APPENDIX 1

The Impact of Value Areas on Viability

APPENDIX 1 **THE IMPACT OF VALUE AREAS ON VIABILITY** **SCENARIO 1**

Variation in Value (at mid density and mid land value)

Acheived IRRs (%)

NO GRANT

70/30 % split in tenure assumed

Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

Assumptions	Urban	Suburban	Rural
Value Area	*Adjusted --High, Mid, Low*		
Land Value (per ha)	£3,400,000	£3,100,000	£2,800,000
Grant	Nil	Nil	Nil
Density (dph)	70	45	35
Tenure Split	70/30	70/30	70/30

	Scenario 1a			**Scenario 1b**			**Scenario 1c**		
% Affordable:	**30%**			**40%**			**50%**		
Urban (Graph 1.1)	Table 1.1			Table 1.2			Table 1.3		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (35)	19.1%	13.6%	8.8%	16.1%	10.5%	5.5%	4.5%	-1.8%	-7.7%
1 ha (70)	18.8%	13.2%	8.2%	12.5%	6.7%	1.4%	6.8%	0.7%	-4.9%
3 ha (210)	16.1%	11.1%	6.6%	11.2%	5.9%	1.1%	6.3%	0.8%	-4.3%
Suburban (Graph 1.2)	Table 1.4			Table 1.5			Table 1.6		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (23)	19.1%	7.6%	7.1%	10.4%	0.4%	-0.7%	4.3%	-3.9%	-7.1%
1 ha (45)	16.6%	11.4%	6.3%	9.8%	4.5%	-0.9%	4.9%	-0.8%	-6.4%
3 ha (135)	14.4%	9.8%	5.1%	9.2%	4.4%	-0.5%	5.1%	0.1%	-5.0%
Rural (Graph 1.3)	Table 1.7			Table 1.8			Table 1.9		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (18)	20.5%	16.1%	11.5%	13.6%	8.7%	3.5%	6.9%	1.9%	-3.4%
1 ha (35)	16.5%	12.1%	7.4%	11.5%	7.0%	2.4%	6.2%	1.4%	-3.6%
3 ha (105)	15.4%	11.5%	7.4%	11.4%	7.3%	3.1%	5.7%	1.4%	-3.1%

APPENDIX 2

The Impact of Grant on Viability

APPENDIX 2 THE IMPACT OF GRANT ON VIABILITY SCENARIO 2 (see tables 4.4, 4.5 and 4.6 in Section 6)
Variation in Value (at mid density and mid land value)
Acheived IRRs (%)
GRANT LEVEL 3 - £40,000/£0
70/30 % split in tenure assumed
Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

Assumptions	Urban	Suburban	Rural
Value Area	*Adjusted --High, Mid, Low*		
Land Value (per ha)	£3,400,000	£3,100,000	£2,800,000
Grant	*Adjusted - Nil, Grant Levels 1, 2 and 3*		
Density (dph)	70	45	35
Tenure Split	70/30	70/30	70/30

Scenario 2a (Table 4.4 in Section 4) **Scenario 2b (Table 4.5 in Section 4)** **Scenario 2c (Table 4.6 in Section 4)**

% Affordable: **30%** **40%** **50%**

Urban (Graph 1.1) Table 2.1 Table 2.2 Table 2.3

Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (35)	22.9%	15.0%	12.6%	20.5%	12.6%	9.9%	11.1%	4.8%	-1.2%
1 ha (70)	21.9%	16.3%	11.3%	17.5%	11.7%	6.4%	13.2%	7.1%	1.4%
3 ha (210)	19.2%	14.2%	9.7%	15.6%	10.4%	5.6%	12.1%	6.6%	1.6%

Suburban (Graph 1.2) Table 2.4 Table 2.5 Table 2.6

Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (23)	21.4%	10.0%	11.0%	14.2%	4.3%	3.1%	9.6%	1.5%	-1.7%
1 ha (45)	19.3%	14.1%	8.9%	14.2%	8.9%	3.5%	10.2%	4.6%	-1.1%
3 ha (135)	16.8%	12.2%	7.6%	12.7%	8.0%	3.2%	9.6%	4.7%	-0.4%

Rural (Graph 1.3) Table 2.7 Table 2.8 Table 2.9

Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (18)	22.5%	18.1%	13.5%	16.4%	11.6%	6.4%	11.5%	6.5%	1.3%
1 ha (35)	18.9%	14.5%	9.8%	15.5%	11.0%	6.4%	11.1%	6.4%	1.5%
3 ha (105)	17.5%	13.7%	9.6%	14.3%	10.3%	6.1%	9.8%	5.7%	1.3%

APPENDIX 2 **THE IMPACT OF GRANT ON VIABILITY** **SCENARIO 3 (see tables 3a, 3b and 3c)**

Variation in Value (at mid density and mid land value)

Acheived IRRs (%)

GRANT LEVEL 2 - £40,000/£15,000

70/30 % split in tenure assumed

Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

	Scenario 3a			Scenario 3b			Scenario 3c		
% Affordable:	30%			40%			50%		
Urban (Graph 1.1)	Table 2.10			Table 2.11			Table 2.12		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (35)	23.2%	15.7%	13.0%	21.0%	13.5%	10.4%	12.6%	6.2%	0.3%
1 ha (70)	22.5%	16.9%	11.9%	18.3%	12.5%	7.2%	14.3%	8.2%	2.5%
3 ha (210)	19.7%	14.7%	10.3%	16.3%	11.1%	6.4%	13.0%	7.6%	2.6%
Suburban (Graph 1.2)	Table 2.13			Table 2.14			Table 2.15		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (23)	21.6%	11.2%	11.2%	14.9%	5.6%	3.8%	10.6%	2.8%	-0.7%
1 ha (45)	19.7%	14.5%	9.4%	14.8%	9.5%	4.1%	10.9%	5.3%	-0.3%
3 ha (135)	17.1%	12.6%	8.0%	13.3%	8.6%	3.7%	10.3%	5.4%	0.4%
Rural (Graph 1.3)	Table 2.16			Table 2.17			Table 2.18		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (18)	22.7%	18.4%	13.7%	17.3%	12.4%	7.2%	12.4%	7.4%	2.1%
1 ha (35)	19.3%	14.9%	10.2%	15.9%	11.4%	6.8%	11.9%	7.2%	2.2%
3 ha (105)	17.8%	14.0%	9.9%	14.8%	10.8%	6.6%	10.6%	6.4%	2.0%

APPENDIX 2 THE IMPACT OF GRANT ON VIABILITY SCENARIO 4 (see tables 4a, 4b and 4c)
Variation in Value (at mid density and mid land value)
Acheived IRRs (%)
GRANT LEVEL 1 - £50,000/£25,000
70/30 % split in tenure assumed
Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

	Scenario 4a			Scenario 4b			Scenario 4c		
% Affordable:	30%			40%			50%		
Urban (Graph 1.1)	Table 2.19			Table 2.20			Table 2.21		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (35)	24.4%	19.0%	14.2%	22.5%	17.0%	11.9%	15.4%	9.0%	2.9%
1 ha (70)	23.7%	18.1%	13.2%	20.1%	14.3%	9.0%	16.8%	10.6%	4.9%
3 ha (210)	20.8%	15.9%	11.5%	17.9%	12.7%	8.0%	15.1%	9.7%	4.7%
Suburban (Graph 1.2)	Table 2.22			Table 2.23			Table 2.24		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (23)	22.3%	17.1%	11.9%	16.3%	10.8%	5.3%	12.7%	7.0%	1.3%
1 ha (45)	20.7%	15.5%	10.3%	16.3%	11.0%	5.6%	12.8%	7.2%	1.5%
3 ha (135)	18.0%	13.4%	8.9%	14.6%	9.8%	5.1%	11.9%	7.0%	2.1%
Rural (Graph 1.3)	Table 2.25			Table 2.26			Table 2.27		
Value:	High	Mid	Low	High	Mid	Low	High	Mid	Low
Site Area (Nr. Units)									
0.5 ha (18)	23.4%	19.0%	14.4%	18.5%	13.6%	8.5%	14.1%	9.2%	3.9%
1 ha (35)	20.2%	15.8%	11.1%	17.1%	12.7%	8.1%	13.6%	8.9%	4.0%
3 ha (105)	18.6%	14.8%	10.7%	15.8%	11.9%	7.7%	12.1%	8.0%	3.6%

APPENDIX 3

The Impact of Density on Viability

APPENDIX 3 THE IMPACT OF DENSITY ON VIABILITY
Mid outturn value and mid land value
Acheived IRRs (%)
NO GRANT
70/30 % split in tenure assumed
Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%
Density measured in dwellings per hectare (dph)

Assumptions	Urban	Suburban	Rural
Value Area	Mid	Mid	Mid
Land Value (per ha)	£3,400,000	£3,100,000	£2,800,000
Grant	*Adjusted - Grant Levels 1, 2 and 3*		
Density (dph)	*Adjusted - High, Mid and Low*		
Tenure Split	70/30	70/30	70/30

Affordable Percentage: **30%** **40%** **50%**

Urban (Graph 3.1) Table 3.1 Table 3.2 Table 3.3

Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	80	70	60	80	70	60	80	70	60
Site Area (ha)									
0.5	9.9%	13.6%	10.8%	5.7%	10.5%	5.7%	-1.1%	-1.8%	-1.5%
1	11.5%	13.2%	11.5%	6.4%	6.7%	5.9%	-1.2%	0.7%	-1.3%
3	10.3%	11.1%	9.8%	5.2%	5.9%	5.5%	-0.9%	0.8%	-0.1%

Suburban (Graph 3.2) Table 3.4 Table 3.5 Table 3.6

Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	55	45	35	55	45	35	55	45	35
Site Area (ha)									
0.5	8.1%	13.9%	11.7%	8.1%	4.9%	5.6%	-2.3%	-1.3%	-0.1%
1	7.3%	11.4%	9.6%	2.2%	4.5%	4.6%	-2.9%	-0.8%	-2.7%
3	7.5%	9.8%	7.4%	2.1%	4.4%	2.7%	-3.0%	0.1%	-3.2%

Rural (Graph 3.3) Table 3.7 Table 3.8 Table 3.9

Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	40	35	30	40	35	30	40	35	30
Site Area (ha)									
0.5	12.9%	16.1%	13.2%	7.7%	8.7%	6.2%	7.7%	1.9%	2.9%
1	12.9%	12.1%	10.4%	8.4%	7.0%	3.4%	2.9%	1.4%	-2.5%
3	12.0%	11.5%	8.8%	7.7%	7.3%	4.7%	2.8%	1.4%	-1.1%

APPENDIX 3 THE IMPACT OF DENSITY ON VIABILITY
Mid outturn value and mid land value
Acheived IRRs (%)
GRANT LEVEL 3 - £40,000/£0
70/30 % split in tenure assumed
Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%
Density measured in dwellings per hectare (dph)

Affordable Percentage:	30%			40%			50%		
Urban (Graph 3.1)	Table 3.28			Table 3.29			Table 3.30		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	80	70	60	80	70	60	80	70	60
Site Area (ha)									
0.5	14.1%	17.4%	14.3%	11.0%	14.9%	9.9%	6.0%	4.8%	4.8%
1	15.4%	16.3%	14.5%	11.7%	11.7%	10.5%	6.2%	7.1%	4.7%
3	13.8%	14.2%	12.6%	10.1%	10.4%	9.5%	5.6%	6.6%	5.1%
Suburban (Graph 3.2)	Table 3.31			Table 3.32			Table 3.33		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	55	45	35	55	45	35	55	45	35
Site Area (ha)									
0.5	12.1%	16.2%	14.1%	12.1%	8.6%	8.8%	3.4%	4.0%	4.0%
1	10.5%	14.1%	11.8%	6.7%	8.9%	7.5%	3.1%	4.6%	1.5%
3	10.3%	12.2%	9.3%	6.3%	8.0%	5.5%	2.4%	4.7%	0.8%
Rural (Graph 3.3)	Table 3.34			Table 3.35			Table 3.36		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	40	35	30	40	35	30	40	35	30
Site Area (ha)									
0.5	15.7%	18.1%	15.2%	12.0%	11.6%	9.2%	12.0%	6.5%	6.6%
1	15.7%	14.5%	12.2%	12.6%	11.0%	7.2%	8.3%	6.4%	1.9%
3	14.4%	13.7%	10.7%	11.3%	10.3%	7.4%	7.5%	5.7%	2.7%

APPENDIX 3 THE IMPACT OF DENSITY ON VIABILITY
Mid outturn value and mid land value
Acheived IRRs (%)
GRANT LEVEL 2 - £40,000/£15,000
70/30 % split in tenure assumed
Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%
Density measured in dwellings per hectare (dph)

Affordable Percentage:	30%			40%			50%		
Urban (Graph 3.1)	Table 3.19			Table 3.20			Table 3.21		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	80	70	60	80	70	60	80	70	60
Site Area (ha)									
0.5	14.8%	17.8%	14.7%	11.9%	15.5%	10.7%	7.2%	6.2%	5.6%
1	16.0%	16.9%	15.1%	12.5%	12.5%	11.2%	7.3%	8.2%	5.7%
3	14.3%	14.7%	13.1%	10.9%	11.1%	10.1%	6.7%	7.6%	6.0%
Suburban (Graph 3.2)	Table 3.22			Table 3.23			Table 3.24		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	55	45	35	55	45	35	55	45	35
Site Area (ha)									
0.5	12.5%	16.4%	14.1%	12.5%	9.4%	9.0%	4.6%	5.0%	4.5%
1	11.2%	14.5%	12.0%	7.5%	9.5%	8.0%	4.0%	5.3%	2.3%
3	10.7%	12.6%	9.6%	6.9%	8.6%	6.0%	3.3%	5.4%	1.4%
Rural (Graph 3.3)	Table 3.25			Table 3.26			Table 3.27		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	40	35	30	40	35	30	40	35	30
Site Area (ha)									
0.5	16.2%	18.4%	15.2%	12.6%	12.4%	9.4%	12.6%	7.4%	6.9%
1	16.2%	14.9%	12.6%	13.2%	11.4%	7.6%	9.1%	7.2%	2.7%
3	14.8%	14.0%	11.0%	11.8%	10.8%	7.8%	8.3%	6.4%	3.3%

APPENDIX 3 THE IMPACT OF DENSITY ON VIABILITY
Mid outturn value and mid land value
Acheived IRRs (%)
GRANT LEVEL 1 - £50,000/£25,000
70/30 % split in tenure assumed
Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%
Density measured in dwellings per hectare (dph)

Affordable Percentage:	30%			40%			50%		
Urban (Graph 3.1)	Table 3.10			Table 3.11			Table 3.12		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	80	70	60	80	70	60	80	70	60
Site Area (ha)									
0.5	16.4%	19.0%	15.9%	13.9%	17.0%	12.4%	9.9%	9.0%	7.8%
1	17.5%	18.1%	16.3%	14.4%	14.3%	12.8%	9.9%	10.6%	8.0%
3	15.6%	15.9%	14.1%	12.6%	12.7%	11.5%	9.1%	9.7%	8.0%
Suburban (Graph 3.2)	Table 3.13			Table 3.14			Table 3.15		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	55	45	35	55	45	35	55	45	35
Site Area (ha)									
0.5	13.8%	17.1%	14.7%	13.8%	10.8%	10.0%	6.9%	7.0%	5.9%
1	12.4%	15.5%	12.7%	9.2%	11.0%	9.1%	6.2%	7.2%	3.9%
3	11.7%	13.4%	10.3%	8.4%	9.8%	7.0%	5.3%	7.0%	2.8%
Rural (Graph 3.3)	Table 3.16			Table 3.17			Table 3.18		
Density:	High	Mid	Low	High	Mid	Low	High	Mid	Low
dph:	40	35	30	40	35	30	40	35	30
Site Area (ha)									
0.5	17.2%	19.0%	15.8%	14.0%	13.6%	10.4%	14.0%	9.2%	8.1%
1	17.2%	15.8%	13.3%	14.7%	12.7%	8.8%	11.1%	8.9%	4.4%
3	15.7%	14.8%	11.7%	13.1%	11.9%	8.8%	9.9%	8.0%	4.7%

APPENDIX 4

The Impact of Affordability Housing Tenure on Viability

APPENDIX 4 **THE IMPACT OF AFFORDABLE HOUSING TENURE MIX ON VIABILITY**

DTZ

A. Variation in Tenure Split at 30% Affordable Provision

Acheived IRRs (%)

Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

Assumptions	Urban	Suburban	Rural
Value Area	Mid	Mid	Mid
Land Value (per ha)	£3,400,000	£3,100,000	£2,800,000
Grant	*Adjusted - Nil and Grant Level 1*		
Density (dph)	70	45	35
Tenure Split	Adjusted - 70/30, 60/40 and 50/50		

Tenure Split %: **70/30** **60/40** **50/50**

Urban Mid Density Mid Value (Graph 4.1a and 4.1b)

Site Area (Nr. Units)	Grant:	Table 4.1 nil	Table 4.1 Grant 1	Table 4.2 nil	Table 4.2 Grant 1	Table 4.3 nil	Table 4.3 Grant 1
0.5 (35)		13.6%	18.9%	15.5%	20.2%	15.8%	20.2%
1 (70)		13.2%	18.6%	13.8%	18.6%	14.1%	18.6%
3 (210)		11.1%	15.9%	11.4%	15.9%	11.6%	15.9%

Suburban Mid Density Mid Value (Graph 4.2a and 4.2b)

Site Area (Nr. Units)	Grant:	Table 4.4 nil	Table 4.4 Grant 1	Table 4.5 nil	Table 4.5 Grant 1	Table 4.6 nil	Table 4.6 Grant 1
0.5 (23)		13.9%	17.7%	13.6%	17.5%	13.6%	17.5%
1 (45)		11.4%	17.1%	13.2%	17.0%	13.4%	17.0%
3 (135)		9.8%	14.1%	10.6%	14.1%	10.8%	14.0%

Rural Mid Density Mid Value (Graph 4.3a and 4.3b)

Site Area (Nr. Units)	Grant:	Table 4.7 nil	Table 4.7 Grant 1	Table 4.8 nil	Table 4.8 Grant 1	Table 4.9 nil	Table 4.9 Grant 1
0.5 (18)		16.1%	17.8%	14.4%	17.8%	14.4%	17.8%
1 (35)		12.1%	15.6%	11.6%	15.5%	11.9%	15.6%
3 (105)		11.5%	14.5%	11.3%	14.5%	11.5%	14.5%

APPENDIX 4 **THE IMPACT OF AFFORDABLE HOUSING TENURE MIX ON VIABILITY** DTZ

B. Variation in Tenure Split at 40% Affordable Provision

Acheived IRRs (%)

Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

Tenure Split %:	70/30		60/40		50/50	
Urban Mid Density Mid Value (Graph 4.1a and 4.1b)	Table 4.10		Table 4.11		Table 4.12	
Grant:	nil	Grant 1	nil	Grant 1	nil	Grant 1
Site Area (Nr. Units)						
0.5 (35)	10.5%	17.0%	11.1%	16.9%	11.3%	16.8%
1 (70)	7.7%	14.9%	8.0%	14.8%	8.6%	14.7%
3 (210)	5.9%	12.7%	6.4%	12.8%	6.6%	12.6%
Suburban Mid Density Mid Value (Graph 4.2a and 4.2b)	Table 4.13		Table 4.14		Table 4.15	
Grant:	nil	Grant 1	nil	Grant 1	nil	Grant 1
Site Area (Nr. Units)						
0.5 (23)	4.9%	10.8%	5.2%	10.7%	5.2%	10.7%
1 (45)	4.5%	11.0%	4.7%	10.9%	5.0%	10.8%
3 (135)	4.4%	9.8%	4.6%	9.8%	4.9%	9.7%
Rural Mid Density Mid Value (Graph 4.3a and 4.3b)	Table 4.16		Table 4.17		Table 4.18	
Grant:	nil	Grant 1	nil	Grant 1	nil	Grant 1
Site Area (Nr. Units)						
0.5 (18)	8.7%	13.6%	9.0%	13.6%	9.0%	13.6%
1 (35)	7.0%	12.7%	7.5%	12.7%	7.7%	12.7%
3 (105)	7.3%	11.9%	7.6%	11.9%	7.9%	11.9%

APPENDIX 4 **THE IMPACT OF AFFORDABLE HOUSING TENURE MIX ON VIABILITY** DTZ

C. Variation in Tenure Split at 50% Affordable Provision

Acheived IRRs (%)

Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

Tenure Split %:	70/30		60/40		50/50	
Urban Mid Density Mid Value (Graph 4.1a and 4.1b)	Table 4.19		Table 4.20		Table 4.21	
Grant:	nil	Grant 1	nil	Grant 1	nil	Grant 1
Site Area (Nr. Units)						
0.5 (35)	-1.8%	9.0%	-1.2%	8.9%	-1.0%	8.8%
1 (70)	0.7%	10.6%	1.1%	10.6%	1.5%	10.5%
3 (210)	0.8%	9.7%	1.3%	9.6%	1.7%	9.6%
Suburban Mid Density Mid Value (Graph 4.2a and 4.2b)	Table 4.22		Table 4.23		Table 4.24	
Grant:	nil	Grant 1	nil	Grant 1	nil	Grant 1
Site Area (Nr. Units)						
0.5 (23)	-1.3%	7.0%	-1.1%	6.9%	-0.7%	6.8%
1 (45)	-0.8%	7.2%	-0.5%	7.1%	-0.1%	7.0%
3 (135)	0.1%	7.0%	0.4%	7.0%	0.8%	6.9%
Rural Mid Density Mid Value (Graph 4.3a and 4.3b)	Table 4.25		Table 4.26		Table 4.27	
Grant:	nil	Grant 1	nil	Grant 1	nil	Grant 1
Site Area (Nr. Units)						
0.5 (18)	1.9%	9.2%	2.3%	9.1%	2.3%	9.1%
1 (35)	1.4%	8.9%	1.8%	8.9%	2.3%	8.9%
3 (105)	1.4%	8.0%	1.8%	7.9%	2.2%	7.9%

APPENDIX 5

The Viability Of Small Sites

APPENDIX 5 - THE VIABILITY OF SMALL SITES
Small Sites Under 10 Units
Acheived IRRs (%)

Sites assessed at medium density, mid outturn value and mid land value at the standard 70/30 % tenure split
Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

Assumptions	Urban	Suburban	Rural
Value Area	Mid	Mid	Mid
Land Value (per ha)	£3.4m	£3.1m	£2.8m
Grant	*Adjusted*		
Density (dph)	70	45	35
Tenure Split	70/30	70/30	70/30

Affordable Percentage: **30%**

Urban (Graph 5.1) Table 5.1

Units	Grant: nil	1	2	3
9	15.0%	21.8%	20.1%	19.3%
7	21.7%	29.1%	27.6%	27.6%
5	3.9%	14.0%	11.9%	11.9%
4	9.5%	15.4%	14.2%	14.2%
3	6.9%	15.7%	13.9%	13.9%

Suburban (Graph 5.2) Table 5.4

Units	Grant: nil	1	2	3
9	14.9%	20.5%	19.1%	18.4%
7	13.9%	19.4%	18.3%	18.3%
5	5.4%	13.7%	12.0%	12.0%
4	26.1%	30.7%	29.7%	29.7%
3	15.6%	22.1%	20.7%	20.7%

Rural (Graph 5.3) Table 5.7

Units	Grant: nil	1	2	3
9	17.5%	23.3%	20.6%	20.0%
7	22.9%	27.7%	31.8%	31.1%
5	18.5%	29.4%	48.0%	47.0%
4	19.5%	23.1%	22.2%	22.2%

40%

Table 5.2

nil	1	2	3
9.3%	19.2%	16.9%	16.0%
14.7%	26.3%	23.3%	22.1%
3.9%	14.0%	11.9%	11.9%
-8.9%	4.2%	1.4%	1.4%
6.9%	15.7%	13.9%	13.9%

Table 5.5

nil	1	2	3
8.6%	16.8%	14.8%	14.1%
5.8%	14.6%	12.5%	11.6%
5.4%	13.7%	12.0%	12.0%
10.2%	20.6%	18.4%	18.4%
15.6%	22.1%	20.7%	20.7%

Table 5.8

nil	1	2	3
11.3%	20.8%	16.1%	15.4%
15.6%	23.3%	27.3%	26.6%
18.5%	25.6%	43.8%	42.8%
8.1%	17.0%	15.0%	15.0%

50%

Table 5.3

nil	1	2	3
9.3%	19.2%	16.9%	16.0%
14.7%	26.3%	23.3%	22.1%
3.9%	14.0%	11.9%	11.9%
-8.9%	4.2%	1.4%	1.4%
6.9%	15.7%	13.9%	13.9%

Table 5.6

nil	1	2	3
8.6%	16.8%	14.8%	14.1%
5.8%	14.6%	12.5%	11.6%
5.4%	13.7%	12.0%	12.0%
10.2%	20.6%	18.4%	18.4%
15.6%	22.1%	20.7%	20.7%

Table 5.9

nil	1	2	3
11.3%	20.8%	16.1%	15.4%
15.6%	23.3%	27.3%	26.6%
18.5%	25.6%	43.8%	42.8%
8.1%	17.0%	15.0%	15.0%

3	15.5%	30.1%	19.6%	19.6%	15.5%	20.7%	19.6%	19.6%	15.5%	20.7%	19.6%	19.6%

APPENDIX 6

The Impact of Tarrifs on Viability

APPENDIX 6 THE IMPACTS OF TARIFFS ON VIABILITY

Small Sites Tariff

Sites assessed at medium density, mid outturn value and mid land value at the standard 70/30 % split

Red indicates not viable, i.e. for sites > or = 50 units if IRR is < 12.5% and for sites < 50 units if IRR is < 10%

Assumptions on unit numbers and habitable rooms:

Unit	Hab Rooms
One Bed Flat	2
Two Bed Flat	3
Three Bed Flat	4
Two Bed House	3
Three Bed House	4
Four Bed House	5
Five Bed House	7

Other Assumptions:

	Urban	Suburban	Rural
Value Area	Mid	Mid	Mid
Land Value (per ha)	£3,400,000	£3,100,000	£2,800,000
Grant	Nil	Nil	Nil
Density (dph)	70	45	35
Tenure Split	70/30	70/30	70/30

Tariff per Private Unit Onsite

Urban

Nr. Units	Tariff per unit										
	£30,000	£35,000	£40,000	£45,000	£50,000	£55,000	£60,000	£65,000	£70,000	£75,000	£80,000
9	19.7%	18.0%	16.3%	14.5%	12.6%	10.7%	8.8%	6.8%	4.7%	2.6%	0.3%
7	25.3%	23.6%	21.9%	20.1%	18.2%	16.4%	14.4%	12.4%	10.4%	8.3%	6.1%
5	15.0%	13.2%	11.3%	9.4%	7.4%	5.4%	3.3%	1.1%	-1.1%	-3.5%	-6.0%
4	10.4%	8.5%	6.5%	4.5%	2.4%	0.2%	-2.0%	-4.3%	-6.8%	-9.3%	-12.0%
3	12.3%	10.3%	8.2%	6.1%	3.8%	1.5%	-0.9%	-3.4%	-6.1%	-8.8%	-11.8%

Suburban

Nr. Units	Tariff per unit										
	£30,000	£35,000	£40,000	£45,000	£50,000	£55,000	£60,000	£65,000	£70,000	£75,000	£80,000
9	23.1%	21.8%	20.5%	18.4%	17.7%	16.3%	14.8%	13.3%	11.8%	10.2%	8.6%
7	21.1%	19.7%	18.4%	17.0%	15.6%	14.2%	12.7%	11.2%	9.7%	8.1%	6.5%
5	20.4%	19.1%	17.7%	16.3%	14.8%	13.3%	11.8%	10.3%	8.7%	7.1%	5.4%
4	29.2%	28.0%	26.8%	25.6%	24.3%	23.0%	21.7%	20.4%	19.0%	17.6%	16.2%
3	23.3%	22.0%	20.7%	19.3%	18.0%	16.6%	15.1%	13.7%	12.2%	10.6%	9.1%

Rural

Nr. Units	Tariff per unit										
	£30,000	£35,000	£40,000	£45,000	£50,000	£55,000	£60,000	£65,000	£70,000	£75,000	£80,000
9	25.0%	23.8%	22.7%	21.5%	20.3%	19.1%	17.8%	16.6%	15.3%	14.0%	12.7%
7	27.3%	26.2%	25.1%	24.0%	22.8%	21.6%	20.4%	19.2%	18.0%	16.7%	15.5%
5	28.0%	26.9%	25.8%	24.6%	23.5%	22.3%	21.1%	19.9%	18.6%	17.4%	16.1%
4	24.3%	23.1%	21.9%	20.6%	19.4%	18.1%	16.8%	15.4%	14.0%	12.6%	11.2%
3	24.1%	23.0%	21.9%	20.7%	19.5%	18.4%	17.1%	15.9%	14.7%	13.4%	12.1%

Tariff per Private Habitable Room Onsite

Urban

Nr. Units	Tariff per hab room								
	£5,000	£7,500	£10,000	£12,500	£15,000	£17,500	£20,000	£22,500	£25,000
9	24.8%	22.5%	20.1%	17.6%	15.1%	12.4%	9.7%	6.8%	3.8%
7	30.2%	27.8%	25.3%	22.7%	20.1%	17.3%	14.4%	11.4%	8.3%
5	20.6%	18.2%	15.8%	13.2%	10.6%	7.8%	5.0%	2.0%	-1.1%
4	16.6%	14.5%	12.2%	9.9%	7.5%	5.0%	2.4%	-0.3%	-3.1%
3	19.3%	17.2%	15.0%	12.7%	10.3%	7.9%	5.3%	2.7%	-0.1%

Suburban

Nr. Units	Tariff per hab room								
	£5,000	£7,500	£10,000	£12,500	£15,000	£17,500	£20,000	£22,500	£25,000
9	26.4%	24.2%	21.9%	19.6%	17.2%	14.7%	12.1%	9.4%	6.6%
7	24.4%	22.2%	19.9%	17.6%	15.2%	12.7%	10.1%	7.4%	4.6%
5	23.9%	21.6%	19.4%	17.0%	14.5%	12.0%	9.3%	6.6%	3.7%
4	31.8%	29.7%	27.4%	25.1%	22.7%	20.2%	17.6%	15.0%	12.2%
3	26.6%	24.5%	22.4%	20.2%	18.0%	15.6%	13.2%	10.6%	8.0%

Rural

Nr. Units	Tariff per hab room								
	£5,000	£7,500	£10,000	£12,500	£15,000	£17,500	£20,000	£22,500	£25,000
9	26.9%	24.6%	22.1%	19.6%	17.0%	14.3%	11.4%	8.5%	5.3%
7	29.0%	26.6%	24.1%	21.6%	18.9%	16.1%	13.2%	10.2%	7.0%
5	29.7%	27.3%	24.9%	22.3%	19.6%	16.8%	13.9%	10.9%	7.7%
4	26.7%	24.3%	21.9%	19.4%	16.8%	14.0%	11.2%	8.2%	5.0%
3	25.9%	23.5%	21.1%	18.6%	15.9%	13.2%	10.3%	7.2%	4.1%

APPENDIX 6 - Small Sites Tariff continued

Tariff per Private Gross Internal Area Onsite

Urban

Nr. Units	Tariff per square foot									
	£40	£45	£50	£55	£60	£65	£70	£75	£80	£85
9	19.0%	17.7%	16.3%	14.8%	13.4%	11.9%	10.3%	8.8%	7.2%	5.5%
7	24.3%	22.9%	21.4%	19.9%	18.4%	16.9%	15.3%	13.7%	12.0%	10.4%
5	14.7%	13.3%	11.8%	10.3%	8.8%	7.3%	5.7%	4.1%	2.4%	0.7%
4	10.8%	9.5%	8.1%	6.7%	5.3%	3.8%	2.3%	0.7%	-0.9%	-2.5%
3	13.3%	12.0%	10.6%	9.1%	7.7%	6.2%	4.7%	3.1%	1.5%	-0.1%

Suburban

Nr. Units	Tariff per square foot									
	£40	£45	£50	£55	£60	£65	£70	£75	£80	£85
9	21.1%	19.8%	18.5%	17.2%	15.8%	14.4%	13.0%	11.6%	10.1%	8.6%
7	19.0%	17.7%	16.4%	15.1%	13.7%	12.4%	10.9%	9.5%	8.0%	6.5%
5	18.4%	17.0%	15.7%	14.3%	12.9%	11.5%	10.0%	8.5%	7.0%	5.4%
4	26.5%	25.3%	24.0%	22.6%	21.3%	19.9%	18.5%	17.1%	15.6%	14.1%
3	21.6%	20.4%	19.2%	17.9%	16.6%	15.3%	14.0%	12.6%	11.3%	9.8%

Rural

Nr. Units	Tariff per square foot									
	£40	£45	£50	£55	£60	£65	£70	£75	£80	£85
9	21.3%	19.9%	18.5%	17.1%	15.6%	14.1%	12.6%	11.0%	9.4%	7.7%
7	23.2%	21.8%	20.4%	18.9%	17.5%	15.9%	14.4%	12.8%	11.1%	9.4%
5	23.9%	22.5%	21.1%	19.6%	18.1%	16.6%	15.0%	13.4%	11.7%	10.0%
4	21.1%	19.7%	18.3%	16.9%	15.5%	14.0%	12.5%	10.9%	9.3%	7.7%
3	20.4%	19.0%	17.6%	16.2%	14.8%	13.3%	11.8%	10.2%	8.6%	7.0%

Maximum Tariff

	£ per Unit		£ per Hab rooms		£ per GIF Area	
	All	Majority	All	Majority	All	Majority
Urban	£30,000	£40,000	£12,500	£15,000	£40	£55
Suburban	£65,000	£75,000	£17,500	£20,000	£70	£80
Rural	£80,000	£80,000	£20,000	£20,000	£75	£75

APPENDIX 7

The Internal Rate of Return; Explanatory Notes

APPENDIX 7 –

Internal Rate of Return (IRR)

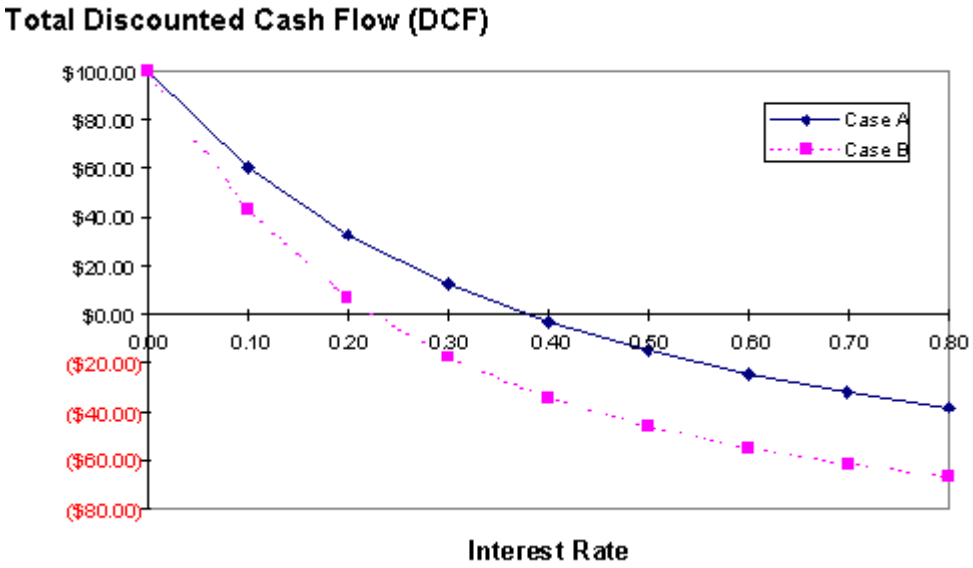
Internal rate of return (IRR) is the rate of return on an investment. The IRR of an investment is the discount rate for which the total present value of future cash flows equals the cost of the investment. In other words, it is the interest rate, which produces a zero Net Present Value (NPV).

The NPV formula is defined as:

$$NPV = I_0 + \frac{I_1}{1+r} + \frac{I_2}{(1+r)^2} + \ldots + \frac{I_n}{(1+r)^n}$$

Where
I = Future Cash Flows
r = Interest Rate

The IRR calculation is used to derive the value of the interest rate (r), given a series of net future cash flows (I), which would discount the value of the net future cash flows to zero. The calculation is performed iteratively, where a computer program initially guesses the value of r, and then continuously refines itself, until the equation yields a result at or near zero. Probably the best way to illustrate IRR quickly is with the help of the graph below.



These curves are based on two different investments cash flow scenarios; Case A and Case B. We have used nine different interest rates, from 0% up to 80%, in steps of 10%. As one would expect, as the interest rate used for calculating NPV of the cash flow stream increases, the resulting NPV decreases. For Case A, an interest rate of 38% produces NPV or Discounted Cash Flow (DCF) of zero, whereas Case B reaches zero with an interest rate of 22%. Case A therefore has an IRR of 38%, Case B an IRR of 22%. Which is the better Investment? Other things being equal, the one with the higher IRR.

Would an investment with an IRR of, say 75% be a better investment? The answer is YES. Another way to think of IRR is this: IRR tells one the interest rates required to "wipe out" the value of this investment. For the Case A cash flow, the prevailing interest rate would have to rise to 38% to make this investment worthless or nil. The Case B investment would become worthless if interest rates rose to 22%.

Source website:
http://searchcrm.techtarget.com/expert/KnowledgebaseAnswer/0,289625,sid11_gci1244411,00.html and http://www.solutionmatrix.com/internal-rate-of-return.html

APPENDIX 8

Unit Mix Assumptions

APPENDIX 8
DTZ UNIT MIX ASSUMPTIONS

	Site Size (ha)
Small	0 - 0.25
	0.25 - 0.5
Medium	0.5 - 1.0
	1.0 - 3.0
Large	3.0 - 6.0
	6.0+

Urban

Urban Small
High Density
80 dph

Unit	Percentage
Studio	10%
1 bed flat	35%
2 bed flat	35%
3 bed flat	20%
	100%

Urban Medium
Medium Density
70 dph

Unit	Percentage
Studio	5%
1 bed flat	30%
2 bed flat	30%
3 bed flat	15%
2 bed townhouse	10%
3 bed townhouse	10%
	100%

Urban Large
Low Density
60 dph

Unit	Percentage
Studio	5%
1 bed flat	25%
2 bed flat	25%
3 bed flat	10%
2 bed townhouse	17.5%
3 bed townhouse	17.5%
	100%

Suburban

Suburban Small
High Density
55 dph

Unit	Percentage
1 bed flat	30%
2 bed flat	30%
3 bed flat	15%
2 bed townhouse	12.5%
3 bed townhouse	12.5%
	100%

Suburban Medium
Medium Density
45 dph

Unit	Percentage
1 bed flat	20%
2 bed flat	20%
3 bed flat	5%
2 bed townhouse	20%
3 bed townhouse	25%

4 bed house	10%
	100%

Suburban Large
Low Density
35 dph

Unit	Percentage
1 bed flat	15%
2 bed flat	15%
2 bed townhouse / house	20%
3 bed townhouse / house	35%
4 bed house	10%
5 bed house	5%
	100%

Rural

Rural Small
High Density
40 dph

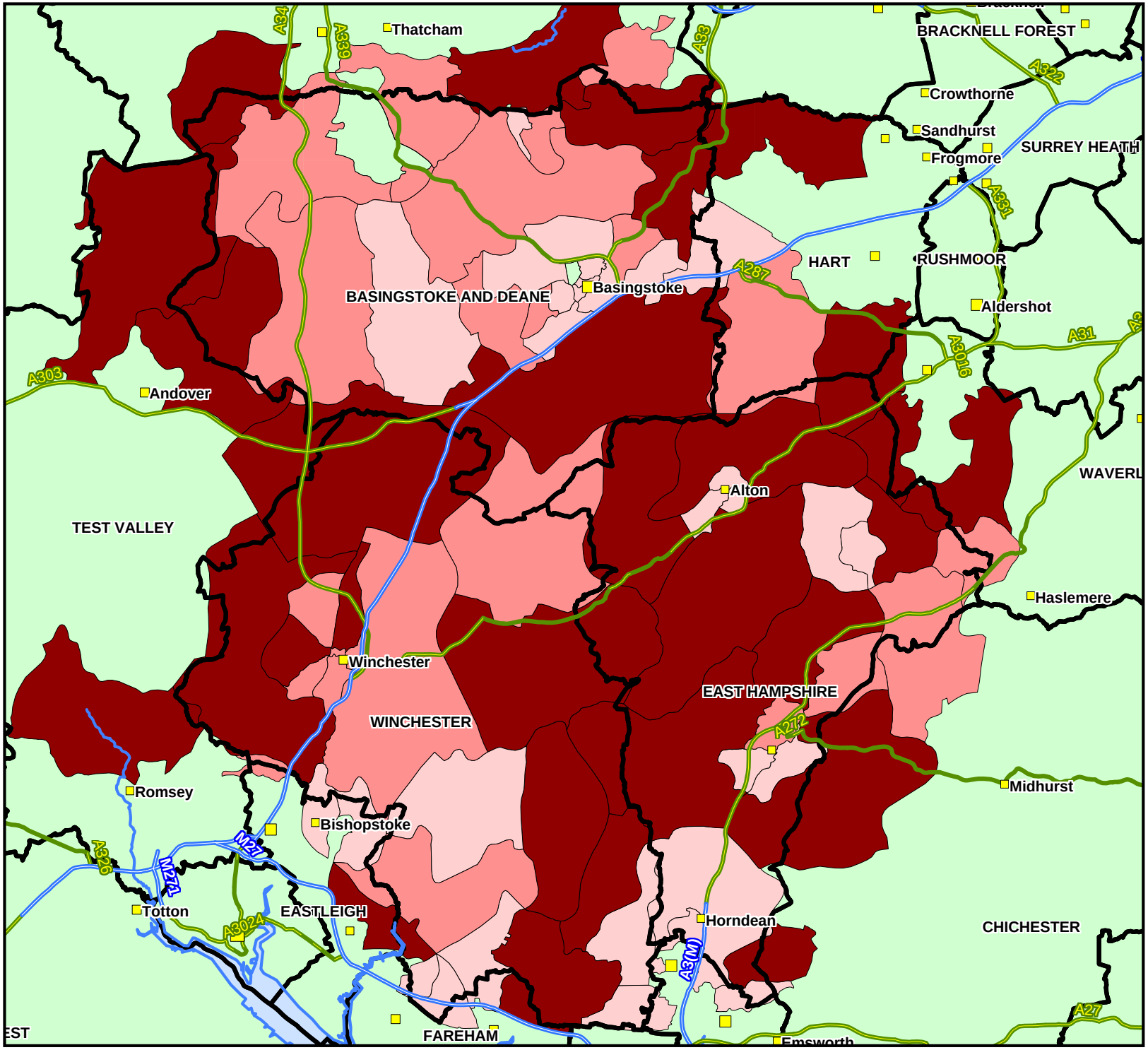
Units	Percentage
1 bed flat	5%
2 bed flat	5%
2 bed house	45.0%
3 bed house	45.0%
	100.0%

Rural Large
Low Density
30 dph

Units	Percentage
1 bed flat	5.0%
2 bed flat	5.0%
2 bed house	20.0%
3 bed house	35.0%
4 bed house	22.5%
5 bed house	12.5%
	100.0%

APPENDIX 9

Central Hampshire House Price Areas



CENTRAL HAMPSHIRE

House Prices by Post Sector
Q3&4 2007

Low	(30)
Medium	(24)
High	(28)

DTZ

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APPENDIX 10

Development Appraisal Toolkits

Model	Description	Aims	Users	Advantages	Disadvantages
Housing Corporation Economic Appraisal Tool	The economic appraisal toolkit was developed by GVA Grimley and Bespoke property group. The model works using a cash-flow and a residual site value.	- Understanding the economics of any particular development site in order to measure precisely the amount of SHG that is required to deliver the desired amount of affordable housing alongside planning gain contributions. - Comparison of residual value with development land in the local area or existing use value	Originally built for the Housing Corporation but now available to all.	- Ease of use - Highly accurate - Allows for mixed uses - Allows for phasing - Based on widely understood residual valuation technique - Results can be easily interpreted by comparison with the market - Sensitivity analysis can be undertaken	- Very sensitive valuation - Small errors or inaccuracies can have a disproportionate effect on the answer - Highly dependent on the inputting of accurate and realistic assumptions - No affordable housing revenue calculation
GLA "Three Dragons" Toolkit	The development control toolkit provides the user with an assessment of the economics of residential development for specific schemes. The main output of the toolkit is residual value. The toolkit estimates the impact of affordable housing on the residual. Whether or not this impact is such that the viability of the development is impeded, is a judgement that has to be made by the user.	- Residual site value - Residual if 100% market housing - Revenue for specified % of affordable housing - Impact of wider planning obligations	Designed to assess schemes referred to the GLA.	- Allows user to test economic implications of different types and amounts of planning obligation and the amount of affordable housing - Allows for sensitivity analysis	- Default variables specific to London and based on 2006 values - Lack of cashflow effects the results for schemes with long build-out periods - Inability to deal with mixed use schemes - Guidance notes focus too much on the technical side to the toolkit and less on the interpretation
Circle Developer	Circle Developer is the Industry standard development appraisal software that prepares timed cash flows and a residual land value.	- Residual site value - Development appraisal	Owners, commercial developers, house builders, land developers, agents and financial institutions.	- Highly accurate - Allows for mixed use - Multi-phased graphical interface - Unlimited project size and number of phases - Sensitivity analysis with up to four dimensions - Timed cash flow - Project template facility - Allows for use of investment performance measurements (e.g. IRR) - Clear reporting and outputs	- Expensive - Need specific training to use - No step by step guide - Helpline always very busy - Does not allow inputting of a mixture of residential units in addition to floor areas - Cannot export data from excel - No affordable housing revenue specified