flat area of open rough grass land with a smattering of low trees and hedgerows. The site will form an urban extension from the south of the existing neighbourhood [which comprise largely of single storey bungalows, circa 1960s/1970s]. It is popular area for walking, cycling and exercising dogs, being facilitated by public bridleways and footpaths. There are no applications or permissions.
12	Land to the rear of Haugh Green, Upper Haugh, Rotherham	Greenfield	19.68	This site is currently agricultural land situated to the north of the existing neighbourhood of Upper Haugh. The site falls sharply from north to south into the valley where 1990s housing has been built to the south of the site [largely 3/4 bed detached homes]. The site is located in the Green Belt. There are no applications or permissions.
13	Land off Keeton Hall Road, Kiveton Park	Greenfield	3.16	This site comprises of open farmland to the north east of the village of Kiveton Park. The immediate neighbourhood to its south west comprises of council housing and bungalows. The village's location gives convenient access to Junction 31 on the M1. It is a residential development site [H36] in the UDP.

- 2.7 Though the Borough Council seeks to promote a high standard of space and urban design, market and location factors will also affect the character and design standard for particular sites. Both site size and buildability will influence building costs and specific planning designations impact on materials [conservation] and massing [green belt policies] that is permitted; again these may raise costs but also could justify a house price premium. Further comments on these matters will be covered later.
- 2.8 Only three of the thirteen sites [Sites 3, 7 and 8] involve redevelopment of previously developed land [i.e. brown-field land].

Development Assumptions

- 2.9 To carry out financial modelling of the thirteen sites a number of assumptions and parameters had to be agreed and set. Consideration was given to local [housing] market conditions and the current planning and development context and activity which were used to inform and to generate model “development types”. Additionally, this appraisal approach will enable RMBC to continue to conduct appraisals for other sites and to make comparisons.
- 2.10 The main factors and attributes that have shaped the development types include:
- Specification and design
 - Density
 - Site location
- 2.11 Our approach is based upon a housing typology comprising four categories – town centre; suburban; other urban/edge town; and village and rural setting, which are more fully described in Table 2.2.

Table 2.2 Development Types

Development Type	Generic Attributes	Generic Density
Rotherham Urban Sites	High development density: with a high proportion of apartments [40%] in blocks comprising three to five storey developments and remaining terraced and linked houses. Very limited on-site open space but with on-site car parking.	55units per hectare
Rotherham Suburban Sites	Medium-to-higher development density: majority are two and three storey development, with no more than 25% apartments. On-site open space and car parking.	50 units per hectare
Other Urban/Edge Town Sites	Medium-to higher development density: majority are two and three storey development, with no more than 20% apartments. On-site car parking and open space provision	40-50 units per hectare
Village and Rural Sites	Lower development density: all two and three storey development, no more than 10% apartments. Limited on-site open space, but full provision for on-site car parking.	35 or fewer units per hectare

- 2.12 Reflecting the development types and information on current applications as well as applications on sites nearby or adjacent to the study sites, four densities were applied as set out in Table 2.3 below. Our approach is in accordance with the sentiments of PPS3 [DCLG, 2006] in terms of making best use of land². Apart from the “village and rural” sites, all the study sites are in excess of this guidance. Applying a lower threshold for the rural sites has been adopted to take into account special designations such as conservation areas and areas of high landscape value.

Table 2.3 Development Densities

Development Type	Housing Density [Units per Hectare]
Urban	55
Suburban	50
Other Urban/Edge Town	45-50
Village and Rural	35 or fewer
Average across the Study Sites	41.8

- 2.13 Table 2.4 presents the housing capacity for each of the study sites given the generic housing densities as set out in Table 2.3.
- 2.14 If all the study sites are built out to their capacity, they will generate 3,922 housing units; the largest site [Site 12 at Upper Haugh] is just less than 20 hectares; the smallest site [Site 5 at Wickersley] is 0.86 hectares. The overall density across the thirteen sites is 41.8 dwellings per hectare [dph].

² We understand that such density directives are under review.

Table 2.4 Development type and housing capacities

Site Number	Site Name	Development Type	Site Area [hectares]	Housing Capacity	Provision of on-site public open space
1	Westfield Road, Brampton	Other Urban Edge [50DPH]	3.91	166	Assuming 85% of site for housing
2	Land off Rother Crescent, Treeton	Other Urban Edge [40DPH]	3.12	92	Assuming 74% of site for housing
3	Timber Yard Dinnington	Other Urban Edge [45DPH]	7.71	295	Assuming 85% of site for housing
4	Dalton Allotment Site, off Dalton Lane, Dalton	Suburban [50DPH]	4.66	198	Assuming 85% of site for housing
5	Land off Gill close, Gill Close, Wickersley	Other Urban Edge [35DPH]	0.86	29	Assuming 95% of site for housing and adjacent to conservation area
6	Land off Sawn Moor Road, Sawn Moor, Thurgroft	Other Urban Edge [55DPH]	12.94	605	Assuming 85% of site for housing
7	Croda Site, Carlisle Street, Rotherham	Rotherham Urban [55DPH]	12.64	591	Assuming 85% of site for housing
8	Ivanhoe Works, Kimberworth Road, Masbrough	Rotherham Urban [55DPH]	4.39	217	Assuming 90% of site for housing
9	Land to the North of Upper Wortley Road, Thorpe Hesley,	Other Urban Edge [50DPH]	6.65	283	Assuming 85% of site for housing
10	Land off Wentworth Way, Dinnington	Other Urban Edge [50DPH]	8.69	369	Assuming 85% of site for housing
11	Land northwest of Munsbrough Lane, Munsbrough	Rotherham Urban [50DPH]	5.42	230	Assuming 85% of site for housing
12	Land to the rear of Haugh Green, Upper Haugh	Other Urban Edge [45DPH]	19.68	753	Assuming 85% of site for housing
13	Land off Keeton Hall Road, Kiveton Park	Other Urban Edge [35DPH]	3.16	94	Assuming 85% of site for housing

- 2.15 Of the 3,922 units, around 68% would be built as Other Urban/Edge Town sites, with the balance built on Rotherham Urban sites [27%] and Suburban sites [6%]. The Other Urban/Edge Town sites reflect three kinds of sites:
- Redundant or under-used employment and industrial sites that are located in highly urbanized environments, including industrial villages;
 - Green-field sites, with some currently designated as green belt, that are contiguous with existing urban development boundaries; and
 - Infill sites in edge of town or suburban locations.
- 2.16 All of the study sites offer new opportunities to provide new housing and regenerate and raise environmental quality in these locations and settlements.

3 AFFORDABLE HOUSING AND OTHER PLANNING OBLIGATIONS AND DEVELOPER CONTRIBUTIONS

Preamble

- 3.1 This Section focuses on the assumptions agreed and parameters set to test the viability of a range of affordable housing provision for the thirteen individual sites, including assumptions regarding other planning obligations and developer contributions.

Affordable housing assumptions

- 3.2 Appraisals were prepared for a specific number of development scenarios/iterations which reflected varying proportions of affordable housing [i.e. social rented and shared ownership housing].

Affordable housing policy and quotas

- 3.3 Since 2007, the Borough Council's affordable housing policy has been 25% which is sought on all sites above the PPS3 [DCLG, 2006; and 2010] threshold. The tenure mix for the 25% affordable housing is split 14% for social rented units and 11% for part ownership [e.g. HomeBuy].
- 3.4 On the basis of evidence from other planning authorities, some seek a different affordable housing quota, particularly on sites in rural locations. In this regard, we have applied **higher** notional affordable housing requirements to test their impact on the viability of the thirteen study sites and given changes in market conditions we have also tested viability if the affordable housing quota was **reduced**.
- 3.5 It is on the basis of this evidence and assumptions that we tested the sites' viability in terms of **eight iterations** relating to:
- Zero affordable housing i.e. all market housing as a baseline.
 - Current affordable housing policy³:
 - 25% of total units on sites, with a split of 14% social rented and 11% shared ownership
 - Prospective affordable housing policy:
 - 15% of total units on sites, with the affordable proportion split 8.4% for social rented and 6.6% for shared ownership
 - 20% of total units on sites, with the affordable proportion split 11.2% for social rented and 8.8% for shared ownership
 - 30% of total units on sites, with the affordable proportion split 16.8% for social rented and 13.2% for shared ownership
 - 35% of total units on sites, with the affordable proportion split 19.6% for social rented and 15.4% for shared ownership
 - 50% of total units on sites, with the affordable proportion split 28% for social rented and 22% for shared ownership

³ See *Affordable Housing*, Interim Planning Statement, Forward Planning, Rotherham Metropolitan Borough Council, January 2008.

- 100% of total units on sites, with the affordable proportion split 100% for social rented and 0% for shared ownership.
- 3.6 In addition to the summary table of results in Section 6, the results of the modelling for each site are presented in a separate Volume to this Report.

Affordable Housing Prices and Equivalent Rent levels

- 3.7 On instruction from the Borough Council, we have assumed that **no social housing grant**⁴ will be available to support the transfer and acquisition of affordable housing through their delivery by S106 agreements from the private housing developers to housing associations [i.e. Registered Social Landlords].
- 3.8 Advice was sought and received from a number of Housing Associations actively owning and investing in the borough's housing market regarding the terms on which housing is transferred from private housing developers to ensure that these homes are affordable [in terms of PPS3, (DCLG 2006)] and conform to current energy and design standards [Code for Sustainable Homes, (DCLG, 2009)].
- 3.9 Generally, for shared ownership, 70% of market value is assumed, which for a 75m² home, the equivalent weekly rent is around £130 if capitalized at a market based yield of 7.5%pa; on the same basis the weekly rent for a 100m² home would be £173.
- 3.10 For a social rented home: a standard weekly rent of £65 for a 75m² home, which is equivalent to a value of £54,080 if capitalized at a yield of 6.25%pa and a standard weekly rent of £75 for a 100m² home, which is equivalent to a value of £62,400 if capitalized at a yield of 6.25%pa.
- 3.11 Clearly, the resultant equivalent capital values for the social rented homes are generally well below 50% of market values. It was no surprise to learn that housing developers much prefer the shared ownership option.

Other Planning Obligations and Developer Contributions

- 3.12 Most authorities seek or require that housing [and other] developments mitigate impacts on the local area and community. With the exception of affordable housing, the basis of these planning requirements are triggered by the needs arising from proposed development and whether there is adequate provision and capacity in the local area regarding social and community services. The sort of requirements can include:
- Transport covering for example parking, cycle-ways and footpaths, bus services
 - School places in nursery, primary and secondary schools
 - Libraries and leisure provision
 - Open space and children's play areas and equipment
 - Health and social personal services [e.g. doctors' surgeries, health centres], community and village halls
 - Public Art provision.

⁴ The Homes and Communities Agency, on a case-by-case basis, will consider supporting the cross-subsidisation of S106 affordable housing schemes by grant funds available to housing associations [i.e. Registered Social Landlords].

- 3.13 It was not feasible to estimate the contributions arising from the development on each of the study sites. However, as part of our modelling approach we have included a standard charge to cover a mix of requirements that might be paid by housing developers.
- 3.14 Based on limited local information and drawing on evidence from other authorities, we have applied a standard contribution of **£7,000** per unit on all study sites. We are also conscious that these standard contributions, in total, if received will generate quite large lump sums from each site.
- 3.15 One might argue that regarding other planning obligations to be funded by private housing developers, we are being over-optimistic or indeed opportunistic. However, our view is that we are being risk averse as these additional costs will result in lower outturn land bid budgets; the costs for the planning obligations do not affect the target rate of profit sought by the private housing developer as their profit is a fixed input determined by the developer.
- 3.16 And, clearly, in recognizing that there may be a need to make such contributions we are ensuring that a “truer” or “fuller” cost of development is being covered; such costs are amortised in local land values in the same way that abnormal costs and costs tied to remediation reduce land values.
- 3.17 We are aware, of course, that if these planning requirements do not arise in practice, then the sums allowed for in the budget will raise the developers' profits so long as all other factors remain constant.

4 MODELLING HOUSING VIABILITY

Preamble

- 4.1 The principal purpose of this study is to conduct viability analysis in order to test the impact of a range of affordable housing quota options.
- 4.2 The basis of our calculations proceed from the recognition that developers are profit-led and our studies assume a market rate of return that is similar to that cited in respected textbooks [e.g. Ratcliffe et al, 2009] and in Barker [HM Treasury, 2003 and 2004] and used in common valuation packages [RICS, 2009].
- 4.3 We recognise that for too long viability has not been sufficiently taken into account regarding affordable housing and planning requirements and that this might have frustrated the implementation of development projects in the past. However, with the emergence of central Government guidance [i.e. PPS3 Housing [DCLG, 2006]; Circular 05/2005 on Planning Obligations [TSO,2006]; Planning Obligations - Practice Guidance, [DCLG, 2007] and HCA [2010]] advice there is an impetus and a new imperative for a wide range of stakeholders, as well as those directly associated with the planning and development decision making [i.e. Council officers, elected Members, other third parties] to become more aware and understand better the consequences of imposing or seeking planning and affordable housing requirements on viability.
- 4.4 Consequently, employing some kind of development appraisal where a site's development potential can be assessed prior to plan making will serve to inform a procedure which has been largely the domain of private housing developers.
- 4.5 In pursuit of transparency, our approach does not only provide the requisite financial information and other evidence on which to base decisions regarding viability, but in the proceeding Sections we will explain the underlying principles [i.e. methodology] and assumptions made in carrying the viability testing. This is important because it will allow the Borough Council to draw on the study's findings to inform emerging policies as well as underpin future monitoring and review.

What is meant by viability?

- 4.6 Our understanding of viability can be seen from two perspectives.
- 4.7 Firstly, for the developer, a proposed development project is viable if, in principle, the developer has enough money to buy the site now, build out the site and achieve their target rate of profit.
- 4.8 And secondly, for the landowner, their test of viability is based on whether the land bid price in some future use [which is permitted by planning] is higher than the land's current use value now.

Viability: financial or economic?

- 4.9 Additionally, viability is sometimes prefaced with the term "financial" or "economic". This can lead to some confusion.

- 4.10 In using the term financial or finance it is generally seen [at least by economists] to relate to a narrow set of factors or variables under consideration that directly affect the demand side [in revenue terms] and/or supply side [in cost terms]; the operative word being “direct”.
- 4.11 The term economic is a wider concept that normally includes both those costs and revenues that directly and indirectly arises from a project or activity. As such their scope is often prescribed by the nature of the project [e.g. the building of a road] or a programme [e.g. decommissioning of power stations] or a scheme [e.g. the training of unemployed workers] that is under scrutiny.
- 4.12 For the purposes of this study the term viability refers to economic viability, since we seek to include all relevant and reasonable costs incurred in mitigating all the directly-related needs arising from a proposed development [whether on-site or off-site].

Modelling Financial Viability

- 4.13 In essence, development appraisal models are relatively simple⁵. The basic framework for development appraisal involves conducting a residual [land] valuation. This can be expressed in the form of a formula:

$$\text{GDV} - (\text{BC} + \text{P}) = \text{RLV}$$

Where:

GDV = Gross Development Value

BC = Building Costs, including all fees and finance charges

P = Developers Normal Profits

RLV = Residual Land Value

- 4.14 For our purposes, this basic equation can be re-arranged in three ways, as follows:

[1] **GDV - (BC + P) = RLV** Here the Land Value is a residual. This is the maximum amount that can be paid for the land by the developer.

[2] **GDV - (BC + RLV) = P** Here, with a known Land Value, the Profit is a residual in this equation.

[3] **(BC + P + RLV) = GDV** Here the GDV is made up of the three main “cost” elements which explicitly include the developer’s profit.

- 4.15 From these different equations we can identify critical values:

- Equation 1: for those who are seeking to sell or buy land;
- Equation 2: the amount of profit that might be achieved by the developer having bought the land; and

⁵ The procedures for the conduct of and the purpose of a valuation of this kind is set out in a manual known as “The Red Book” which is prepared and published by the RICS, the professional body of chartered surveyors. See RICS (2009) *RICS Appraisal and Valuation Standards* [The Red Book], 6th Edition.

- Equation 3: this reveals the three basic “costs” that comprise the value of the completed development.
- 4.16 The basic framework for conducting the modelling uses Microsoft Excel spreadsheets; these have been designed and created by Professor Stephen Walker specifically to conduct Residual Land Valuation of a site's development potential, applying a discounted cash flow approach.

Viability Threshold: uplift multiplier

- 4.17 Viability testing is achieved by comparing the residual land values [the land budget available to buy the land] in its future use for housing against a site's current and/or alternative land use values. The ratio of these two values is termed the **uplift multiplier**. So long as this quotient is **greater than 1** for any combination of affordable housing requirement and sensitivity testing, then the **development as housing is viable**.
- 4.18 For each site, detailed outputs from the financial modelling are presented a separate document to this main Report. These models embrace standard RICS valuation procedures as set out in its “Red Book” as well as cash flow based appraisals including sensitivity analysis output, which reflects recent HCA advice⁶.

Profits of Developers

- 4.19 Profit is a factor input determined by the developer. It reflects the developers' opportunity costs of capital. Developers rarely like to reveal this quotient. We know that the CBI⁷ has stated that business must make between 12% and 18% profits to standstill. Economists would interpret this to be a business's normal profit rate. One would expect that the “hurdle” rate for developers would be higher, given that development attracts a risk premium over and above general business risk and involves the production of such “lumpy goods”. Compared to commercial development, risks are higher for the speculative private housing developer.
- 4.20 Given their sensitivity we think it vital that we declare our position and the way we came to set an appropriate developers rate of profit used in viability testing. From an academic perspective actual profits are often described as “confidential” and therefore not for discussion. The academic literature, therefore, resorts to assumptions and one well-tried assumption in the property sector is the 33%:33%:33% of value [i.e. gross development value] rule where profit is assumed to be one third alongside land costs and build costs.
- 4.21 Profits also are a function of the property cycle, where profits can be squeezed in a falling market and rise at an increasing rate in a rising market. Empirical evidence attests to this cyclical behaviour in that the Barker Report [2003] cites the average rate of profit [%] based on a ratio of trading profits to turnover for the main house builders in the UK in Table 4.1 below. We have updated this set of statistics to cover reported profits derived from the accounts of house-builders [see FAME, 2010].

⁶ See HCA, 2010, *Investment and planning obligations, Responding to the downturn*, Good Practice Note, HCA

⁷ See CBI website at <http://www.cbi.org.uk>

Table 4.1: Developers Profits

Year	Profits as a % of Turnover or Value [Before Tax]	Profit as a % of Costs [Equivalence; Before Tax]	Position in the property cycle
1989/90	23%	30%	Peak
1992/93	10%	11%	Falling market; point of inflection
1994/95	13%	15%	Slow recovering market
2000/01	15%	18%	A rising market
2002/03	16%	19%	A continuing rising market
2007 March [Bovis Homes]	23%	30%	Top of the market; mergers and acquisition activity attests to a much tighter market.
2010 June [Bovis Homes]	8.5%	9.3%	Until now a falling market; possibly start of a recovery [i.e. a point of inflexion].

Source: Adapted from Barker Review, Interim Report – Analysis, 2003, p.65; with additions from Company Accounts via FAME [accessed July 2010].

- 4.22 Another observation that builds on the academic literature is the concept of normal profit; where each sector is presented as having an acceptable rate of return that needs to be achieved to keep them interested in staying in that sector or country. Consequently, if house builders are squeezed and find their returns falling much below, say, 20% they might resort to other development or related activities. Economists would explain the transfer of resources to alternative uses [and countries] as an opportunity cost, and in some ways our discussions with locally active property developers suggests that companies are essentially cautious but that they need to be more able to respond to market opportunities as they arise [i.e. as expressed in terms of cash flow and the ratio of risk to profit returns].
- 4.23 A further area of debate relates to the base on which profits are set. In this respect, it is argued that as costs are almost always known or easier to estimate, validate and crucially to control, they are therefore a better base on which to set the developers target rate of profit. Additionally, value is only known when actual [economic] demand is known [or a pre-sale or let has been agreed] which is at the point of sale. Therefore, value is a hypothetical; a guess-estimate based on assessments now of a market which might be some years away in the future. Thus, basing the developers target rate of profit on value is open to substantially higher risks of change and uncertainties.
- 4.24 An appropriate rate of profit might lie between 15% and 25% on costs. Ultimately, this will depend on a number of factors, including: competition and hence demand; position on the property cycle; national as well as local economic sentiments.
- 4.25 Recent discussions with commercial and housing developers have revealed an acceptable profit margin of about 20% on costs. Higher margins might be warranted given the range of contingencies and higher risks associated with some sites [especially brown-field sites] in Rotherham.
- 4.26 Given the academic reasoning and empirical evidence presented above, we feel justified in setting a target rate of profit of 20% on costs that is equivalent to 16.67% of value, which comfortably reflects current market sentiment. Where affordable housing units are delivered, the profit rate has been set as if the developer is a contractor i.e. at 6% on costs or 5.66% of value.

5 ASSUMPTIONS FOR VIABILITY ANALYSIS

Preamble

- 5.1 This Section considers the key price and cost variables and other assumptions required to generate financial appraisals for the individual sites in Rotherham. These include the following matters:
- Price assumptions for financial appraisals
 - Cost assumptions for financial appraisals
 - Assumptions relating to phasing and pace of development

The Housing Market Context

- 5.2 As with other housing markets, Rotherham and its neighbouring Councils have recorded substantial house price reductions largely fuelled by a dramatic fall in the volume of transactions caused by scarcity in mortgage finance. According to The Land Registry, since June 2007, average house prices in the councils comprising South Yorkshire have fallen by over 12% points to March 2010. Crucially, the volume of home transactions peaked at 2,635 [quarterly figures ending in June 2007]; since then these have shown a steady if not consistent fall since that quarter. For example, transaction volumes were close to 50% points below the peak in the quarter ending March 2008, and by the quarter ending in January 2009 transaction volumes were close to 80% points below the peak [at just 552]. Though the transaction volumes have picked up in the recent quarters, these have hovered between 55% points and 70% points below the quarterly peak in June 2007. The general prospects for the future remain pessimistic and at best unclear.
- 5.3 Transactions data sourced from The Land Registry by postcode sectors, shows that in the 4th Quarter of 2006 the average house price of homes sold was just over £134,000. However, there are sharp differences across Rotherham's housing market as demonstrated by the data in Table 5.1 below; the cheapest homes are more than 40% lower than the average, whilst the most expensive are over 43% higher than the average.
- 5.4 The majority of the transactions involved either semi-detached [44%] or terraced homes [33%] where they achieved average sales prices of £114,000 and £86,700 respectively.
- 5.5 Table 5.2 shows where the highest and lowest prices and volume of sales that have been achieved in Rotherham, using postcode sector data, which was sourced from The Land Registry, August 2010.

Table 5.1: Average House Prices Sold by House Type in Rotherham MBC, at June, for 2006 through to 2010

Month	Detached (£)	Semi-Detached (£)	Terraced (£)	Maisonette /Flat (£)	All [£]	Monthly Sales Volume
June 2006	201,196	107,670	65,767	85,886	116,883	443
June 2007	212,522	113,731	69,470	90,721	123,463	449
June 2008	218,346	116,848	71,374	93,207	126,846	157
June 2009	176,765	94,596	57,781	75,457	102,690	227
June 2010	187,235	100,199	61,204	79,927	108,773	Not available

Source: The Land Registry, 2010 [accessed July 2010]

Table 5.2: Average Prices of New and Old Homes Sold in Rotherham MBC, 2nd Quarter 2010 by Postcode Districts and Sales Volume

Postcode Districts	Average NEW House Prices [Sales in Brackets]	% difference from the Average NEW	Average OLD House Prices [Sales in Brackets]	% difference from the Average OLD	Place names
S64	£102,466 [3]	-30.07%	£114,340 [46]	-5.12%	Wath Upon Dearne/Swinton
S61	£130,022 [4]	-11.27%	£111,232 [52]	-7.70%	West RMBC/Kimberworth/Greasborough
S25	£135,835 [7]	-7.30%	£132,932 [46]	10.30%	Thurcroft/Hooton Levitt
S63	£143,834 [17]	-1.84%	£102,764 [81]	-14.73%	West Melton/Brampton/Swinton/Upper Haugh
S62	£148,616 [3]	1.42%	£110,785 [28]	-8.07%	Thorpe Helsey/Wentworth
S73	£162,753	11.07%	£98,085 [54]	-18.61%	Brampton –only a small part
S26	£171,310 [7]	16.91%	£141,289 [59]	17.24%	Dinnington/Aston/Aughton/Todwick/Wales/Harthill/Kiveton Park
S66	£177,460 [17]	21.10%	£142,889 [111]	18.56%	Bramley/Maltby
S13	£0 [0]	na	£111,513 [54]	-7.47%	Catcliffe/Orgreave/Treeton
S60	£0 [0]	na	£122,062 [65]	1.28%	Herringthorpe/Moorgate/Canklow/Whiston [SW of Town Centre]
S65	£0 [0]	na	£118,611 [43]	-1.58%	Thrybergh/Hooton Roberts/Dalton/
S81	£0 [0]	na	£139,689 [97]	15.91%	Dinnington/Aston/Aughton/Todwick/Wales/Harthill/Kiveton Park
Average [Total]	£146,537 [63]		£120,516 [736]		

Source: The Land Registry, 2010, Crown Copyright Reserved [Accessed August 2010]

- 5.6 Relative to the total volume of sales, the sale of new homes is discernibly low compromising fewer than 8% of the total in Rotherham for the 2nd quarter of 2010.
- 5.7 Much of the cheaper housing [largely terraced and semi-detached homes] were sold in places north and west of the River Don [e.g. in Rawmarsh, Swinton and Kimberworth] and in places immediately situated in an arc to the south west of the town centre; the former being part of the South Yorkshire Housing Renewal Pathfinder area.
- 5.8 Notwithstanding national economic pressures, Rotherham's housing market in the future will also be influenced by a number of more local factors, of which the more important ones are listed below:
- Continuing imbalance in the local housing markets in terms of prices, mix and quality within the Borough.
 - Given that the current Local Plan has no "white" land in relation to its current green belt policies, which were set and designed originally to complement urban renewal and economic development with the Borough's extant urban boundaries. There is a realization that in the forthcoming plan period, some future housing development is likely to be accommodated on sites released from their green belt designation.
 - Major former mining sites have undergone extensive land reclamation and this long term action is beginning to deliver benefits in relation to economic and community benefit. In this regards, plans for a new community at Waverley are progressing well.
 - The legacy of redundant and derelict factory buildings and sites continues to blight prominent areas of the Borough; market action alone is unlikely to be viable even in the long term.
 - Complementary economic development and urban renaissance strategies supporting the employment and housing markets, particularly in relation to town centre renewal and investment.
 - Good access to motorway network, regional airports and ports.
- 5.9 Finally, a recent market forecast [February 2010] made by cost consultants Cyril Sweett for the Yorkshire and Humber region expressed the following sentiment:
- "[the region] is expanding modestly. Market confidence is recovering with schemes being reviewed for re-commencement. Activity is firm in education, health and infrastructure, with residential and retail also fairing well [my emphasis]. Industrial, offices and the leisure sector remain depressed."

New Build Developments in Rotherham

- 5.10 At the time of this study [i.e. April-August 2010], some house builders have been returning to sites that they had mothballed during the worst times of the recent recession [which hit South Yorkshire at the end of 2007]. This includes:
- Persimmon at Laughton Common, near Dinnington;
 - Bloor Homes at Thorpe Helsey; and
 - Ackroyd & Abbott at Fenton Road, Rotherham

- 5.11 Some builders have started on new sites [e.g. Jones Homes at Treeton]; while a smaller, niche developer has been on site for several months [e.g. Sweet Homes at Wickersley].
- 5.12 Such new housing must compete with the extant housing stock not only in terms of the price/rent quality ratio but also in terms of accessibility to community and educational provision, affordability and householders' choices.
- 5.13 Some examples of current housing developments are displayed in Table 5.3 showing locally active house builders and the housing mix and prices that are viable in today's housing market in Rotherham.
- 5.14 There seems to be three broad categories as follows:
- Small sites with potential for higher specification schemes in Rotherham's premium urban edge or rural fringe sites are still achieving £2,400/m² [e.g. Sweet Homes at Wickersley];
 - Sites in other towns and suburban sites achieving £1,890/m² [Treeton] to £2,820/m² [Thorpe Helsey]. However, the latter scheme is quite exceptional since the unit sizes are smaller by some 15-25m². [**£1,850/m²**]
 - Sites in less attractive suburban areas with modest aspect achieving between £1230/m² and £1670/m² [e.g. Topaz, Kimberworth; Potter's Court, Kilnhurst; Laughton Common, Dinnington]. [**£1,450/m²**]
- 5.15 On the basis of these and other schemes in Rotherham, leads to a range of new build house prices that vary between £1230/m² and £1,850/m² with a typical price of £1,650/m². This is close to an average fall of 18.8% in prices compared with £2031/m² that had been applied in Rotherham's 2007 Viability Assessment Study.

Table 5.3 Current New Build Developments in Rotherham

House Builders	Scheme Name	Housing Mix	Price per unit/m ²
Ben Bailey Homes	Wharf View, Kilnhurst [site currently mothballed, with several homes completed awaiting buyers]	4 bed [Epsom-100m ²], 4Bed Townhouse [Minster-100m ²], 4bed Townhouse [Lincoln-100m ²], 4bed Detached [Norton-110m ²]	£160k or £1,605/m ² ; £185k or £1,850/m ² ; £180k or £1,800/m ² ; £230k or £2,090/m ²
Ben Bailey Homes	Ashcroft, Parkgate	3bed Mews [Chatsworth-66m ²], 3bed Terrace [Devon Open Plan -80m ²]; 4bed Detached [Elsmere-95m ²]	£140k to £160k; average @ £1,813/m ²
Ben Bailey Homes	Wentworth Grange, Brampton	Epsom, 4bed TH [100m ²]	£165k or £1,655/m ²
Persimmon Homes	Laughton Common, Dinnington	4bed [Brierley-122m ²], 4bed [Rowley-129m ²], 3bed Semi [Chelsea-101m ²], 3bed, 3storey [Kensington-124m ²]	£181k or £1,481/m ² ; £188k or £1,458/m ² ; £151k or £1,490/m ² ; £152.5k or £1,231/m ² ; Average @ £1,412/m ²
Jones Homes	Arundel Park, land off Rother Crescent, Treeton [currently on site]	2 and 3 bed linked homes; 4bed detached homes	From c. £147k to £220k; average @ £1,893/m ²
Bloor Homes	Thorpe Field Farm, Thorpe Helsey	Bradfield [63m ²]; Dalton [64m ²]	£180k or £2,842/m ² or £178.5k or £2,796/m ²
Ackroyd and Abbott	Topaz, Fenton Road, Kimberworth [site mothballed, but has started onsite again in May 2010]	2, 3 and 4 bed homes [coach houses, semi-detached, linked and detached]	£125k or £2,000/m ² £175k or £2,330/m ² £215k or £2,500/m ²
Britannia Developments	Potter's Court, Kilnhurst [1 st phase completed; 2 nd phase on hold]	3bed Semi-detached [Derby-86.5m ²] 3bed Townhouse [Kentmere-126m ²] 4bed TH [Rishworth-136m ²]	£145k or £1,676/m ² £166k or £1,315/m ² £179k or £1,316/m ²

- 5.16 This is not an exhaustive typology as the study sites contain several attractive and rural located sites which are outside these categories, reflecting specific attributes of the sites in question.
- 5.17 In seeking appropriate new build prices for the thirteen sites that are spread across Rotherham and which provide guidance for any future sites, we need to take account of this diversity as far as possible. The typologies that are adopted are qualified by factors relating to complementary and competing uses, proximity and accessibility to community amenities and transport connections, as well as environmental quality. It is also recognized that the provision and scale of affordable and key worker housing is also likely to influence marketability of sites.

Price assumptions for financial appraisals

- 5.18 The Gross Development Value [GDV] is based on the notion that if a proposed development is built now, the value of the completed development can be estimated based on comparables of similar developments locally, with some adjustments made to ensure as close a comparison can be made on an equivalent basis. Thus the valuation is a product of current market prices [and of rents too], the content and mix of development, and any other relevant adjustments.
- 5.19 It is important to remember that some planning benefits may add value [as well as add costs] to the proposed development because these "add" amenities or facilities and thus "value"; some will alter both the level and distribution of values, particularly when affordable or key-worker housing is provided.
- 5.20 On the basis of the above we apportioned £/m² prices, as set out in Table 5.4 overleaf.

Table 5.4 Housing Prices [unit/m²]

Price band	Site description	Sites applied to	Price/m²
Standard Price Band			
A1	Other Urban Edge	1, 3, 10, 12,	£1,650
A2	Other Urban Edge	2, 6, 9, 13	£1,833
B1	Suburban	4	£1,650
B2	Suburban	5	£1,833
C	Rotherham Urban	7, 8, 11	£1,650

- 5.21 Current urban design advice⁸ reasons that the impact of the provision and presence of affordable housing on sales prices can be minimised through appropriate design and specification.
- 5.22 There are a number of basic development cost elements that are covered in the modelling:
- Building costs
 - Other costs [e.g. abnormal costs, planning obligations]
 - Finance costs and weighting
 - Fees
- 5.23 And additionally, of course, a key “cost” that has already been discussed [see paragraphs 4.19 to 4.26] is the developers' profits.

Building Costs

- 5.24 These can be derived by a Quantity Surveyor or estimated by drawing on industry standard costs and indices. The latter are readily available from Spon's Architects' and Builders' Price Book or Building Cost Information Services [BCIS] the latter is a service provided by the RICS⁹. Costs per unit, costs per m², and several kinds of cost, project and tender prices can also be accessed. These nationally derived costs are based on tender or actual completed contracts of development; adjustments can be made for building cost inflation and for local costs. Inclusive of these costs are preliminaries [15%], which cover site infrastructure and other normal preparation costs.
- 5.25 We have prepared the viability analysis using a set of base building costs [£/m²] for two generic housing forms in Rotherham with three costs levels [see Table 5.5 below]. Normal costs of £880/m² have been used for all the sites except those located in rural village settings and edge of town, particularly in conservation areas. The higher costs relate to higher specification and design standards to reflect market dynamics on one of the town centre sites and the one rural site that needs to take account of its sensitive location being adjacent to a conservation area.
- 5.26 The build costs for the affordable housing are the same as the market homes even though the internal specification may be lower, whilst the dwelling footprints are the same.
- 5.27 The model has also adjusted these “national” building costs by applying a local cost adjustment factor¹⁰, equivalent to 0.89 to reflect Rotherham's local circumstances.

⁸ See CABA [2006] *Design at a Glance*, June 2006, CABA; see also <http://www.caba.org.uk/default.aspx?contentitemid=188>.

⁹ Davis, Langdon and Everest (editors) (2010) SPON'S ARCHITECTS' AND BUILDERS' PRICE BOOK, London: E and FN Spon; Building Cost Information Service (BCIS) (2010) SURVEY OF TENDER PRICES; PROJECT PRICES, bi or tri-annual, RICS

¹⁰ See BCIS, 2010 [accessed June 2010].

Table 5.5 Building Costs [£/m²] – All Housing: Market and Affordable

Site Type and Location	Site Number	Design Quality	
All Housing		Costs (£/m ²)	Specification
Other Urban Edge	1, 2, 3, 6, 9, 10, 12, 13	880	Normal
Suburban	4, 5	880	Normal
Rotherham Urban	7, 8, 11	880	Normal

Source: BCIS, 2010 [Accessed June]

Other Costs

- 5.28 The modelling of viability can also take into account other costs above the normal. For example, these typically cover remediation costs to cover contamination; special survey costs; and planning obligations/contributions. As far as possible, our viability analysis has taken into account specific site requirements.
- 5.29 We have also included in the appraisals a sum for abnormal costs where appropriate, equivalent to a sum of £1,000 per housing unit. The Croda site is known to be acutely contaminated; we have apportioned £1m per hectare for remediation. The Ivanhoe site contains a large number of structures; for this we have apportioned £0.75m per hectare for site clearance and restitution¹¹. The green field sites are not affected by these additional costs.

Finance Costs

- 5.30 For modelling viability we have assumed a 6% per annum interest rate for both costs and revenues. Though this rate is materially higher than base rates on inter-bank rates, current bond markets were issuing paper at around this rate at the time of the modelling [i.e. May and June 2010].
- 5.31 Finance costs are triggered whether the developer funds the development from profits or from borrowed capital or a mix. This is because the finance cost is an opportunity cost: the profits could have been held in an escrow account and have accumulated interest or the finance could have funded alternative development options.

¹¹ See **Contamination and Remedial Costs, Best Practice Note**, English Partnerships, February 2008

Finance Charge Weighting

- 5.32 Since, the modelling involved a discounted cash flow appraisal of residual land value this method explicitly obviates the need to employ finance charge weights. Such weighting is only necessary if a static approach to conducting residual land value is adopted; the 2007 study used the static method.

Fees

- 5.33 There are a variety of fees that we have included in our modelling. Such fees arise as a result of arranging finance; planning and survey fees; site finding and purchase, building design and procurement, and on the sale or letting of the completed development. The rates used are set out in Table 5.7 below.

Table 5.7 Fee Rates

Fee Items	Rates
▪ Professional Fees [% of building costs]	8%
▪ Sales Agent Fee [% of total sale value]	1%
▪ Sales Legal Fees [% of total sale value]	1%
▪ Land Acquisition Fees [%]	1%
▪ Marketing [£/unit]	£350
▪ Planning/Survey Fees	Current rate
▪ Stamp Duty Land Tax [%]	Current rate as appropriate
▪ VAT [%]	ignored

Assumptions relating to phasing and pace of development

- 5.34 As part of our modelling, we made a number of assumptions regarding phasing and the pace of development that take into account the size of sites and site attributes; these are displayed in Table 5.8. Normally, house builders will give greater priority to householders' demand and would model options according to cash flows [including discounting]. Of course, for some sites planning conditions may impose particular restrictions to which developers must comply.
- 5.35 The appraisals have also been prepared assuming that building costs and sales values at a base date of June 2010. There is a six months' pre-construction period for the sites [up to a capacity of 200 units] to allow for resolution of minor planning issues and site preparation and twelve months for the larger sites [more than 200 units], which includes the two difficult brown-field sites [Sites 7 and 8].

Table 5.8 Pace of Development Assumptions [by site number]

Site Number	<24 months	25-48 months	49-72 months	73-96 months	97-120 months
Other Urban Edge		1, 2, 9, 13	3, 10	6	12
Suburban	5	4			
Rotherham Urban		8, 11		7	

- 5.36 The above assumptions mean that developments are completed at a reasonable consistent pace, which is dependent on the capacity of each site. With regard to phasing, the build out of each site is assumed to proceed in regular phases over the duration of each site's project life.

Benchmarking Land Values

- 5.37 In advance of conducting the financial appraisals, data on land values sourced from The Valuation Office Agency [VOA] provide a good basis on which to develop an understanding of relative land values between the regions and across different land uses: principally agricultural, industrial and residential land uses.
- 5.38 Figure 5.2 summarises the position in Rotherham's land markets based on a range of data tracking regional and sub-regional transactions. The principal data source is The Property Market Report [VOA, 2009 & 2010] which reports on a biannual basis. Since that edition, the Valuation Office Agency has materially altered its publishing format and scope – largely to reflect the dearth of transactions. Nevertheless we can report on updated information from this latest report which was published in January 2010 [see below].

Agricultural Land Values

- 5.39 In contrast with a decline in residential building land values, agricultural land values have risen in the Yorkshire and Humber region. At July 2009, values had risen by more than 50% to around £14,000 per hectare compared with £10,000 per hectare in January 2007. This pattern of change is not exclusive to Yorkshire and Humber region. Though we are unable to draw a direct comparison with the data published in the latest Property Market Report [i.e. January 2010], values for Yorkshire and North East are marginally higher. For the green-field sites, these values serve as the "base" land values in the locality and given planning permission, any person offering a higher bid price is likely to trigger exchange to secure landownership.

Industrial Land Values

- 5.40 Industrial land values have also substantially fallen over the same period. By July 2009, their values had fallen to around £435,000 per hectare for the Yorkshire and Humber region, which is 48% lower. Figures for Doncaster have also declined from £575,000 to £400,000 per hectare, which is over 30% lower, whilst for Sheffield land values fell to around £450,000, which is around 22% lower. The latest Property Market [January 2010], claim that values have not changed over the last six months. We have used the £400,000 per hectare for comparison purposes.

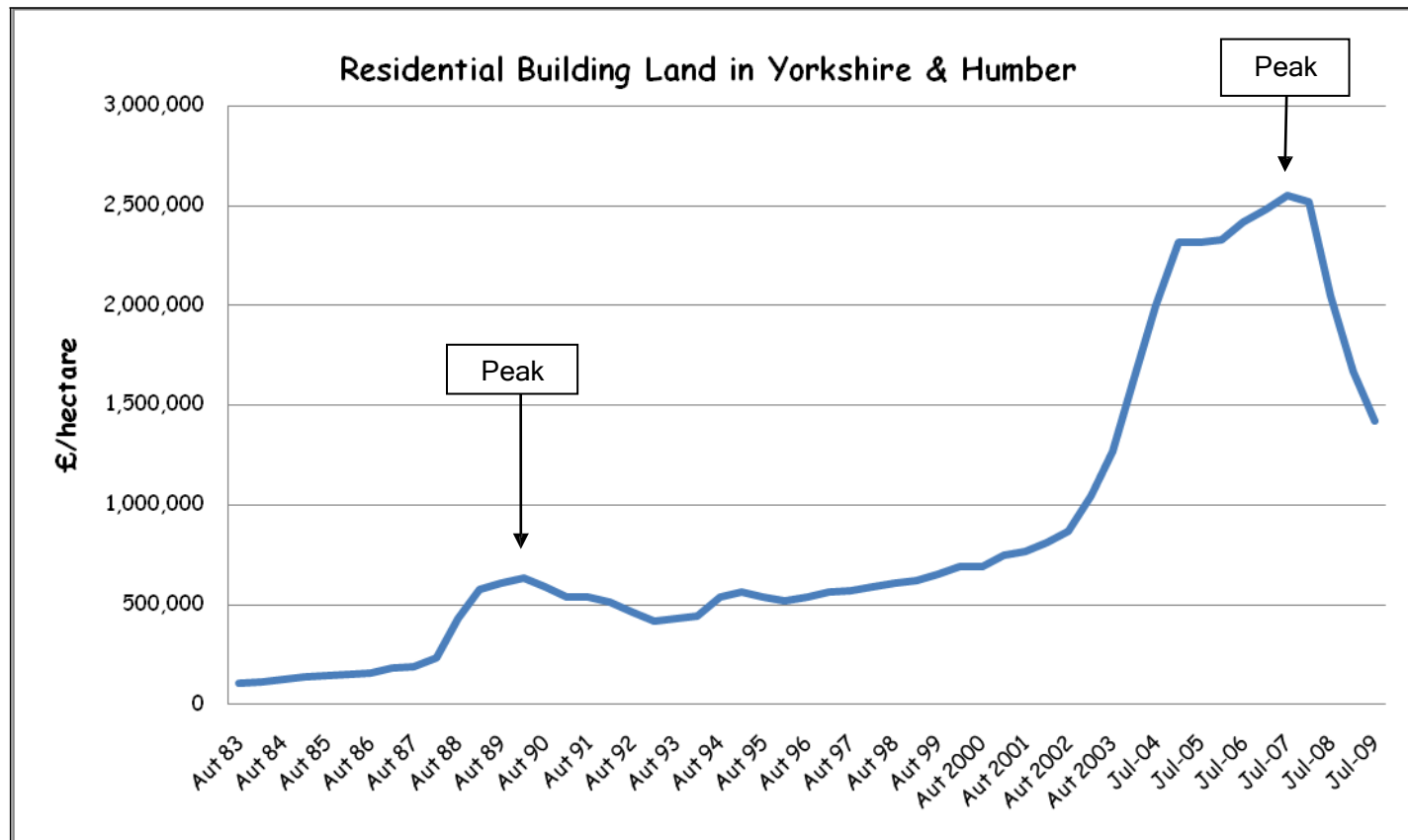
Residential Building Land Values

- 5.41 Nationally, there are some sharp differences in regional values of residential bulk land [sites over 2 hectares]: the highest is found in Inner London [£8.4m per hectare] and the lowest is recorded in the Merseyside region [£1.2m per hectare]. Of the English regions, Yorkshire and Humber region records the fourth lowest with values of £2.4m per hectare.
- 5.42 Residential building land values remained below £650,000 per hectare until the Autumn of 1999; which then was a ten-year peak that began back in 1989 [see Figure 5.1]. Values broke through the £1m per hectare threshold in the Spring of 2003. Values peaked at £2.6m per hectare in July 2007. By July 2009, values have fallen to around £1.4m per hectare, which is over 46% lower. The latest figures from The Property Market Report show that had remained at about the same levels. We will apply the rate of £1.4m per hectare as our comparable in this Report.
- 5.43 As Table 5.10 shows, there are wide variations within the Yorkshire and Humberside Region, Though Rotherham is not specifically identified, discussions with the VOA and local agents confirm that its bulk residential land values are judged to be between those being achieved in Doncaster [£1.5m per hectare] and Sheffield [£1.3m per hectare].
- 5.44 Rotherham's housing land market is currently heavily influenced by a tight green belt boundary and no "white" land designations. As the forward supply of former industrial and employment land [for a range of uses] declines, future housing sites will have to be met by releasing sites from their green belt designations. The study's site selection has recognised this situation.

Summary on Land Value Benchmarks

- 5.45 We can now put into perspective these relative land values for Rotherham and its environs; Figure 5.2 displays these key land value thresholds [see page 36]. We will compare these with the computed land values for the ten study sites.

Figure 5.1: Residential Building Land: Yorkshire & Humber Region, Autumn 1983 to July 2009

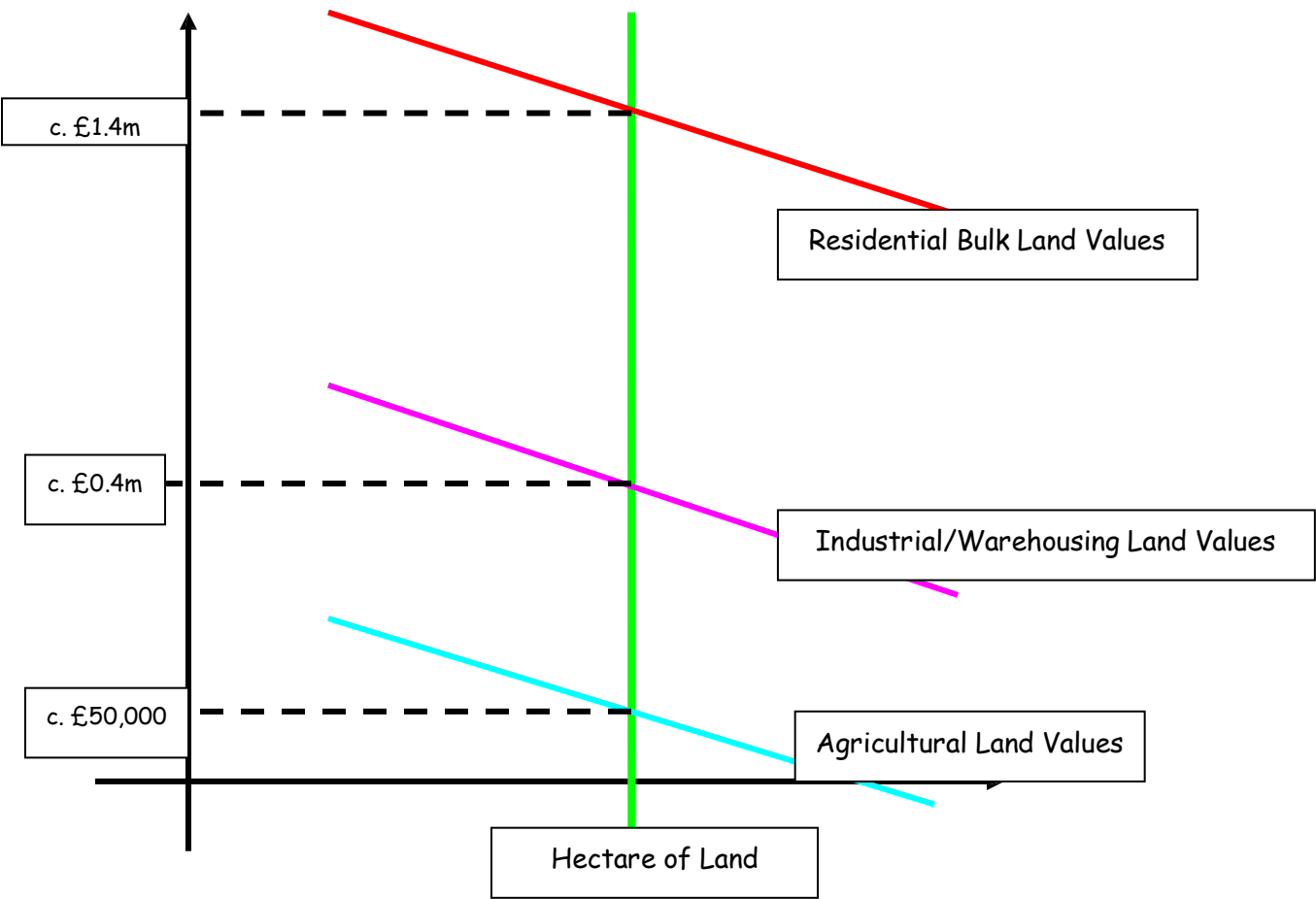


Source: The Property Market Report, VOA 2009

Table 5.10 YORKSHIRE AND THE HUMBER REGION in January 2007 and July 2009			
Sub-region	Small Sites (sites for less than five houses)	Bulk Land (sites in excess of two hectares)	Sites for flats or maisonettes
	£s per hectare	£s per hectare	£s per hectare
January 2007: Doncaster	2,600,000	2,100,000	2,600,000
July 2009: Doncaster	1,500,000	1,500,000	1,500,000
January 2007: Sheffield	3,100,000	2,600,000	3,400,000
July 2009: Sheffield	1,500,000	1,300,000	1,700,000
January 2007: Leeds	4,000,000	3,500,000	4,000,000
July 2009: Leeds	2,100,000	1,800,000	2,100,000

Source: The Property Market Report, VOA July 2009

Figure 5.2: Benchmark Land Values for Rotherham, July 2010



6 RESULTS OF VIABILITY ANALYSIS

Preamble

- 6.1 This Section presents the results of financial appraisals conducted for assessing the viability of the thirteen study sites.

The Residual Land Value [RLV]

- 6.2 On the basis of the development assumptions set out earlier in this Report, we prepared financial appraisals for each of the thirteen study sites, using specially designed spreadsheets. The appraisal uses a discounted residual cash flow valuation [appraisal] of land value. The resultant RLV is by definition a residual. It is the sum of money available to buy the land needed for the housing development to proceed. It is a derived sum based on the final development value, an accurate estimate of building costs and a sum of money to meet the developers target rate of profit. This is the budget to buy the land. Developers will want to minimise the price they actually pay for land; landowners obviously try to maximise the price they want to receive. The landowner and the developer are the only ones to know the offer prices; we can compare these with transactions based data from The Land Registry and evidence from the Valuation Office Agency. The results of the valuation are commonly expressed in £ per hectare so that comparisons can be made on a like-for-like basis.
- 6.3 For a proposed development to pass the test of viability, it is necessary for the land value for housing to exceed the land value from any valid alternative use [i.e. requiring planning permission]. For virgin land or a green field site, where its current use is agricultural, its land value will be typically low. In contrast to the previous Viability Report [in 2007], ten of the study sites are green-field sites and three sites [Sites 7, 8 and 11] have been in previous use s[typically as a factory or warehouse]. Clearly where such sites have been cleared, or are known to be contaminated or where derelict structures are evident, these sites' land values are likely to be substantially lower, even negative. In Section 5, we provided comparative land values for alternative uses for Rotherham.
- 6.4 Efficient market hypothesis contends that markets ought to reflect all the relevant costs and values, so that a developer's land bid offer price reflects in a clear and true way the costs of providing affordable housing and other planning requirements. However, because of imperfect knowledge, landowners' price expectations may be higher than the offer prices being made by developers.
- 6.5 In the context of affordable housing requirements *a priori*, these requirements will lead to lower land values. As a general principle there is an inverse relationship between the level of affordable housing and land values; as the requirements for the former increase the latter decrease.
- 6.6 It is also important to record how the cost of mitigating a planning obligation affects the RLV, and whether the RLV is abnormally low or appears to be negative. As such we have stress-tested the appraisals for changes in build costs and house prices in order to ensure that the Borough's position regarding affordable housing is enduring as well as reflecting current market conditions.

Financial appraisal results

- 6.7 We generated financial appraisals based on the stated values, costs and financial assumptions for eight affordable housing options/iterations that involved:
1. Zero affordable housing, which is a **baseline** with all-market homes.
 2. 15% of total units as affordable housing, with a split of 14% social rented and 11% HomeBuy.

3. 15% of total units on sites, with the affordable proportion split 8.4% for social rented and 6.6% for shared ownership
4. 20% of total units on sites, with the affordable proportion split 11.2% for social rented and 8.8% for shared ownership
5. 25% of total units on sites, with the affordable proportion split 14% for social rented and 11% for shared ownership [i.e. extant policy position]
6. 30% of total units on sites, with the affordable proportion split 16.8% for social rented and 13.2% for shared ownership
7. 35% of total units on sites, with the affordable proportion split 19.6% for social rented and 15.4% for shared ownership
8. 50% of total units on sites, with the affordable proportion split 28% for social rented and 22% for shared ownership
9. 100% of total units as affordable housing, with 100% social rented.

6.8 The results for the eight iterations are presented in Table 6.1. Individual appraisals for all thirteen sites are provided in a separate volume to this Report.

Table 6.1 Appraisal results for eight affordable housing options: Residual Land Values [£m/hectare]

Affordable Option: % Shared Ownership/% Social Rented								
Site Number and Name	Baseline: 0% [1]	15%: 6.6%/8.4% [2]	20%: 8.8%/11.2% [3]	25%: 11%/14% [4]	30%: 13.2%/16.8% [5]	35%: 15.4%/19.6% [6]	50%: 22%/28% [7]	100%: 0%/100% [8]
1. Land, Westfield Road, Brampton	£1,130,759	£899,787	£822,797	£745,807	£668,816	£591,347	£358,607	-£504,462
2. Arundel Park, Rother Crescent, Treeton	£1,245,859	£1,038,891	£969,901	£900,912	£831,922	£762,933	£555,964	-£165,080
3. Timber Yard, Outgang Lane, Dinnington	£828,946	£649,061	£589,100	£529,138	£469,177	£409,215	£228,170	-£428,509
4. Dalton Lane Allotments, Dalton Lane, Dalton	£1,075,863	£854,759	£780,749	£706,583	£632,417	£558,251	£335,489	-£487,726
5. Land off Gill Close, Wickersley	£1,412,843	£1,169,848	£1,088,850	£1,007,852	£926,854	£845,855	£602,861	-£263,511
6. Land off Sawn Moor, Thurcroft	£1,104,408	£907,151	£841,122	£775,094	£709,065	£643,036	£444,715	-£285,537
7. Croda Site, Carlisle Street, Rotherham	£143,499	-£45,540	-£110,546	-£175,552	-£241,082	-£306,834	-£504,091	-£1,161,614

Nb. The Column coloured yellow is the Borough Council's current affordable housing policy requirement

Table 6.1 Appraisal results for eight affordable housing options: Residual Land Values [£m/hectare] [continued]

Affordable Option: % Shared Ownership/% Social Rented								
Site Number and Name	Baseline: 0% [1]	15%: 6.6%/8.4% [2]	20%: 8.8%/11.2% [3]	25%: 11%/14% [4]	30%: 13.2%/16.8% [5]	35%: 15.4%/19.6% [6]	50%: 22%/28% [7]	100%: 0%/100% [8]
8. Ivanhoe Works, Kimberworth Road, Munsbrough	£615,775	£365,538	£280,893	£196,249	£111,604	£26,735	-£254,127	-£1,231,269
9. Land to the North of Upper Wortley Road, Rotherham	£1,373,089	£1,122,948	£1,039,567	£956,187	£872,806	£789,426	£539,194	-£344,036
10. Land off Wentworth Road, Dinnington	£834,372	£657,662	£598,438	£539,214	£479,989	£420,765	£241,791	-£462,110
11. Land north west of Munsbrough Lane, Rotherham	£1,056,827	£838,962	£765,914	£692,841	£619,768	£546,695	£327,476	-£480,308
12. Land to rear of Haugh Green, Upper Haugh	£605,905	£475,935	£432,611	£389,288	£345,804	£302,129	£170,670	-£343,091
13. Land off Keeton Hall Road, Kiveton Park	£1,108,919	£912,264	£846,428	£780,592	£714,607	£648,234	£446,069	-£260,769

Nb. The Column coloured yellow is the Borough Council's current affordable housing policy requirement

Table 6.2 Summary of Appraisal Results: Residual Land Values [£/hectare]

Affordable Option: % Shared Ownership/% Social Rented								
Site Number and Name	Baseline: 0% [1]	15%: 6.6%/8.4% [2]	20%: 8.8%/11.2% [3]	25%: 11%/14% [4]	30%: 13.2%/16.8% [5]	35%: 15.4%/19.6% [6]	50%: 22%/28% [7]	100%: 0%/100% [8]
Average for ALL Study Sites [13]	£964,390	£757,482	£688,140	£618,785	£549,365	£479,830	£268,676	-£493,694
Average for Green-field Sites[10]	£1,094,884	£887,821	£818,638	£749,437	£680,205	£610,867	£402,284	-£359,663
Average for Brown-field Sites[3]	£529,407	£323,020	£253,149	£183,278	£113,233	£43,039	-£176,683	-£940,464

Nb. The Column coloured yellow is the Borough Council's current affordable housing policy requirement

- 6.9 Table 6.1 presents, on a site-by-site basis, the results of the financial appraisals when different proportions of affordable housing are delivered. We will discuss these results alongside sensitivity analysis at paragraph 6.20. The next paragraphs simply summarize the findings as set out in table 6.2.
- 6.10 Table 6.2, which summarizes the results of the viability appraisals, reveals that with NO affordable housing requirement, the thirteen study sites deliver a residual land value [RLV] of just under £1m per hectare on average. The green-field sites located in suburban and other urban/edge of town locations deliver the highest of the land values averaging £1.1m per hectare. The brown-field sites deliver the lowest values with an average of nearly £0.53m per hectare. These lower values are explained by the significantly higher costs associated with developing out these sites and the lower outturn prices on these sites.
- 6.11 Taking into account developer contributions and some abnormal costs, the financial results points to a market valuation for green-field housing land free of planning and development costs [with an assumed developers profit of 20% on costs] typically approaching £1.2m per hectare. This figure is slightly lower than the Valuation Office Agency data of around £1.3 to £1.4m per hectare [The Property Market Report, January 2010]; this indicates that the appraisals marginally underestimate profitability.
- 6.12 The position of the brown-field sites is clearly very different from the green-field sites; specific site conditions drive their land values considerably below the above figures and comparables [which are largely referencing green-field sites in any case].
- 6.13 As expected as increasing amounts of affordable housing are sought, the residual land values are reduced and on some sites substantially so.
- 6.14 A key reference point is the RLV inclusive of 25% affordable housing [see Column 4 in Tables 6.1 and 6.2]. At this point, the RLV on average is driven towards £0.62m per hectare, representing an average fall of 36% in the RLV.
- 6.15 For the ten green-field sites, their RLV inclusive of the 25% affordable housing has declined on average by nearly 32% to £0.75m per hectare, however all these sites remain viable relative to their comparables. Indeed, all the green-field sites remain viable if affordable housing was sought at 50% of total units built, however, this finding is in the absence of sensitivity analysis which needs to inform and confirm that the Borough Council's affordable housing policy is sustainable and enduringly viable.
- 6.16 For the three brown-field sites, their RLV inclusive of the 25% affordable housing has declined on average by nearly two-thirds to less than £0.18m per hectare. Once sensitivity analysis is conducted, these sites are highly vulnerable to small rises in costs and small falls in house prices, which renders them very unattractive propositions and technically unviable.
- 6.17 The only situation where all the study sites' RLVs are negative is if all the housing to be developed on the sites was to be affordable homes, which is extremely unlikely.
- 6.18 In practice, the threshold of viability is not fixed. Viability will depend on the value from existing uses or any valid alternative. In Section 5, we showed that in and around Rotherham land values for industry and agriculture were around £400,000 per hectare and £50,000 per hectare respectively.

- 6.19 A final point, if in the future the planning authority intends to secure contributions from non-residential developments as part of their review of their current approaches, then any such contributions made by developers will also reduce the alternative use values which are used to benchmark viability.

Sensitivity Analysis

- 6.20 To reiterate, a site is viable when the developer has enough money in their budget to buy the land, build out the scheme and meet their assumed target rate of profit. This means the developer's land bid budget is large enough to compete away other land uses that planning would permit at today's market prices and costs [i.e. at the time of the valuation (now)].
- 6.21 The sensitivity analysis has been conducted across all the affordable housing iterations, but our reference point is to test whether viability is maintained at the Borough Council's extant affordable housing policy requirement of 25% of all dwelling units.
- 6.22 A priori, viability of a site is a relative and thus a dynamic concept. To accommodate changes in market conditions, we have conducted sensitivity analysis – a kind of stress testing to examine the degree of vulnerability viability is to changes in the price/rents and costs of building out the sites. We have been guided by the fact that there are four key variables that affect the RLV and hence ultimately viability. According to Ratcliffe et al [2009], price [rents and yields], cost, time and interest rates are the most important of all variables. In respect of housing viability, price and cost are the most important of these four variables.
- 6.23 We have also been guided by market changes and recent forecasts so that the testing is realistic as far as it can be. Thus, for price changes we have modelled the effects of 2.5% and 5% per annum rises and falls; for build cost changes we have modelled the effects of 2.5%, 5%, 7.5% and 10% per annum increases. If the build out time is longer than 12 months, then such increases in build costs and changes to house prices will be compounded; with this in mind, we know that the larger sites' viability position will be affected most [e.g. Sites 3, 6, 7, 10, 12].
- 6.24 In addition, we have modelled the effects of stepped increases in build costs per unit of £10,000, £20,000 and £30,000 per unit. With regard to this stress test, such one-off increases in build costs per unit emulate the consequence of trying to achieving higher rating as envisaged by the Code for Sustainable Homes. We also reveal the level of such a rise in build cost at the point when viability is compromised. Again, the viability benchmark is the Borough Council's current affordable housing policy of 25% of all dwelling units built on sites.
- 6.25 For the ten green-field sites, their current use value is typically quite low since their extant use relate to agricultural uses, which are valued at around £14,000 per hectare according to the Property Market Report [VOA, 2009 and 2010]. For this study, however, we have assumed a "hope" value of £50,000 per hectare to reflect their truer "market" worth for such sites where housing development is not normally permitted.
- 6.26 For the three brown-field sites, these may be worth more than agricultural land in their current use as industrial or warehousing sites, though specific site conditions can reduce their worth substantially. It is important to stress that where a site has been cleared [e.g. Site 7, The Croda Site] and known to be heavily contaminated, its value is viewed to be no more than zero as it currently has no operational use [and thus no income earning

capacity]. Indeed, there are likely to be substantial abnormal costs associated in developing out such sites, which in valuation terms could make their value negative.

- 6.27 A full set of results of the sensitivity analysis for each site is presented in a separate volume. In order to simplify the presentation and to ease understanding of the analysis, we have presented the results in the form of uplift multipliers. The uplift multiplier measures the size of the rise in land value due to developing the site for housing relative to a current use value. This means, irrespective of the comparator land use value and the particular sensitivity test [at the head of each column], that so long a site's uplift multiplier is greater than 1, then the site is viable.

Site-by-Site Results

- 6.28 The results from the sensitivity analysis are presented for each of the study sites separately, starting with the green-field sites and then the brown-field sites.

GREEN-FIELD SITES

Site 1: Land, Westfield Road Brampton: this is a 3.91 hectare green-field site, with a capacity of 166 homes, and total project duration of 36 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 2-3.]

Site 2: Arundel Park, off Rother Crescent, Treeton: this is a 3.12 hectare green-field site, with a capacity of 92 homes, and total project duration of 30 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 4-5.] The house-builders are currently on site.

Site 4: Dalton Lane Allotments, Dalton: this is a 4.6 hectare green-field site, with a capacity of 198 homes, and total project duration of 42 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 6-7.]

Site 5: Land off Gill Close, Wickersley: this is a 0.86 hectare green-field site, with a capacity of 29 homes, and total project duration of 18 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 8-9.]

Site 6: Land off Sawn Moor, Thurcroft: this is a 12.94 hectare green-field site, with a capacity of 605 homes, and total project duration of 96 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 10-11.]

Site 9: Land to north of Upper Wortley Road, Rotherham: this is a 6.65 hectare green-field site, with a capacity of 283 homes, and total project duration of 48 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 12-13.]

Site 10: Land off Wentworth Road, Dinnington: this is a 8.69 hectare green-field site, with a capacity of 369 homes, and total project duration of 72 months. The site passes all the stress tests, regarding both build cost rises and house price falls, except if build costs rise by 10% per annum. Despite the failure on this last test, we judge that the site to be viable. [See Tables in Appendix B, pp 14-15.]

Site 11: Land north west of Munsbrough Lane, Rotherham: this is a 5.42 hectare green-field site, with a capacity of 230 homes, and total project duration of 42 months. The site

passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 16-17.]

Site 12: Land to rear of Haugh Green, Upper Haugh: this is a 19.68 hectare green-field site, with a capacity of 753 homes, and total project duration of 96 months. The site passes all the stress tests regarding both build cost rises and house price falls, except when build costs rise by more than 7.5% per annum. Since the build out period is long, compounding the rise in build costs at more than 7% per annum, the overall build costs at the end of the 8 years' period will be some 90% higher [close to double current build costs]. Thus, despite this failure on this test, we judge the site to be viable. [See Tables in Appendix B, pp 18-19.]

Site 13: Land off Keeton Hall Road, Kiveton Park: this is a 3.16 hectare green-field site, with a capacity of 94 homes, and total project duration of 30 months. The site passes all the stress tests regarding both build cost rises and house price falls. The site is and remains viable. [See Tables in Appendix B, pp 20-21.]

BROWN-FIELD SITES

Site 3: Timber Yard, off Outgang Lane, Dinnington: this is a 7.71 hectare brown-field site, with a capacity of 295 homes, and total project duration of 60 months. This site is only viable at today's costs and prices for the delivery of the Borough's current affordable housing [i.e. 25%] policy. However, viability is compromised when build cost rise by more than 2.5% per annum or if house prices fall more than 2.5% per annum. Since the project duration is 5 years, the compound effect of these tests are quite considerable i.e. by the end of the project prices would be 16% lower or build costs higher by 16%. This site passes all the stress test so long as only market homes are built. [See Tables in Appendix B, pp 22-23.]

Site 7: Croda Site, Carlisle Street, Rotherham: this is a 12.64 hectare brown-field site, with a capacity of 591 homes, and total project duration of 84 months. This site is only viable at today's costs and prices for the delivery of all market homes; no affordable housing could be delivered. The site fails all the stress tests and is thus unviable. [See Tables in Appendix B, pp 24-25.]

Site 8: Ivanhoe Works, Kimberworth Road, Masbrough: this is a 4.39 hectare brown-field site, with a capacity of 217 homes, and total project duration of 48 months. This site is only viable at today's costs and prices for the delivery of all market homes; no affordable housing could be delivered. The site fails all the stress tests and is thus unviable. [See Tables in Appendix B, pp 26-27.]

- 6.29 We sought to demonstrate how viability is affected by predicted increases in building costs arising directly from meeting the Code for Sustainable Homes. New homes are expected to generate lower carbon emissions as a result of the Code for Sustainable Homes. The consequential effect of this objective will be to increase overall build costs. There is limited evidence by how much these costs will increase, though a report by consultants Cyril Sweett for The Housing Corporation and English Partnerships [now combined to form The Homes for Community Agency (HCA)] in 2006, showed that build costs could rise by between 2.5% and 24% depending upon the options and the target dates to reach energy performance over Part L Building Regulations.¹² Mark Clare, Chief Executive of Barratts Development - a major house builder - relating to their Zero carbon

¹² DCLG [2008] **Research to Assess the Costs and Benefits of the Government's Proposals to Reduce the Carbon Footprint of New Housing Development**, Department for Communities and Local Government: London

development at Hanham Hall, east of Bristol, claims that to achieve Code Level 6 they will incur an extra £20,000 per unit in costs [March 2010].

- 6.30 Additionally, research for the South West Housing Body in 2007 showed that costs would rise by up to 5% [max £4,400/unit] to achieve improvement from Code Level 3 to Code Level 4; whilst costs would rise by up to 9% [max £8,700/unit] to achieve improvement from Code Level 4 to Code Level 5¹³.
- 6.31 Thus, to embrace this range of build cost increases, we have modelled the effect on viability of three different stepped increases in build costs of £10,000, £20,000 and £30,000 per unit. This modelling has been carried out for all thirteen sites [green-field and brown-field] when 25% of the housing units are affordable.
- 6.32 The results of this modelling are presented in two separate tables. The figures presented relate to the uplift multiplier in the sites' values arising from development. So long as the uplift multiplier is greater than 1, then viability is not compromised – the house-builder has a land budget higher than alternative uses and could proceed to build out the site and still achieve the target rate of profit.

Table 6.3a: GREENFIELD SITES UPLIFT MULTIPLIER @25% of Affordable Housing	Site 1: Land, Westfield Road, Brampton	Site 2: Arundel Park, Land off Rother Crescent, Treeton	Site 4: Dalton Lane Allotment Site, Dalton Lane, Dalton	Site 5 Land off Gill Close, Wickersley	Site 6: Land off Sawn Moor, Thurcroft
At Extant AH Policy [25%]	14.92	18.02	14.13	20.16	15.50
when Build Costs plus £10000/unit	7.70	12.81	7.22	13.77	10.27
when Build Costs plus £20000/unit	0.45	7.60	0.18	7.44	5.01
when Build Costs plus £30000/unit	not applicable	2.44	not applicable	0.76	-0.43
Viability is compromised if Build Costs rise by more than [£/unit]	£19,000	£32,000	£18,750	£29,500	£27,000

- 6.33 For the ten green-field sites, Tables 6.3a and 6.3b shows that the uplift multipliers are all high enough to achieve viability if build costs rise by £10,000 per unit. If build costs rise

¹³ See South West Regional Assembly, 2007, Assessing the Impact of Higher Code Levels on Affordable Delivery in the South West of England: A Policy Makers Summary, SWRA.

by £20,000 per unit, then viability is compromised for 5 sites [Site 1, Site 4; Site 10; Site 11 and Site 12]; the remaining sites are comfortably viable. However, if costs rise by £30,000 per unit, then only 2 of the ten sites [Sites 2 and 13] remain viable.

6.34 Indeed, the bottom row of figures in Tables 6.3a and 6.3b shows the upper limit of the increase in build costs that would render the sites unviable. The figures show that this ranges from £16,500 per unit on Site 12 [at Haugh Green] to £32,000 per unit on Site 2 [at Arundel Park, which is presently under construction by Jones Homes]. The lower figure compare well with the forecast cost increases relating to meeting possible future home energy efficiency standards made by consultants and others [Cyrill Sweett, 2010].

Table 6.3b: GREENFIELD SITES UPLIFT MULTIPLIER @25% of Affordable Housing	Site 9: Land to the North of Upper Wortley Road, Rotherham	Site 10: Land off Wentworth Road, Dinnington	Site 11: Land north west of Munsbroug h Lane, Rotherham	Site 12: Land to rear of Haugh Green, Upper Haugh, Rotherham	Site 13: Land off Keeton Hall Road, Kiveton Park
At Extant AH Policy [25%]	19.12	10.78	13.86	7.79	15.61
when Build Costs plus £10000/unit	12.71	5.25	7.05	3.72	10.22
when Build Costs plus £20000/unit	6.25	-0.45	0.16	-0.51	4.74
when Build Costs plus £30000/unit	-0.33	not applicable	not applicable	not applicable	2.05
Viability is compromised if Build Costs rise by more than [£/unit]	£28,000	£17,500	£18,750	£16,500	£26,750

6.35 For the three brown-field sites, Table 6.3c shows that the uplift multipliers are all very low [or negative] if 25% of the housing units are affordable delivered. Only Site 3 is viable, but this is quickly compromised if additional building costs of £5,000 or more are incurred. Site 8 is marginally unviable if 25% of the housing units are affordable; so with additional building costs the position quickly deteriorates. Site 7 is unviable from the outset. We have commented earlier in the Report about the specific problems of these three sites and their lack of viability if affordable housing is sought.

Table 6.3c: BROWNFIELD SITES UPLIFT MULTIPLIER @25% of Affordable Housing	Site 3: Timber Yard, off Outgang Lane, Dinnington	Site 7: Croda Site, Carlisle Street, Rotherham	Site 8: Ivanhoe Works, Kimberworth Road, Masbrough, Rotherham
At Extant AH Policy [25%]	1.32	-43.89	0.49
when Build Costs plus £10000/unit	0.642	-119.91	-0.55
when Build Costs plus £20000/unit	-0.055	not applicable	not applicable
when Build Costs plus £30000/unit	not applicable	not applicable	not applicable
Viability is compromised if Build Costs rise by more than [£/unit]	£5,000	£0	£0

Concluding Remark

- 6.36 The figures that we have generated in this report can provide a baseline for assessing the impact of alternative affordable housing requirements upon the viability of the thirteen residential sites. Given alternative use values, the RLV inclusive of the 25% affordable housing requirement is on average £0.62m per hectare for all the study sites, compares favourably with £0.4m for industrial land and is significantly higher than the value of equipped agricultural land [where we applied a value of £50,000 per hectare]. Differences between green-field and brown-field have been identified. In respect of the brown-field, especially where there are known site conditions and land contamination challenges, the Borough Council should seek to treat each case on its merits regarding the delivery of affordable housing.

7 CONCLUSIONS AND IMPLICATIONS OF RESULTS

- 7.1 We have conducted financial appraisals for actual or notional housing developments, on thirteen sites identified by Rotherham Metropolitan Borough Council, in order to assess the impact of affordable housing requirements upon development viability.
- 7.2 Our approach has involved modelling housing development for the study sites, using financial appraisal, to generate residual land valuations for each site under a series of affordable housing quota options.
- 7.3 In adopting this approach to the thirteen sites in Rotherham specific development challenges are posed by variations in house prices by type and across the borough and to address relevant variations in housing design and build specification, including abnormal costs in developing brown-field sites. We sought to overcome these by applying specific price and costs bands; a necessary and effective device if modelling in the future is to be used for comparison and monitoring purposes.
- 7.4 Appraisals have been generated for the thirteen sites for eight affordable housing options for scenarios [i.e. baseline, plus seven affordable options] and assuming no public subsidy [or Social Housing Grant]. The results of the appraisals appear to overstate the costs of developing the study sites, as they resulted in land values that are free of planning and development costs [which includes a target rate of developers profit of 20% on costs] typically approaching £1.2m per hectare. This is marginally below the Valuation Office Agency data of around £1.3m per hectare [at June 2010]. On average, our appraisals include £7,000 per housing unit for planning obligations, and for the brown-field sites provision for associated abnormal costs, where relevant.
- 7.5 **In our view, the Borough Council is justified in maintaining its current affordable housing policy that seeks 25% of all dwelling units being affordable homes.** Our appraisals demonstrate that **all the green-field study sites are viable** and lead to satisfactory financial outcomes. The fact that some of our study sites are currently under-construction attests to these sites' viability.
- 7.6 **The position of the three brown-field sites is quite different. None of the brown-field sites are viable.** Given the specific site constraints of such sites, we suggest that the Borough Council adopts a more open-approach which would involve seeking to work with applicants and balancing the range of planning issues in trying to conceive viable schemes.
- 7.7 We have stress tested the sites' viabilities, where increases in build costs or price falls have been modelled. In particular, the tests on the green-field sites demonstrate that the Borough Council's affordable housing policy retains its viability and can withstand adverse market conditions.
- 7.8 In the future, market conditions may be return to be more growth orientated; under such circumstances, the Borough Council will be justified in repeating these tests of development viability.
- 7.9 We have shown that viability is a relative and a dynamic concept.

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ROTHERHAM METROPOLITAN BOROUGH COUNCIL

Housing Viability Study: Affordable Housing Requirements

Volume II: **HOUSING VIABILITY SENSITIVITY OF LARGE SITES** [>0.5 hectares]

Prepared by Professor Stephen Walker

Draft: October 2010

Final: May 2012 [After Scrutiny]

VOLUME II: HOUSING VIABILITY SENSITIVITY OF LARGE SITES [> 0.5 hectares]

For each site there are two separate tables showing their **Uplift Multipliers** i.e. the rise in land value due to developing the site for housing relative to their current use value.

For green-field sites their current use value is usually quite low since their extant uses relate to agricultural uses, which according to The Property Market Report [VOA, 2009 & 2010] are worth around £14,000 per hectare, though we have assumed a “hope” value of £50,000 per hectare given their truer worth of such sites where housing development is not normally permitted [VOA, 2010].

The brown-field sites may be worth more in the current use as industrial or warehousing sites, though specific site conditions may reduce their worth substantially. Where a site has been cleared [e.g. Site 7, The Croda site] its value is viewed to be zero as it has no current operational uses and given its known contamination arising from its previous uses, there are substantial abnormal costs associated with developing out this kind of site, which effectively make the worth negative.

The **two tables of data for each site** relate, in order of presentation, to:

1. Effects of Building Cost Increases and Affordable Housing Requirements on Overall Viability
2. Effects of House Prices Rises and Falls and Affordable Housing Requirements on Overall Viability

The areas in the tables which are **coloured blue** indicate the value of the uplift multipliers at the extant affordable housing policy of 25%; so long as these values are greater than 1, then the site is **viable** irrespective of the sensitivity test that is set out in the column headers.

The areas in the tables which are **coloured yellow** indicate the uplift multiplier values are at or lower than 1, which means that at these levels of affordable housing and the particular sensitivity test, the site is **unviable**.

The sites are grouped into two discrete sub-classes: Green-field sites and Brown-field sites.

LARGE GREEN-FIELD SITES [>0.5Hectares]

Site 1: Land, Westfield Road, Brampton	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	22.62	21.46	20.29	19.12	17.94
15% AH Quota	18.00	16.84	15.67	14.50	13.32
20% AH Quota	16.46	15.30	14.13	12.96	11.78
Extant AH Policy [25%]	14.92	13.76	12.59	11.42	10.24
30% AH quota	13.38	12.22	11.05	9.88	8.70
35% AH Quota	11.83	10.67	9.50	8.33	7.15
50% AH Quota	7.17	6.02	4.85	3.68	2.54
100% AH Quota	-10.09	-11.29	-12.51	-13.73	-14.96
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 1: Land, Westfield Road, Bampton	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	27.68	25.13	22.62	20.13	17.67
15% AH Quota	22.76	20.37	18.00	15.65	13.34
20% AH Quota	21.13	18.78	16.46	14.16	11.90
Extant AH Policy [25%]	19.49	17.19	14.92	12.67	10.45
30% AH quota	17.85	15.60	13.38	11.18	9.01
35% AH Quota	16.20	14.00	11.83	9.68	7.56
50% AH Quota	11.25	9.20	7.17	5.17	3.19
100% AH Quota	-6.87	-8.49	-10.09	-11.67	-13.23
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 2: Arundel Park, Land off Rother Crescent, Treeton	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	24.92	24.30	23.67	23.05	22.43
15% AH Quota	20.78	20.16	19.53	18.91	18.29
20% AH Quota	19.40	18.78	18.15	17.53	16.91
Extant AH Policy [25%]	18.02	17.40	16.77	16.15	15.53
30% AH quota	16.64	16.02	15.39	14.77	14.15
35% AH Quota	15.26	14.64	14.02	13.39	12.77
50% AH Quota	11.12	10.50	9.88	9.25	8.63
100% AH Quota	-3.30	-3.95	-4.60	-5.24	-5.89
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 2: Arundel Park, Land off Rother Crescent, Treeton	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	28.25	26.58	24.92	23.26	21.61
15% AH Quota	23.90	22.33	20.78	19.23	17.68
20% AH Quota	22.45	20.92	19.40	17.88	16.37
Extant AH Policy [25%]	21.00	19.51	18.02	16.54	15.06
30% AH quota	19.55	18.09	16.64	15.19	13.75
35% AH Quota	18.10	16.68	15.26	13.85	12.44
50% AH Quota	13.75	12.43	11.12	9.81	8.51
100% AH Quota	-1.29	-2.30	-3.30	-4.30	-5.30
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 4: Dalton Lane Allotment Site, Dalton Lane, Dalton	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	21.52	19.86	18.17	16.43	14.65
15% AH Quota	17.10	15.44	13.75	12.01	10.23
20% AH Quota	15.61	13.96	12.27	10.53	8.75
Extant AH Policy [25%]	14.13	12.48	10.78	9.05	7.26
30% AH quota	12.65	10.99	9.30	7.56	5.78
35% AH Quota	11.17	9.51	7.82	6.08	4.30
50% AH Quota	6.71	5.06	3.36	1.66	-0.16
100% AH Quota	-9.75	-11.48	-13.24	-15.05	-16.91
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 4: Dalton Lane Allotment Site, Dalton Lane, Dalton	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [- 2.5%pa]	With Real House Price Fall [- 5%pa]
Baseline [100% Market Homes]	28.40	24.91	21.52	18.23	15.04
15% AH Quota	23.57	20.28	17.10	14.00	11.00
20% AH Quota	21.95	18.74	15.61	12.58	9.64
Extant AH Policy [25%]	20.33	17.19	14.13	11.17	8.29
30% AH quota	18.72	15.64	12.65	9.75	6.93
35% AH Quota	17.10	14.09	11.17	8.33	5.58
50% AH Quota	12.24	9.43	6.71	4.07	1.54
100% AH Quota	-5.41	-7.61	-9.75	-11.83	-13.85
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 5: Land off Gill Close, Wickersley	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	28.26	27.70	27.15	26.60	26.06
15% AH Quota	23.40	22.84	22.29	21.74	21.20
20% AH Quota	21.78	21.22	20.67	20.12	19.58
Extant AH Policy [25%]	20.16	19.60	19.05	18.50	17.96
30% AH quota	18.54	17.98	17.43	16.88	16.34
35% AH Quota	16.92	16.36	15.81	15.26	14.72
50% AH Quota	12.06	11.50	11.18	10.62	10.07
100% AH Quota	-5.27	-5.85	-6.42	-6.99	-7.56
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 5: Land off Gill Close, Wickersley	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [- 2.5%pa]	With Real House Price Fall [- 5%pa]
Baseline [100% Market Homes]	31.40	29.83	28.26	26.68	25.10
15% AH Quota	26.34	24.87	23.40	21.92	20.43
20% AH Quota	24.66	23.22	21.78	20.33	18.88
Extant AH Policy [25%]	22.97	21.57	20.16	18.74	17.32
30% AH quota	21.29	19.91	18.54	17.16	15.77
35% AH Quota	19.60	18.26	16.92	15.57	14.21
50% AH Quota	14.55	13.30	12.06	11.03	9.75
100% AH Quota	-3.35	-4.31	-5.27	-6.23	-7.20
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 6: Land off Sawn Moor, Thurcroft	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	22.09	19.34	16.38	13.22	9.84
15% AH Quota	18.14	15.39	12.44	9.28	5.90
20% AH Quota	16.82	14.07	11.12	7.96	4.58
Extant AH Policy [25%]	15.50	12.75	9.80	6.64	3.25
30% AH quota	14.18	11.43	8.48	5.32	1.93
35% AH Quota	12.86	10.11	7.16	4.00	0.63
50% AH Quota	8.89	6.14	3.19	0.03	-3.49
100% AH Quota	-5.71	-8.58	-11.65	-14.94	-18.47
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 6: Land off Sawn Moor, Thurcroft	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [- 2.5%pa]	With Real House Price Fall [- 5%pa]
Baseline [100% Market Homes]	34.02	27.83	22.09	16.76	11.82
15% AH Quota	29.34	23.53	18.14	13.14	8.51
20% AH Quota	27.77	22.09	16.82	11.93	7.40
Extant AH Policy [25%]	26.20	20.65	15.50	10.72	6.29
30% AH quota	24.63	19.21	14.18	9.51	5.19
35% AH Quota	23.07	17.77	12.86	8.30	4.08
50% AH Quota	18.36	13.45	8.89	4.67	0.77
100% AH Quota	1.51	-2.20	-5.71	-8.96	-11.98
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 9: Land to the North of Upper Wortley Road, Rotherham	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	27.46	25.29	23.03	20.69	18.27
15% AH Quota	22.46	20.22	17.90	15.48	12.97
20% AH Quota	20.79	18.54	16.19	13.74	11.20
Extant AH Policy [25%]	19.12	16.85	14.48	12.01	12.53
30% AH quota	17.46	15.16	12.77	10.27	7.66
35% AH Quota	15.79	13.48	11.06	8.53	5.90
50% AH Quota	10.78	8.41	5.93	3.32	0.61
100% AH Quota	-6.88	-9.55	-12.38	-15.37	-18.53
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 9: Land to the North of Upper Wortley Road, Rotherham	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	37.07	32.17	27.46	22.95	18.62
15% AH Quota	31.39	26.83	22.46	18.26	14.24
20% AH Quota	29.50	25.06	20.79	16.70	12.78
Extant AH Policy [25%]	27.61	23.28	19.12	15.14	11.32
30% AH quota	25.71	21.50	17.46	13.58	9.86
35% AH Quota	23.82	19.72	15.79	12.01	8.40
50% AH Quota	18.14	14.39	10.78	7.33	4.01
100% AH Quota	-1.56	-4.27	-6.88	-9.38	-11.78
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 10: Land off Wentworth Road, Dinnington	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	16.69	14.28	11.74	9.06	6.25
15% AH Quota	13.15	10.74	8.20	5.53	2.71
20% AH Quota	11.97	9.56	7.02	4.34	1.53
Extant AH Policy [25%]	10.78	8.37	5.83	3.16	0.36
30% AH quota	9.60	7.19	4.65	1.97	-0.88
35% AH Quota	8.42	6.00	3.46	0.81	-2.11
50% AH Quota	4.84	2.42	-0.12	-2.91	-5.84
100% AH Quota	-9.24	-11.75	-14.40	-17.19	-20.12
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 10: Land off Wentworth Road, Dinnington	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	26.15	21.28	16.69	12.35	8.26
15% AH Quota	22.06	17.48	13.15	9.07	5.22
20% AH Quota	20.69	16.21	11.97	7.97	4.20
Extant AH Policy [25%]	19.32	14.93	10.78	6.87	3.18
30% AH quota	17.95	13.66	9.60	5.77	2.16
35% AH Quota	16.58	12.38	8.42	4.67	1.14
50% AH Quota	12.45	8.53	4.84	1.35	-2.02
100% AH Quota	-3.24	-6.33	-9.24	-11.99	-14.58
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 11: Land north west of Munsbrough Lane, Rotherham	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	21.14	19.49	17.81	16.10	14.35
15% AH Quota	16.78	15.13	13.45	11.74	10.00
20% AH Quota	15.32	13.67	11.99	10.28	8.54
Extant AH Policy [25%]	13.86	12.21	10.53	8.82	7.07
30% AH quota	12.40	10.75	9.07	7.36	5.61
35% AH Quota	10.93	9.29	7.61	5.90	4.15
50% AH Quota	6.55	4.90	3.23	1.54	-0.24
100% AH Quota	-9.61	-11.32	-13.07	-14.85	-16.67
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 11: Land north west of Munsbrough Lane, Rotherham	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [- 2.5%pa]	With Real House Price Fall [- 5%pa]
Baseline [100% Market Homes]	27.90	24.48	21.14	17.88	14.71
15% AH Quota	23.15	19.92	16.78	13.71	10.73
20% AH Quota	21.55	18.40	15.32	12.32	9.39
Extant AH Policy [25%]	19.96	16.87	13.86	10.92	8.05
30% AH quota	18.37	15.34	12.40	9.52	6.72
35% AH Quota	16.77	13.82	10.93	8.12	5.38
50% AH Quota	11.99	9.24	6.55	3.93	1.40
100% AH Quota	-5.31	-7.48	-9.61	-11.67	-13.69
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 12: Land to rear of Haugh Green, Upper Haugh, Rotherham	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	12.12	9.99	7.71	5.27	2.66
15% AH Quota	9.52	7.39	5.12	2.68	0.07
20% AH Quota	8.65	6.53	4.25	1.81	-0.84
Extant AH Policy [25%]	7.79	5.66	3.38	0.94	-1.74
30% AH quota	6.92	4.79	2.51	0.08	-2.64
35% AH Quota	6.04	3.92	1.64	-0.83	-3.55
50% AH Quota	3.41	1.29	-1.03	-3.57	-6.29
100% AH Quota	-6.86	-9.08	-11.45	-13.99	-16.71
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 12: Land to rear of Haugh Green, Upper Haugh, Rotherham	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	20.41	16.11	12.12	8.41	4.98
15% AH Quota	17.33	13.28	9.52	6.03	2.80
20% AH Quota	16.30	12.33	8.65	5.24	2.07
Extant AH Policy [25%]	15.91	11.86	7.79	4.63	1.40
30% AH quota	14.24	10.44	6.92	3.65	0.62
35% AH Quota	13.20	9.49	6.04	2.85	-0.12
50% AH Quota	10.09	6.63	3.41	0.44	-2.43
100% AH Quota	-1.60	-4.33	-6.86	-9.21	-11.39
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 13: Land off Keeton Hall Road, Kiveton Park	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	22.18	21.34	20.50	19.66	18.80
15% AH Quota	18.25	17.41	16.57	15.72	14.87
20% AH Quota	16.93	16.09	15.25	14.41	13.55
Extant AH Policy [25%]	15.61	14.78	13.94	13.09	12.24
30% AH quota	14.29	13.46	12.62	11.77	10.92
35% AH Quota	12.96	12.13	11.29	10.44	9.59
50% AH Quota	8.92	8.09	7.25	6.40	5.55
100% AH Quota	-5.22	-6.08	-6.96	-7.84	-8.73
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 13: Land off Keeton Hall Road, Kiveton Park	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	26.81	24.48	22.18	19.92	17.70
15% AH Quota	22.59	20.40	18.25	16.13	14.04
20% AH Quota	21.18	19.04	16.93	14.86	12.82
Extant AH Policy [25%]	19.77	17.67	15.61	13.59	11.60
30% AH quota	18.35	16.31	14.29	12.31	10.37
35% AH Quota	16.93	14.93	12.96	11.03	9.13
50% AH Quota	12.60	10.75	8.92	7.13	5.37
100% AH Quota	-2.38	-3.81	-5.22	-6.60	-7.95
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

LARGE BROWN-FIELD SITES [>0.5 Hectares]

Site 3: Timber Yard, off Outgang Lane, Dinnington	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	2.07	1.83	1.59	1.33	1.06
15% AH Quota	1.62	1.38	1.13	0.86	0.58
20% AH Quota	1.47	1.23	0.97	0.70	0.42
Extant AH Policy [25%]	1.32	1.08	0.82	0.55	0.26
30% AH quota	1.17	0.92	0.66	0.39	0.11
35% AH Quota	1.02	0.77	0.51	0.23	-0.06
50% AH Quota	0.57	0.31	0.05	-0.25	-0.56
100% AH Quota	-1.07	-1.36	-1.66	-1.99	-2.33
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 3: Timber Yard, off Outgang Lane, Dinnington	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	3.02	2.54	2.07	1.63	1.20
15% AH Quota	2.51	2.06	1.62	1.21	0.81
20% AH Quota	2.34	1.90	1.47	1.07	0.68
Extant AH Policy [25%]	2.17	1.74	1.32	0.93	0.55
30% AH quota	2.00	1.58	1.17	0.79	0.42
35% AH Quota	1.83	1.42	1.02	0.65	0.29
50% AH Quota	1.31	0.93	0.57	0.22	-0.11
100% AH Quota	-0.52	-0.80	-1.07	-1.33	-1.58
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 7: Croda Site, Carlisle Street, Rotherham	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	35.87	-1.49	-43.08	-87.55	-135.08
15% AH Quota	-11.39	-50.25	-91.83	-136.30	-183.83
20% AH Quota	-27.64	-66.50	-108.08	-152.55	-200.08
Extant AH Policy [25%]	-43.89	-82.75	-124.33	-168.80	-216.34
30% AH quota	-60.27	-99.13	-140.72	-185.19	-232.72
35% AH Quota	-76.71	-115.57	-157.16	-201.62	-249.16
50% AH Quota	-126.02	-164.89	-206.47	-250.94	-298.47
100% AH Quota	-290.40	-329.27	-370.85	-415.32	-462.85
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 7: Croda Site, Carlisle Street, Rotherham	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	178.25	104.42	35.87	-28.86	-90.26
15% AH Quota	123.09	53.59	-11.39	-73.73	-131.52
20% AH Quota	104.70	36.65	-27.64	-88.68	-145.27
Extant AH Policy [25%]	86.31	19.70	-43.89	-103.64	-159.03
30% AH quota	67.80	2.74	-60.27	-118.73	-172.91
35% AH Quota	49.23	-15.09	-76.71	-133.87	-186.85
50% AH Quota	-6.74	-68.60	-126.02	-179.29	-228.67
100% AH Quota	-200.14	-246.95	-290.40	-330.71	-368.08
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 8: Ivanhoe Works, Kimberworth Road, Masbrough, Rotherham	Baseline Housing Land Budget	With Rise in Building Costs [+2.5%pa]	With Rise in Building Costs [+5%pa]	With Rise in Building Costs [+7.5pa%]	With Rise in Building Costs [+10%pa]
Baseline [100% Market Homes]	1.54	1.29	1.04	0.78	0.52
15% AH Quota	0.91	0.67	0.41	0.16	-0.11
20% AH Quota	0.70	0.45	0.21	-0.06	-0.33
Extant AH Policy [25%]	0.49	0.25	-0.01	-0.28	-0.55
30% AH quota	0.28	0.03	-0.23	-0.50	-0.77
35% AH Quota	0.07	-0.19	-0.45	-0.72	-1.00
50% AH Quota	-0.64	-0.89	-1.16	-1.43	-1.70
100% AH Quota	-3.08	-3.34	-3.60	-3.87	-4.14
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

Site 8: Ivanhoe Works, Kimberworth Road, Masbrough, Rotherham	With Real House Price Rise [+5%pa]	With Real House Price Rise [+2.5%pa]	Baseline Housing Land Budget	With Real House Price Fall [-2.5%pa]	With Real House Price Fall [-5%pa]
Baseline [100% Market Homes]	2.52	2.03	1.54	1.07	0.60
15% AH Quota	1.84	1.37	0.91	0.47	0.03
20% AH Quota	1.61	1.15	0.70	0.27	-0.17
Extant AH Policy [25%]	1.38	0.93	0.49	0.07	-0.37
30% AH quota	1.15	0.71	0.28	-0.15	-0.57
35% AH Quota	0.91	0.48	0.07	-0.36	-0.77
50% AH Quota	0.19	-0.23	-0.64	-1.03	-1.42
100% AH Quota	-2.45	-2.77	-3.08	-3.38	-3.67
UPLIFT MULTIPLIER - MINIMUM VIABILITY THRESHOLD	1	1	1	1	1

END