

## NORTH WEST CAMBRIDGE AREA ACTION PLAN (NWC AAP) - LAND BUDGET PAPER

1.1 This paper looks at the identified developable area of the NWC AAP and the extent to which it can meet the known development aspirations of Cambridge University.

### Site Footprint

1.2 Total developable area identified in the Preferred Options AAP was 69 hectares (ha) (a site footprint area of 68.89 ha). It is proposed to increase this in the Submission Draft AAP to 73ha (a site footprint of 72.76 ha). The area enclosed by the boundary of the NW AAP totals: 164.82 ha.

### University Aspirations

1.3 The University provided evidence to the Cambridge Local Plan Local Plan Inquiry in 2005, which summarised their development aspirations at North West Cambridge (Proof of Evidence No 1), these have not changed significantly since then. In summary these are as follows:

- An indicative requirement of 2,000 to 2,500 dwellings
- Housing for 2,000 students
- 100,000 m<sup>2</sup> for academic and research space

**Table 1 Land Budget Summary**

Land Use	Assumptions	Ha Built development in bold
<b>Total Land Budget</b>	The area covered by the AAP	<b>164.82 ha</b>
<b>Site Footprint</b>	Area of built development provided for in the AAP	<b>72.76 ha</b>
1. Student Accommodation	2,000 units, comprising 840 undergraduate (UG) and 1,160 postgraduate (PG) units	<b>10.5 ha</b>
2. Employment, academic uses and research and development	Total 100,000 m <sup>2</sup> D1 & B1(b) & Sui-Generis uses	<b>11.3 ha</b>
3. Local Centre	Local retailing, and community services including a primary school, with 150 residential apartments above	<b>4.0 ha providing 150 dwellings</b>
4. Housing	The balance of the site available for development at 50 dph (72.76 ha minus 10.5, 11.3, 4.0, 0.97 and 2.48..	<b>43.51 ha providing 2,175</b>

	Note the 0.97 ha figure relates to the existing World Conservation Monitoring Centre site and the 2.48 is the area of the two key distributor roads.)	<b>dwelling</b> s
5. Total of built development		<b>72.76 ha</b>
6. Outdoor sports, allotments and informal open space	Based on a maximum population assumed to be between 5,200 (for 2,000 dwellings) and 6,500 (for 2,500 dwellings) plus 2,000 students.	Between 23.0 to 28.0 ha plus provision for students if required
7. Other public open space	The remainder of the site.	Between around 61 ha and 69 ha
<b>Councils' preferred footprint dwelling capacity</b>	<b>43.51 ha for 2,175 dwellings, &amp; 150 dwellings in the local centre</b>	<b>2,325 dwellings</b>

The land use budget is illustrated on the attached map. This has been informed by the Concept Diagram, and the University Masterplan from 2005. It is not intended to provide any masterplanning guidance and the land uses could be disposed across the site in other ways than those shown.

## Explanatory Comments and references

### Site Footprint

This is the area proposed to be developed in the Submission AAP, arising from the Issues and Options and Preferred Options stages of the AAP and as proposed to be extended following further scrutiny.

#### 1. Student Accommodation

Of the 2,000 units it is likely that there would be a split in provision between those for undergraduates and those for postgraduates. The University evidence to the Cambridge Local Plan Inquiry, Proof of Evidence No2 Staff and Student Housing Needs, at paragraph 5.3 (6) states that student housing is developed at 150-200 units/ha for postgraduates and 200-250 units/ha for undergraduates. This information appears robust when compared to other monitoring information held by the City. Table 5 of the proof gives student bedroom requirements 2004-2025 and yields a net requirement for 931 UG units (42%) and 1,303 PG units (58%). These percentages have been used to derive the split between Postgraduate (PG) and Undergraduate (UG) in respect of the 2,000 student units to be provided at NW Cambridge.

On this basis the land take for the UG units will be between 3.36 ha and 4.2 ha whilst the land take for the PG units will be between 5.8 ha and 7.73 ha. The range therefore varies from 9.16 to 11.93 ha (rounded to 9.2 to 11.9 ha). The average of the two being 10.55 ha rounded to **10.5 ha**

## 2. Employment, Academic and Research and Development

The approach to the calculation of land budget estimates for employment and academic uses was based upon an examination of actual floorspace, average number of storeys, and site area constructed upon, on a number of other sites in and around the City. These comprised B1(b) and D1 types of development and included the developed parts of the University's West Cambridge campus south of Madingley Road. In the case of Addenbrooke's the figures are based upon an approved planning consent. The spreadsheet used is reproduced below and can usefully model what the floorspace would result assuming a given form of development. Using the model in reverse the floorspace can be used to predict how much land would be required given development at the shown density. Allowing for rounding the floorspace shown on the North West Cambridge entry generates a demand for 6.80ha to accommodate 60,000 m<sup>2</sup> or thereabouts of D1 use, and 4.50ha to accommodate just under 40,000 m<sup>2</sup> of B1(b) space.

This 60:40 split is derived as follows. Policy 9/2c of the Cambridgeshire Structure Plan indicates that the site should be reserved for predominantly University-related uses. The Cambridge Local Plan 2006 at policy 9/7 added greater detail to this split, within the City boundary by apportioning land takes to higher education uses and student accommodation (14 ha) and research uses based on the University requirements at the time (6 ha). It was this ratio that was used to generate the 70:30 split between academic uses and research uses in the North West Area Action Plan Preferred Option report. However the 14 ha figure includes land for student housing. This makes the assumptions behind 70:30 split included in the Preferred Options report unreliable. To recalculate the split of employment uses one must first estimate what land take the student housing would use. To estimate the land take of the student housing some assumptions need to be made regarding the density of student development (these are set out above at section 1). Taking the 10.55 ha figure budgeted for student residential provision and then halving it gives 5.27 ha. This being on the assumption that about half of the student housing would be in each District. It follows that the land take for higher education uses included in policy 9/7 of the Cambridge Local Plan 2006 minus the land assumed for student housing is:  $14 - 5.27 = 8.73$  ha. This gives a division of 8.73 ha to 6 ha equating roughly to a 60:40 split. In the absence of any more detailed evidence from the University this split will be used. It has been based upon figures which have gone through the inquiry process for the Cambridge Local Plan, which is an advantage. It also maintains predominantly University-related uses in the employment uses on the site whilst increasing flexibility in future provision.

Therefore employment development at North West Cambridge will constitute:

- Up to 60,000 m<sup>2</sup> within Use Class D1 - higher education uses  
Area: 6.80 Ha
- Up to 40,000 m<sup>2</sup> within Use Class B1(b) & Sui Generis - academic and commercial research  
Area: 4.50 Ha

Total 100,000 m<sup>2</sup> D1 & B1(b) & Sui Generis. Based upon evidence from developments elsewhere in Cambridge it is considered that this provision could be met on an area of **11.3 Ha**. This is considerably less than the 35.5 ha requirement that the University Masterplan assumed which would have provided only 2,819 m<sup>2</sup> of floorspace per hectare a rate much lower than recent comparable schemes in Cambridge. Furthermore at this density of development it is difficult to see how it could function on the edge of the site as a noise barrier for the residential development behind. This calculation is based upon the following assumptions:

- 15% reduction for total landscaping
- Average of 4-storey and 26% building to plot cover (based on the analysis of similar schemes in the City and fringes, see following table)
- Overall density at 8,000m<sup>2</sup> per hectare

**Table 2 Employment Land Budget Estimates**

Location	Type/use	Tot Area (Acres)	Tot Area (ha)	Less Landscape 15% reduction (Acres)	Cover %	No of Storeys	Floorspace (sq ft)	Density	Sqm/ha
Cambridge Business Park	B1a	15.0	6.07	12.75	22	2	22,701	244,365	3,740
West Cambridge D1	D1	20.71	8.38	17.60	26	4	74,078	797,397	8,840
West Cambridge Commercial	B1b	25.11	10.16	21.34	25	3	64,769	697,192	6,375
Addenbrooke's 20/20inc MRC LMB	B1b	26.09	10.56	22.18	23	5.5	113,545	1,222,226	10,752
MRC on own within above	B1b	12.48	5.05	10.61	26	3	33,481	360,399	6,630
St Johns Milton Rd	B1b	1.98	0.80	1.68	20	2	2,720	29,278	3,400
NW Cambridge D1	D1	16.80	<b>6.80</b>	14.28	26	4	60,111	647,052	8,840
NW Cambridge Commercial	B1b and Sui-Gen	11.12	<b>4.50</b>	9.45	26	4	39,779	428,196	8,840

Note that in the above table the NW sites are as proposed at the NW site, they are not existing developments like the other entries.

### 3. Local Centre

The AAP identifies that the Local Centre should provide for the following land uses:

- Primary School and pre-school care (2.3 hectares of which the County confirm that 0.5 hectares would be open space which could be located in the green corridor outside the developable area). Net 1.8 ha
- Appropriate level of local shopping
- Library and Lifelong learning centre

- d. Flexible community meeting rooms
- e. Provision for the emergency services including the police
- f. A Children's play space
- g. Neighbourhood recycling point
- h. Small-scale local B1 employment uses, under 300sqm, will be provided within the local centre as demand requires, of an appropriate scale to a generally residential area

In the absence of a detailed study into the requirements for the Local Centre in Cambridge North-West, the Clay Farm application in the Southern Fringe has been used as the basis for working out the likely provision. For Clay Farm (up to 2,300 units) the Local Centre breakdown is as follows:

A1 Retail: Local Supermarket 500 m<sup>2</sup> + 4x other A1 totalling 550 m<sup>2</sup>  
 A2 Financial and Professional Services: 240 m<sup>2</sup>  
 A3 Restaurant/Cafe: 200 m<sup>2</sup>  
 A4 Drinking establishment: 450 m<sup>2</sup>  
 A5 Takeaway: 360 m<sup>2</sup>  
 D1 Nursery: 600 m<sup>2</sup> (no residential above)  
 D1/sui generis: 150 m<sup>2</sup>  
 Community Centre 650 m<sup>2</sup>  
 Primary Health Care Centre 1,000 m<sup>2</sup>  
 Total 4,700 m<sup>2</sup>, but deducting 600 m<sup>2</sup>, a useable total of 4,100 m<sup>2</sup>.

The Clay Farm planning application provides a site of 1.86 ha to accommodate the above provision. Note that the planning application does not currently make provision for a library with a floorspace of 350 m<sup>2</sup>.

The local centre for Cambridge North-West will also include part of the total site required for a primary school of 2.3 ha. The playing fields for the primary school could be located outside of the developable area leading to a net requirement 1.8 ha of land from the developable area.

It can also be assumed that the upper floors of retail units in the Local Centre may meet some of the housing land needs (approximately 150 units) through the creation of a mixed use development (see Housing Section below).

**Table 3 Indicative Local Centre land take**

Local Centre Facilities	4,100 m <sup>2</sup> + circulation/service space	1.86 ha
Primary School	2.3ha total site requirement – playing fields 0.5ha to be provided in the adjoining open space	1.8 ha
	<b>Total</b>	<b>3.66 ha rounded to 4.0 hectares to provide for a library and for some flexibility in provision</b>

Note that future planning will be informed by a better understanding of the need for retail and community services on the site in the context of provision on the NIAB site and on the West Cambridge site. This may affect the area needed to provide the local centre and by implication the extent of the residential to be provided on upper floors.

#### 4. Housing

Given the importance of housing to meeting the housing needs of the University and to the viability of the development this budget assumes that the rest of the developable area will be developed for residential. The average net dwelling density of 50 dph (net) assumes a density gradient from a floor represented by the national minimum of 30dph (net) to an unspecified upper ceiling dependent upon factors such as design quality and residential amenity. The highest densities to be provided around the local centre and close to public transport stops. 150 dwellings could be provided within a mixed used local centre on the upper floors above retail and other service uses (see below and the Local Centre section).

Net dwelling density (from PPS3): Net dwelling density is calculated by including only those site areas which will be developed for housing and directly associated uses, including access roads within the site, private garden space, car parking areas, incidental open space and landscaping and children's play areas, where these are provided.

The land use budget assumes that significant landscaping, informal open space and sports provision can be made outside of the land budget assumed for residential development. Some of the sports pitch allocation may be commuted given the topography of the site much of which is not well suited to the provision of sports pitches.

Some land allowance also needs to be made for the two main distributor roads through the site, which are not allowed for in the definition of net dwelling density from PPS3. This loss impacts upon both the development footprint and upon the public open space provision.

There will be two distribution roads on the site, one running directly from Huntingdon Road to Madingley Road and providing for north-east to south-west movements and one running from Huntingdon Road to join the first road towards the centre of the site and providing for north-west to south-east movements through the site.

The County Council as Highway Authority have provided indicative widths for both roads as set out below, and which would be the maximum that may be required. Any reduction in width would free more land for development.

Huntingdon Road link to Road B	Huntingdon Road to Madingley Road Link (Road B)
Two 2-metre footways	Two 2-metre footways

Two 1.5 metre cycleways	Two 1.5 metre cycleways
Two 2.5 metre traffic lanes	Two 3-metre bus lanes
	Two 2.5 metre traffic lanes
Total width 12 metres	Total width 18 metres

The attached plan shows the indicative route of these roads, and the following table provides the of the length of each section of road in metres, an estimate of the area of each section in hectares and whether its provision would lead to a loss of developable area or open space.

Huntingdon Road link to Road B - 12 metre width				Huntingdon Road to Madingley Road Link (Road B) – 18 metre width			
Section	Length	Area	Loss of Developable Area	Section	Length	Area	Loss of Developable Area
A1	1,200	14,400	Yes	B1	275	4,950	No
				B2	577	10,386	Yes
				B3	520	9,360	No
Loss of developable area				Loss of developable area			
14,400 sq metres				10, 386 sq metres			

The total loss of developable are is 24,786 sq metres or 2.48 hectares. At 50 dwellings per hectare this brings the capacity of the site footprint down by approximately 124 dwellings of which approximately 72 would be in South Cambridgeshire and 52 in Cambridge if one assumes a loss of 14,400 sq m in South Cambridgeshire and 10,383 sq m in the City.

In the Local Centre, excluding the Nursery and using figures from the Clay Farm proposal there is likely to be around 4,100 sq m of ground floor floorspace where it should be possible to have residential uses on the upper floors. Taking an average of 66 m<sup>2</sup> <sup>1</sup> for a flat (2 bed), this could generate 62 dwellings and at 2 floors 124, although one must assume a deduction for circulation space, stairwells etc. Assuming 3 floors of residential above and a 20% deduction this would yield 66x3 = 186 dwellings and deducting 20% would yield 149 or approximately 150 units.

The indicative housing areas shown on the indicative Land Budget Map (and excluding the 150 dwellings in the Local Centre) are broadly divided 58% to the City and 42% in South Cambridgeshire. This broad split has been used to inform the Housing Trajectory.

## 5. Outdoor Sports, Allotments and Informal Open Space

<sup>1</sup> English Partnerships Policy Guidance Report entitled 'Places, homes, People - English Partnerships' Quality Standards Delivering Quality Places Revised: from November 2007'. Page 16 identifies their requirements for minimum internal floor areas in relation to bedroom and occupancy. For a 2 bedroom/3 person home they indicate 66sqm.

Applying the dwelling mix proposals from current planning applications for Clay Farm, NIAB and Trumpington Meadows to the NWAAP area is one way of making assumptions about the land budget implications of outdoor sports, allotments and informal open space.

**Table 4 Urban Fringe Dwelling Mix**

Unit Type	Clay Farm No Homes	%	Trump Meadows No Homes	%	NIAB No Homes	%
1 bed	184	8	261	22	200	11
2 bed	1,127	49	369	31	445	25
3 bed	690	30	570	47	690	39
4 bed	253	11			445	25
5 bed	46	2				
<b>Totals</b>	<b>2,300</b>		<b>1,200</b>		<b>1,780</b>	<b>100</b>

Note TM application gives data for 3 bedroom plus.  
Clay Farm 60% houses and 40% flats including 437 2bedroom houses  
NIAB indicative only

Taken together this yields the following composite dwelling mix:

Unit Type	Number	%
1 bed	645	12
2 bed	1,941	37
3 bed	1,950	37
4 bed	698	13
5 bed	46	1
<b>Total</b>	<b>5,280</b>	<b>100</b>

Applying this rounded mix to the NW AAP area (market and key worker housing) gives:

Unit Type	2,000 Homes	People	2,500 Homes	People	Students
1 bed	240	360	300	450	
2 bed	740	1,480	925	1,850	
3 bed	740	2,220	925	2,775	
4 bed	260	1,040	325	1,300	
5 bed	20	100	25	125	
<b>Totals</b>	<b>2,000</b>	<b>5,200</b>	<b>2,500</b>	<b>6,500</b>	<b>2,000</b>

Applying these population assumptions to the open space standards derived from the AAP and the Cambridge Local Plan gives:

	Ha	Students	Total Ha	Notes
<b>5,200 People</b>				
Outdoor sports	6.24	?	6.24+	1
Children and Teenagers	1.56	?	1.56+	2

Informal open Space	9.36	3.6	12.96	2
Allotments	2.08	N/a	2.08	
<b>Total</b>			<b>22.84</b>	
<b>6,500 People</b>				
Outdoor sports	7.8	?	7.8+	1
Children and Teenagers	1.95	?	1.95+	2
Informal open Space	11.7	3.6	15.3	2
Allotments	2.6	N/a	2.6	
<b>Total</b>			<b>27.65</b>	

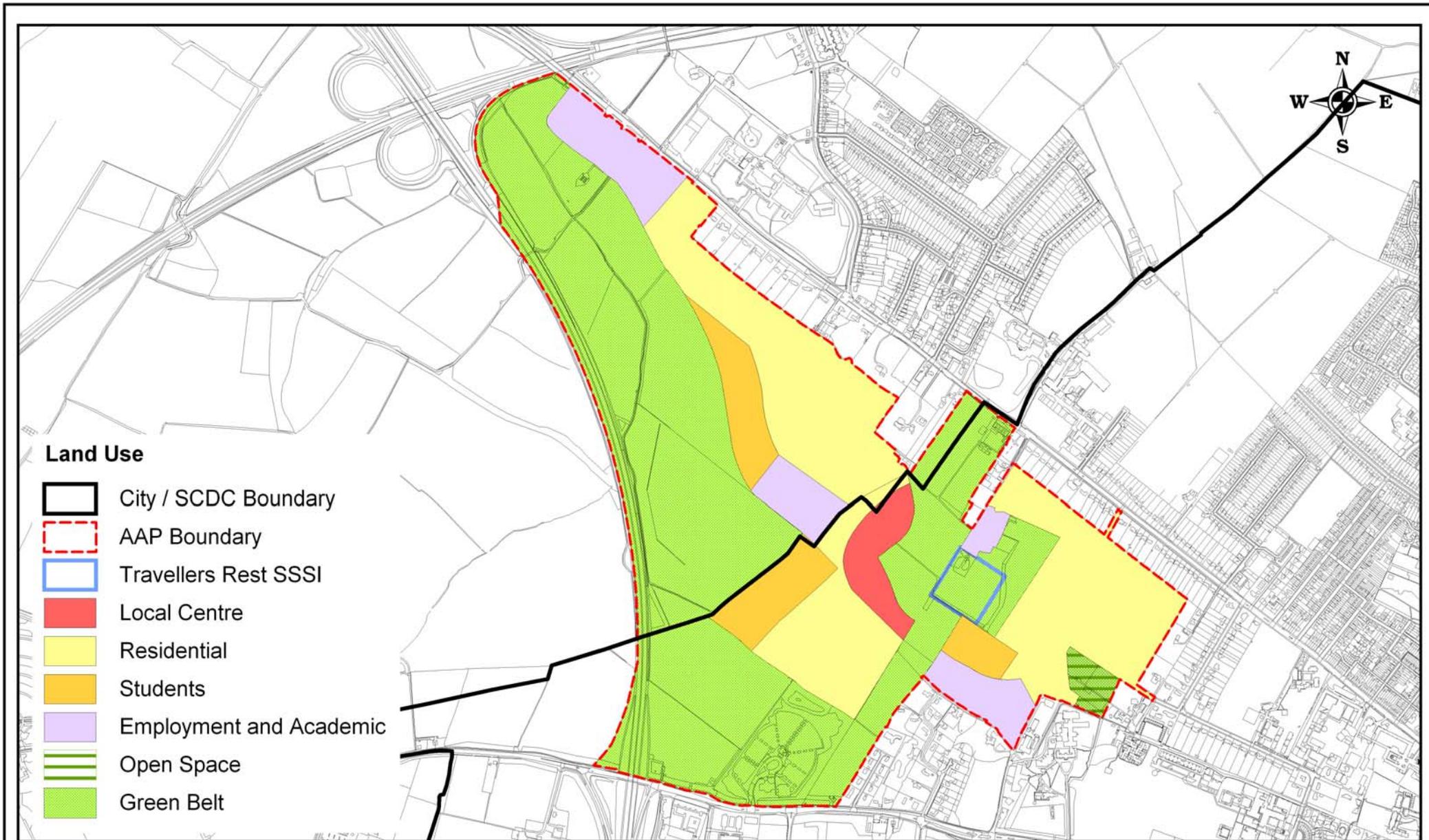
Note 1 From 2006 Cambridge Local Plan: Full provision not sought if accommodation linked to a College(s) by s106 and College has adequate provision

Note 2 From 2006 Cambridge Local Plan: Full provision not sought if development on a College Campus and it can be shown that adequate appropriate open space is provided by the College

It can be seen from the land budget summary in table 1, that there should be no difficulty meeting this requirement on site subject to the specific requirements being affected by the topography (for example flat land outside of the development area). Around 10.5 ha of the provision will take the form of a large open space located at the centre of the development on the north-south green corridor which will be well protected from the effects of the M11 by built development.

## Conclusions

This paper demonstrates that based upon the available evidence the proposed development footprint of 72.76 ha can accommodate a significant amount of development and provide for a very significant level of housing provision which at 2,325 dwellings is in the upper part of the indicative housing range sought by the University of between 2,000 to 2,500 dwellings. It can fully meet the aspirations of the University for employment, research and academic floorspace and provide housing for 2,000 students.



# Indicative Land Budget



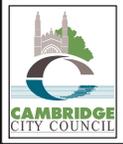
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Date:	March 2008
Produced by:	Simon Parker
Service:	Planning Policy
Scale:	1:14,000 @ A4



**Roads**

	A1 = 1200.48 m
	B1 = 274.86 m
	B2 = 576.82 m
	B3 = 520.05 m
	AAP Boundary



# Main Roads

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Date:	17th March 2008
Produced by:	Matthew Merry
Section/Department:	Policy & Projects, Environment & Planning
Scale:	1:13,000