

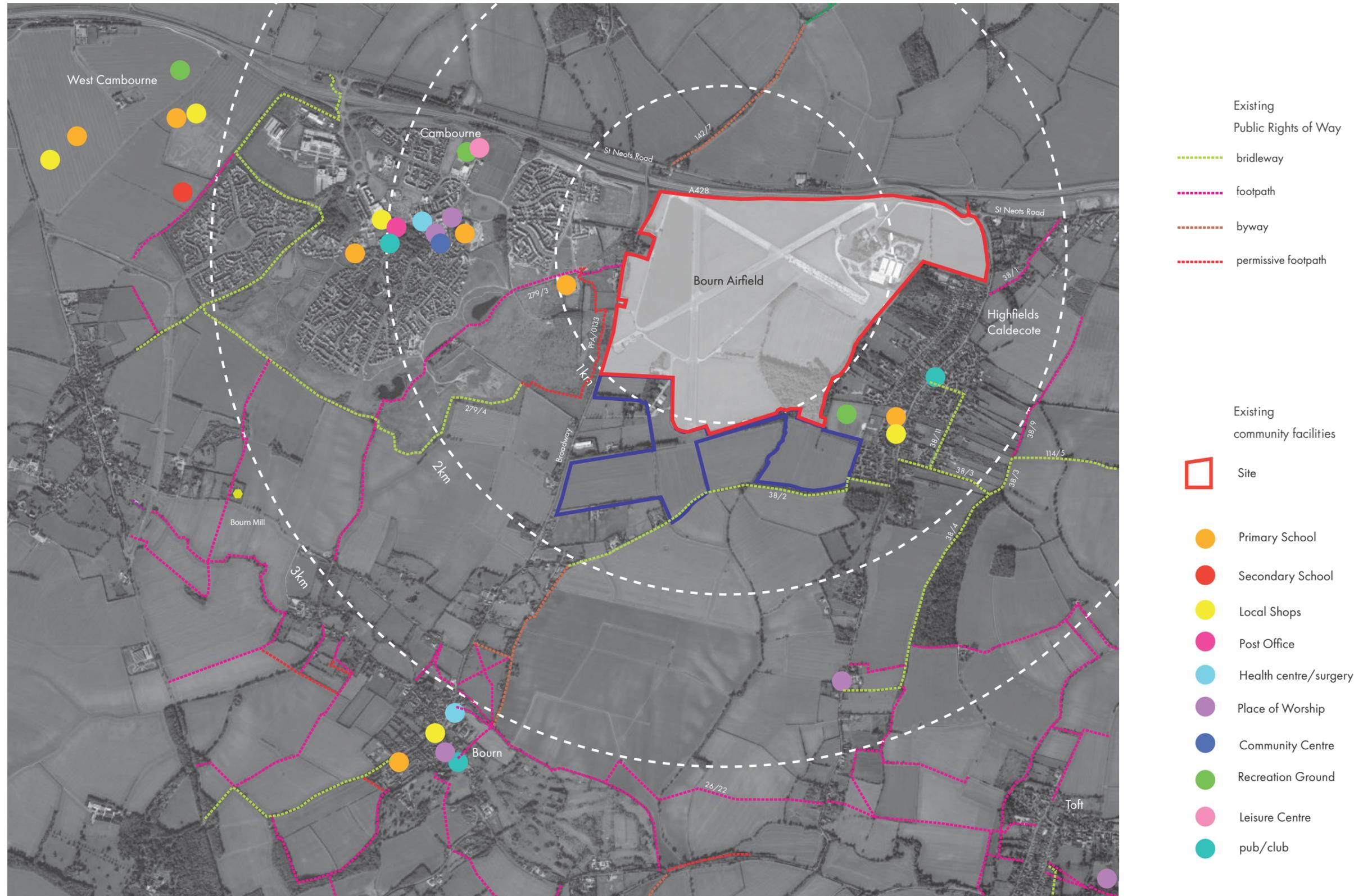
RD/FM/013

**Additional Evidence Relating to Bourn Airfield
New Settlement Major Development Site
Boundary**

*Appendix 1 Bourn Airfield – a landscaped-led settlement (Chapters 4 & 5)
(Part 3 of 8)*

4 Development strategy

Functional relationships with Cambourne and nearby villages



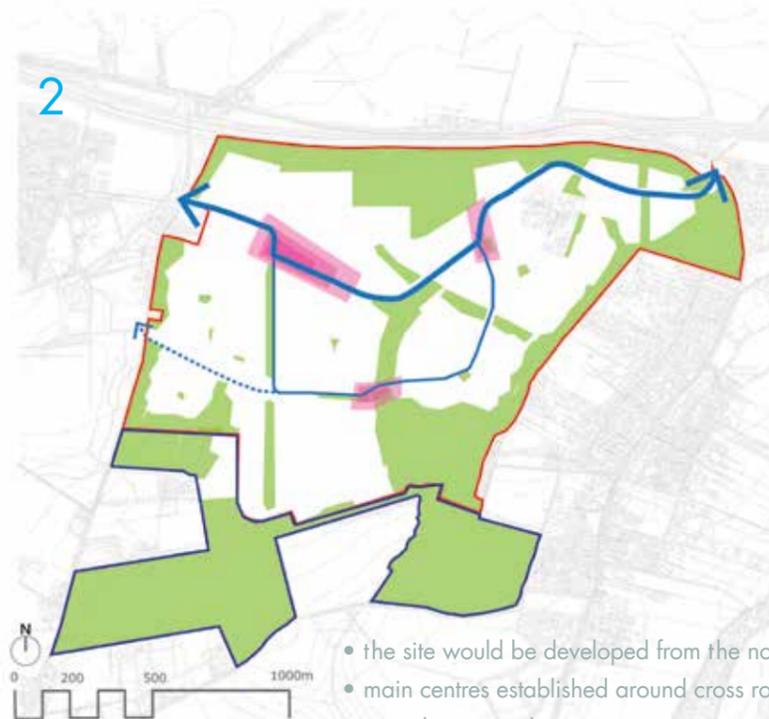
Local facilities are clustered and countryside paths provide hinterland connections

Community

Village Centre location - the heart of the new community ...



- main street provides the strategic link running east west, bending south to maximise site coverage, including largest population proportion



- the site would be developed from the north
- main centres established around cross roads providing critical mass to support services at earliest point of development



- the centres cluster together employment, schools, community and mixed use
- enabling complementary linkages between Bourn facilities and those at Cambourne



- centre locations work together with higher densities to reinforce community nodes
- village centre located towards the west reduces goods vehicle travel distance and with Runway 36 creates a powerful 'place' in the development

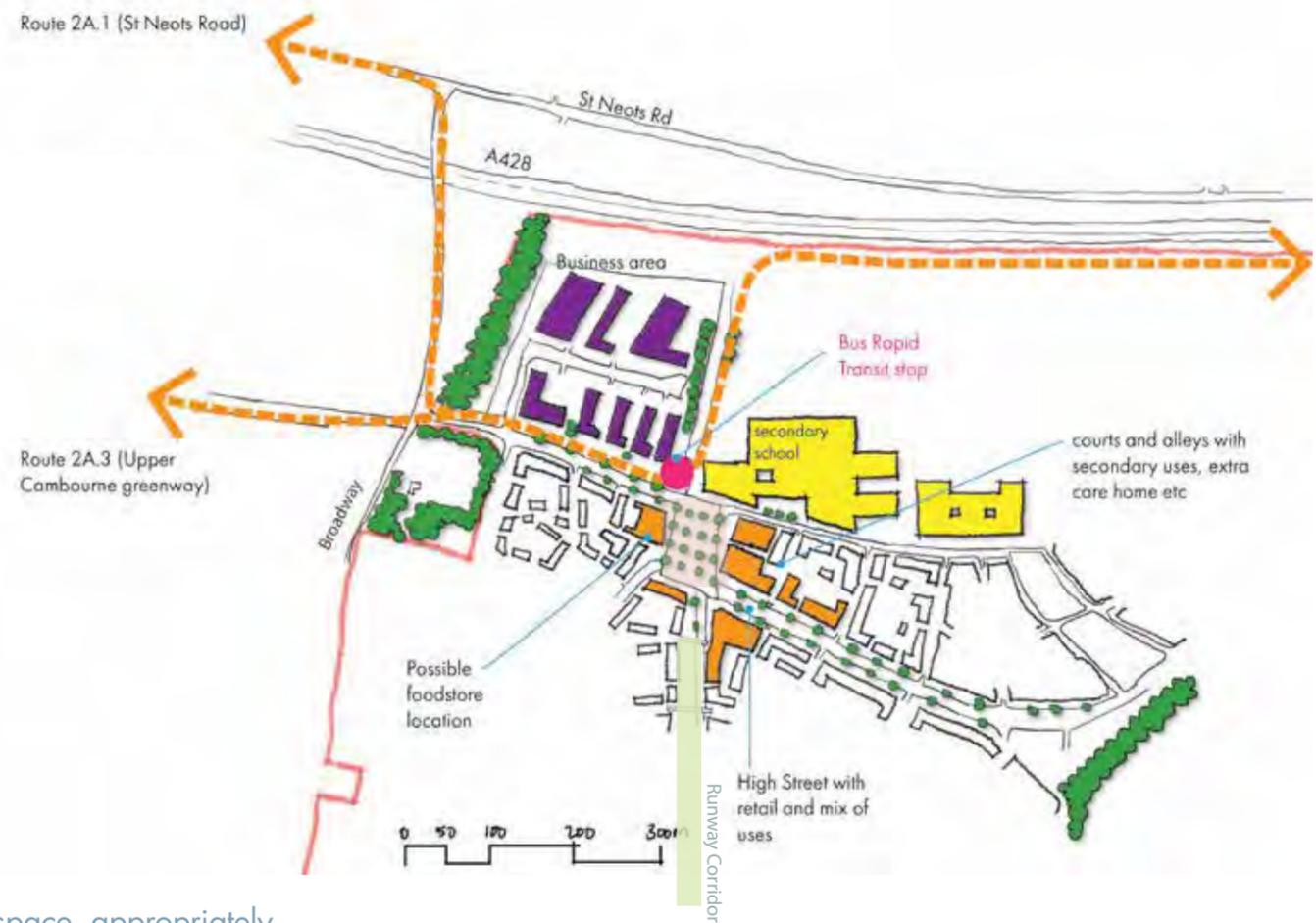


Optioneering: July 2014 onwards

Throughout the design process we have investigated the pros and cons of a range of options for locating the centre.

Potential Village Centre facilities

- foodstore (as a key anchor)
- other retail spaces
- GP surgery / Medical centre
- retirement and assisted living care home
- Post Office
- bank
- pharmacy
- restaurants and cafés
- gym
- community hall
- hairdressers
- crèche/ pre-school
- library
- place of worship
- cultural/arts facilities



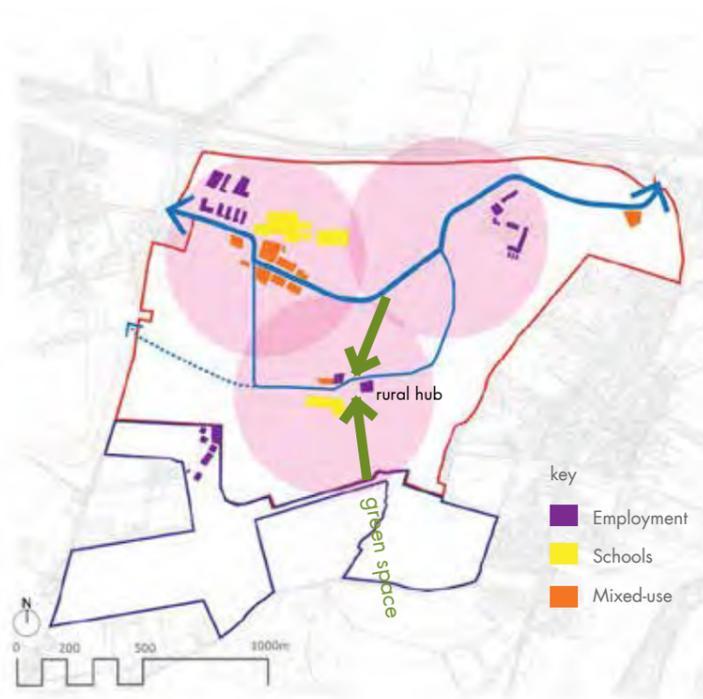
Should the Village Centre be in the form of a traditional 2-sided High Street? Or a key space, appropriately proportioned, with a tight matrix of small-scaled streets as a hinterland? Cambridge Market Square provides food for thought.



Cambridge Market Square is of a similar scale to the proposed village centre square



The Rural Hub



centres provide good walking catchment across site



There is a tradition in Cambridgeshire of village houses looking onto green space, sometimes with water. This is low density, but provides a model for the Rural Hub.



Elsworth, an intersection village, 3 miles from the site.

work barns with social spaces

The Greenway encourages access on foot and cycle and brings a rural character to the heart of the heart of the Hub ...

The Rural Hub provides:

- social/education/work facilities in a green setting
- an alternative to the centre
- integrated bus stops, cycle/footpaths
- education/community/workspace
- water and greenways

within 400 metres of 700-800 houses.



Northstowe primary school, as part of the street scene



natural play space



Employment space

Possible employment locations



Bourn Airfield is part of an integrated employment offer at different scales. This range of opportunities underpins the masterplan and is:

- related to vehicular access
- vitality of the Centre
- walkable distances
- the Rural Hub/community/mixed-use

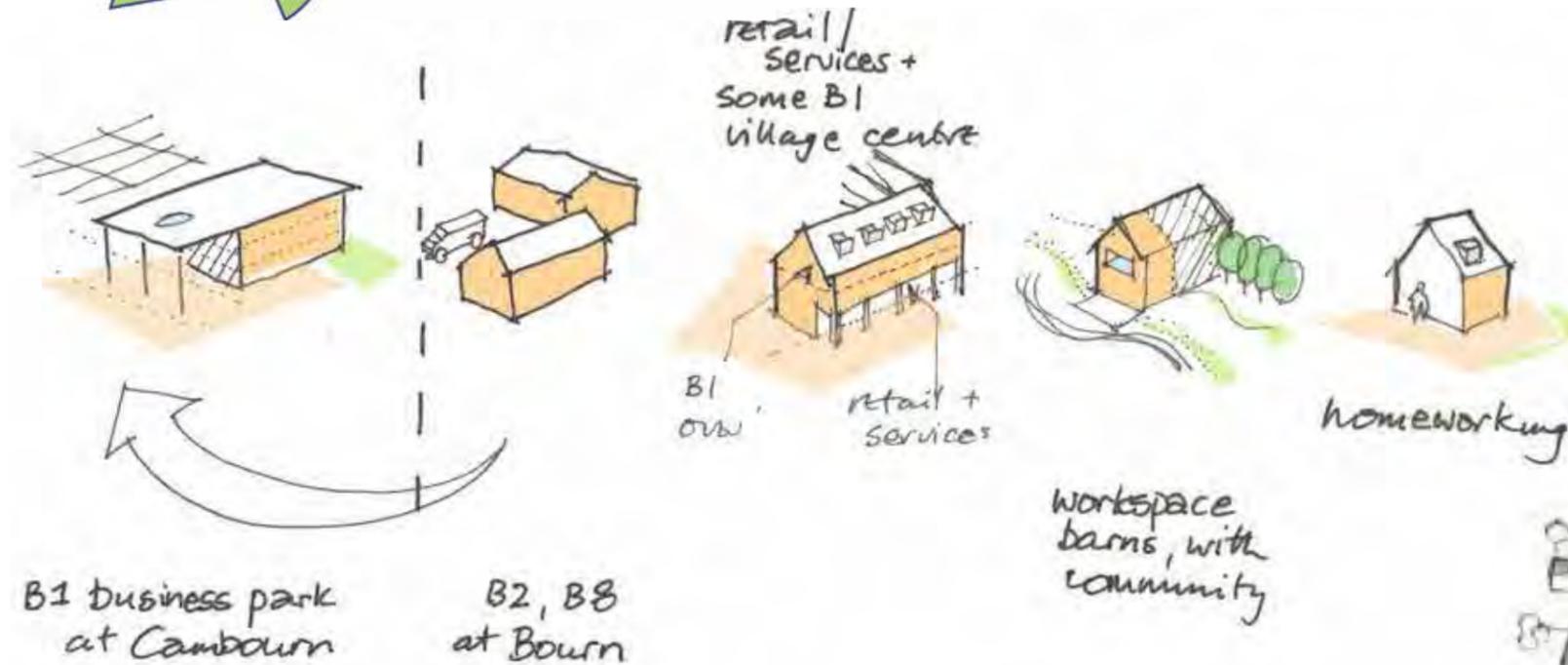


employment area - B2 and B8



loading door Light industrial/workshop space

small-scale B2/B8



A mix of flexible employment spaces to complement the Cambourne offer

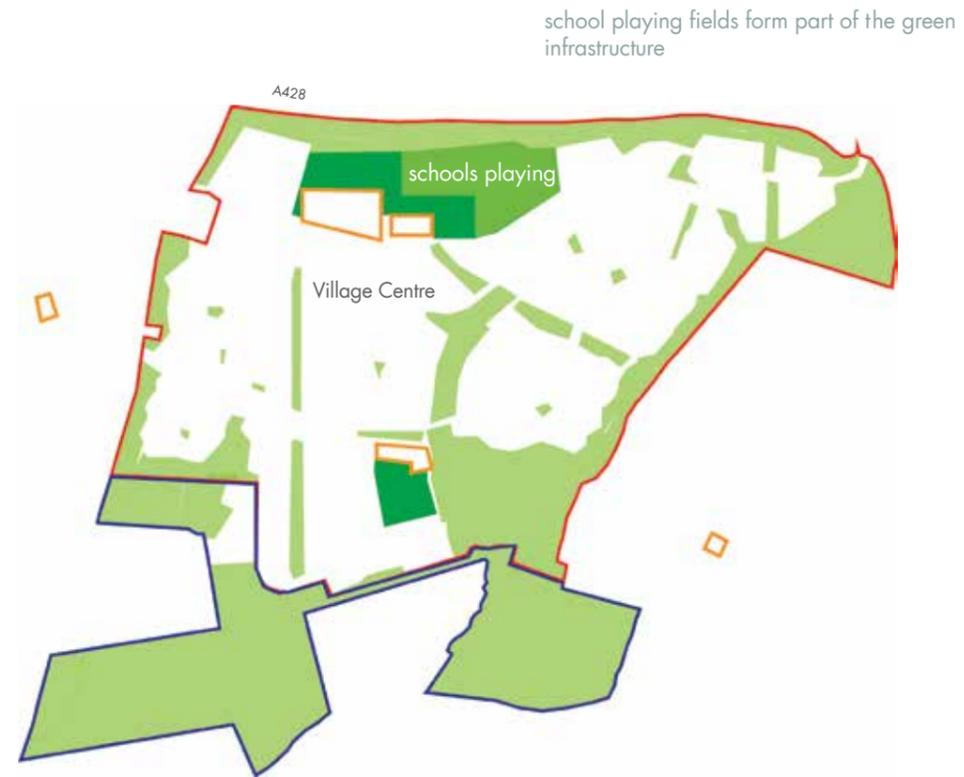
Employment space currently on the site will be retained and integrated into the scheme and a further employment land will be provided. Countryside is keen to facilitate home-working and a key part of this is ensuring that all homes have superfast broadband from the outset. Communal-type business facilities for smaller businesses could be incorporated into workspace 'barns'.



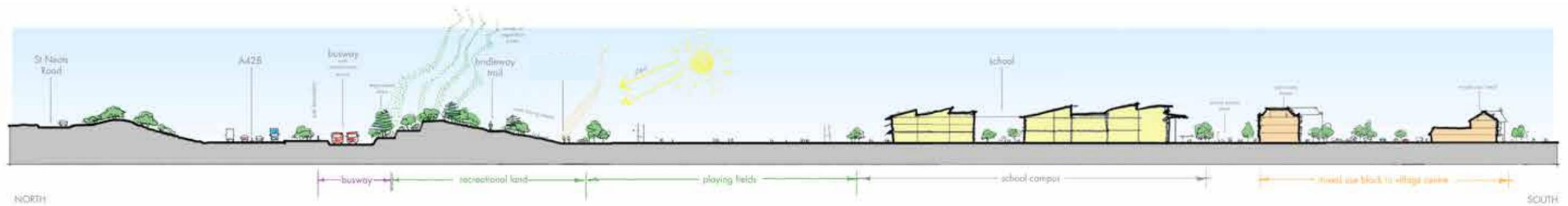
workspace is part of the Village Hub

Schools

Schools are located close to the Centre, the earliest and largest population area and separately, further south. Viewed within the Cambourne/Highfields context they are roughly equidistant. The location of the secondary school provides good coverage to most of the site.



Primary and secondary schools related to Village Centre and fast bus stop



long section north/south

Multi-tiered open spaces and recreation



the green and blue infrastructure provides a strong and varied landscape framework

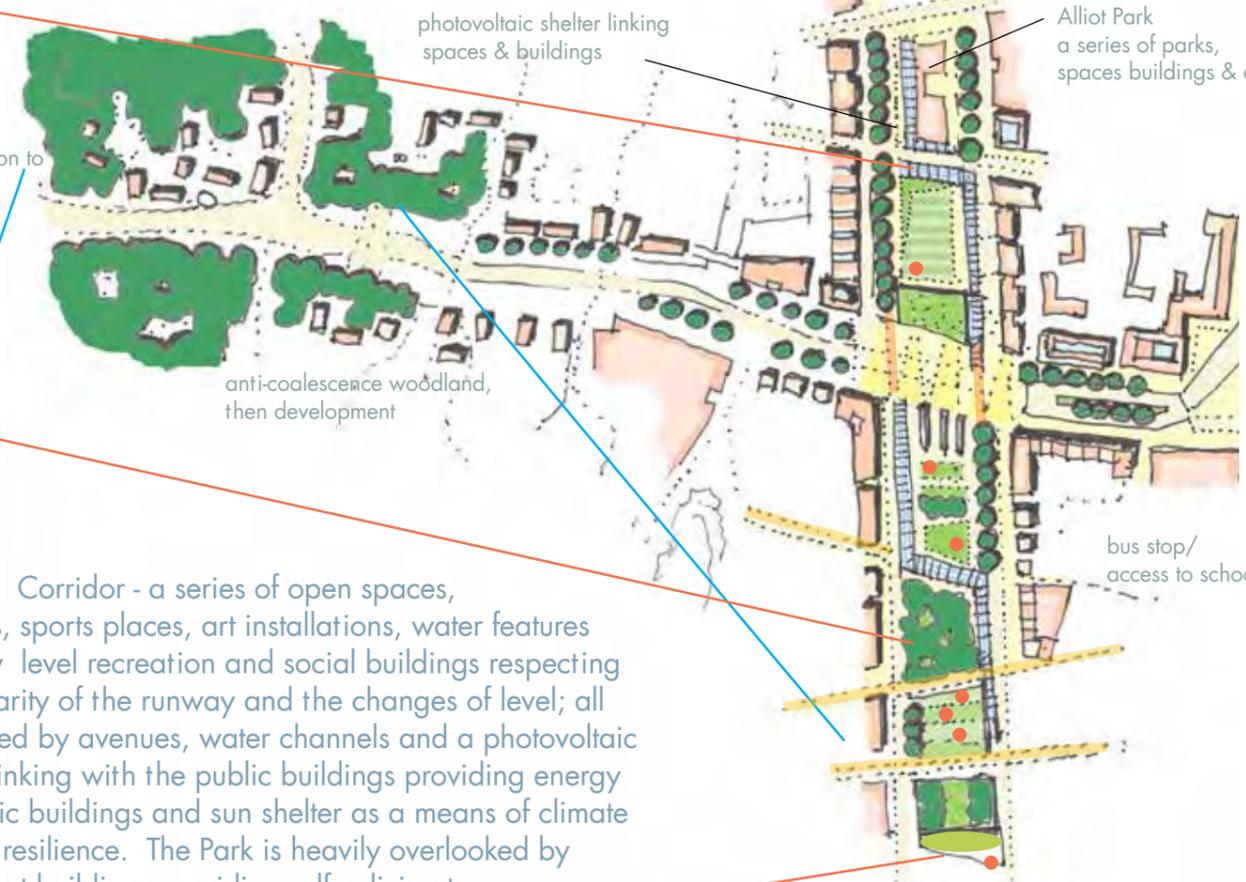
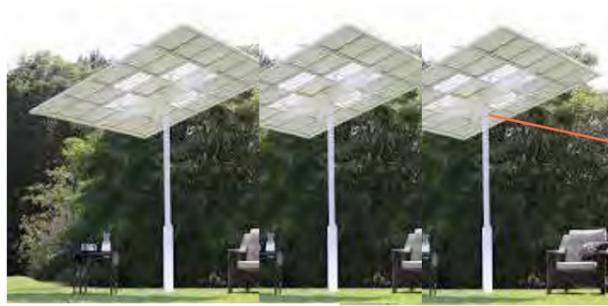


leisure trails provide high quality movement connections from Country Park to woods and wetlands



the landscape provides opportunities for healthy living and recreational lifestyles





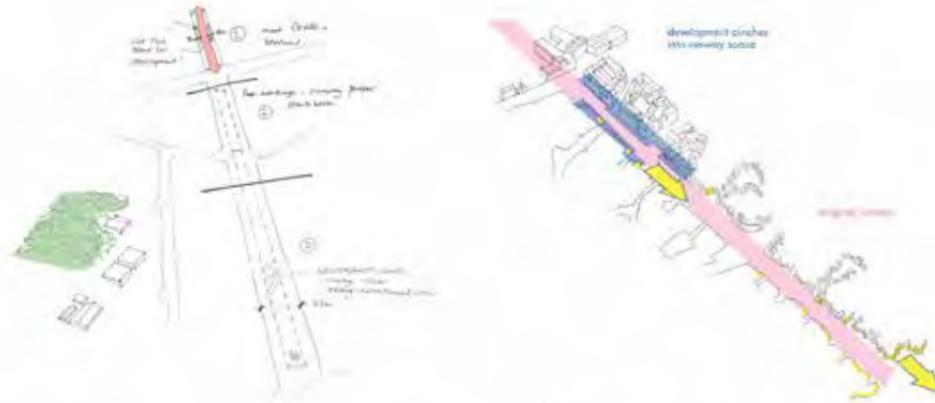
Runway Corridor - a series of open spaces, gardens, sports places, art installations, water features and low level recreation and social buildings respecting the linearity of the runway and the changes of level; all connected by avenues, water channels and a photovoltaic shelter linking with the public buildings providing energy for public buildings and sun shelter as a means of climate change resilience. The Park is heavily overlooked by significant buildings providing self-policing to this key space.



Broadway

The structural landscape provides amenity, biodiversity, and protection against coalescence and then, moving into the scheme, gives a framework for lower density development, finally becoming a frame for higher densities in the centre.

Runway Corridor and leisure



Runway Corridor is a structuring element in the plan providing attractive long distance views to Bourn Valley. It provides a strong reminder of the WW2 airforce history since this was the principal route for bomber pilots taking off, using the distant landscape as a navigation device. The runway has an 8 metre fall from north to south and potential for a south-facing sequence of 'events' related to community, sport and leisure, biodiversity and water.



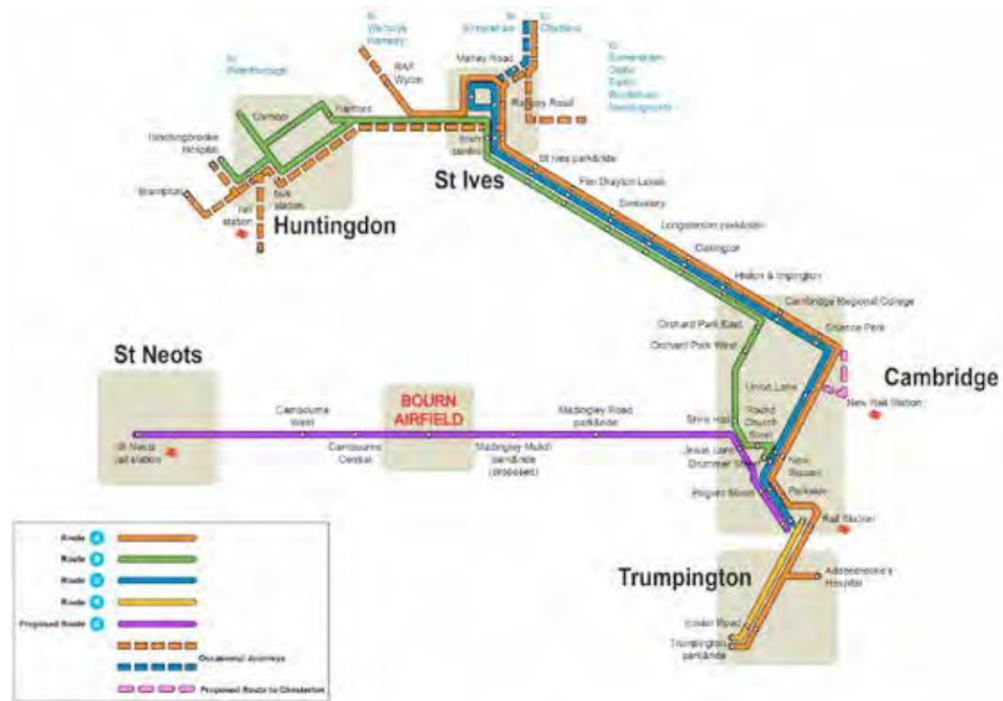
- 1 **Urban square space** using approx 8m of the edges of the runway (carpark/market square) because of the disturbance that will be required in this area repositioned bus route, cafe/ water runnels/ avenue trees in marking out the actual runway edge.
 - 2 **Central space** (some variation to edge alignment in 8m zone but keeping the runway itself free, sports pitches, gardens etc, water more obvious).
 - 3 **Southern zone** - full width, more ecological, more water, cafe/interpretation area in the space providing a prestigious setting for lower density housing with great views ... all connected by pv shelters, lines of trees, water.
- Comprises three spaces**
- urban square spaces - parking, market, paved social and courts spaces with tree canopy
 - central space with mix of community, play and social spaces along with some parking, and water runoff attenuation
 - southern area - with more rural and naturalistic, high value area with fantastic views to Bourn valley



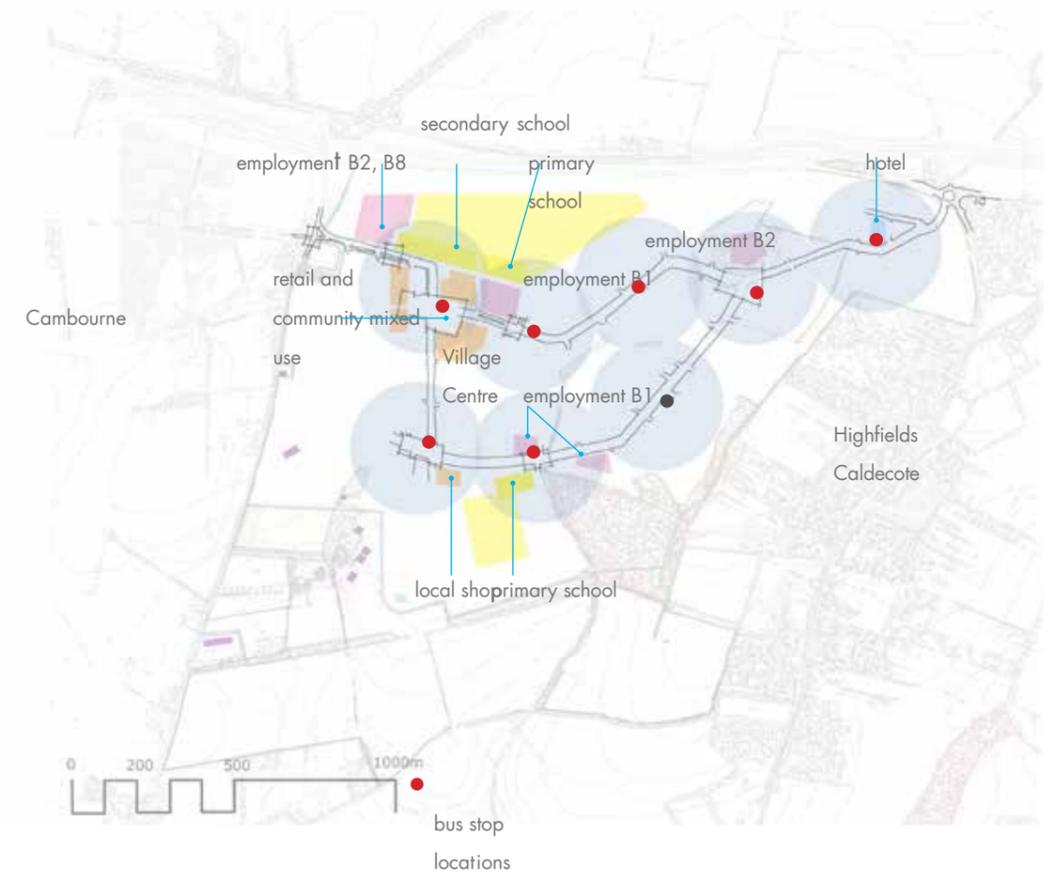
Cafés, lively social spaces, parking, market square, courts, play features, gardens, walkways, seating, water, reed beds and photovoltaic shelters as walkways could be components of the 'new' runway.

Connectivity

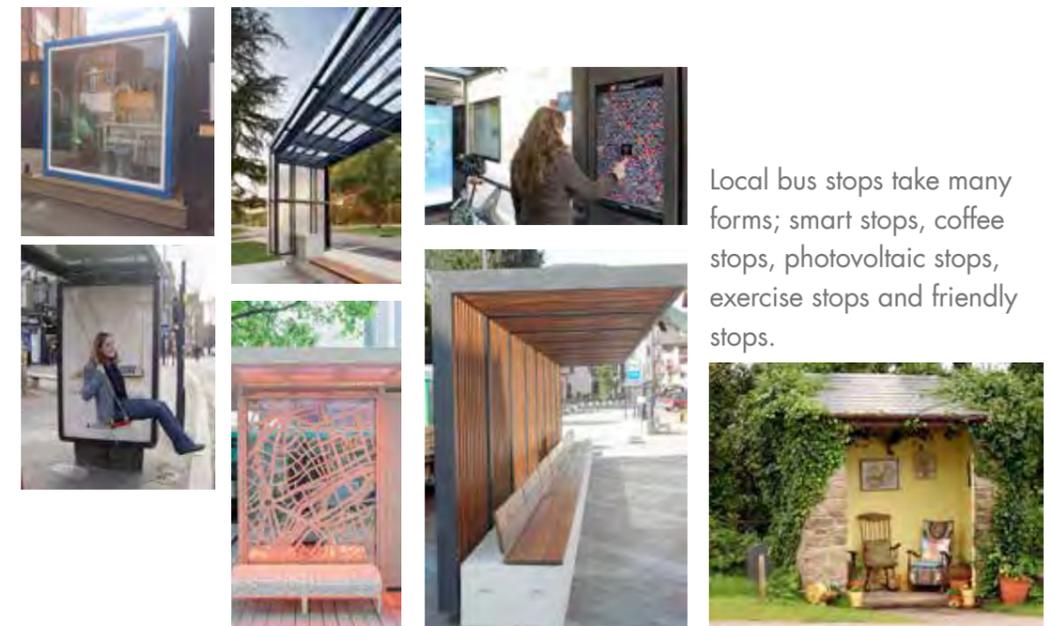
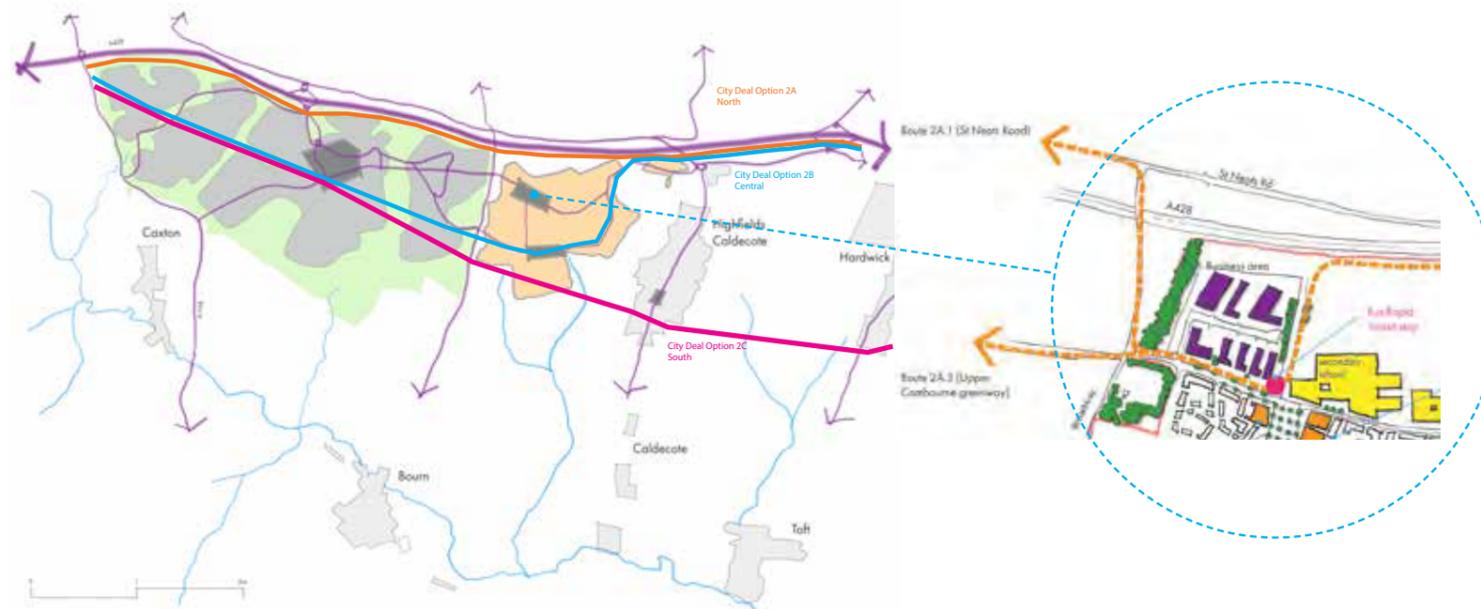
The location is part of the emerging Rapid Bus Network for Cambridge. The emerging masterplan also aims to provide maximum permeability through the local bus network and to embed this in the Centre, the Rural Hub and surrounding street networks.



Neighbourhood bus

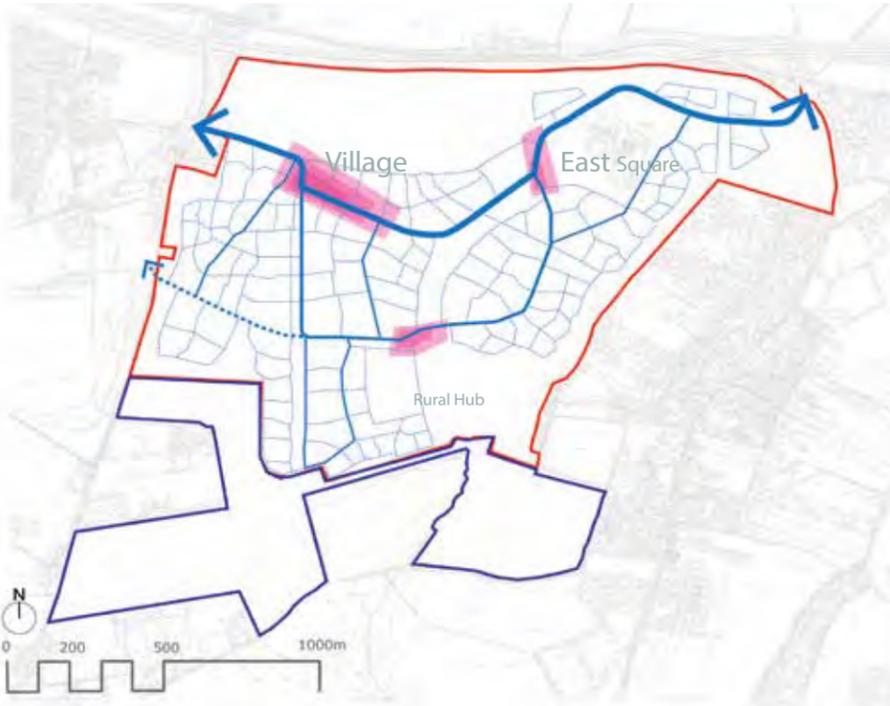


City Deal / Bus Rapid Transit options



Local bus stops take many forms; smart stops, coffee stops, photovoltaic stops, exercise stops and friendly stops.

Pedestrian and cyclist network



The street hierarchy provides excellent pedestrian permeability



The new cycle and leisure trails link to the public right of way network

Combined pedshed diagrams showing the overall accessibility of new Bourn from centres where public transport and community facilities are focussed.



Character - a summary

Neighbourhoods and their characteristics emerge from a variety of functions already described; location on the site, topography and relationship to local landscape, density and scale, intensity of use and mixed use, transport, connectivity etc.

We have also studied local precedents and where appropriate we will aim to incorporate their characteristics. A number of neighbourhood characters will emerge, strongly influenced by their context.



the plan form emerges from a movement framework suggesting an inline village



... the BRT and southern momentum for spreading to the south ...



...and anchors the secondary hubs ...



... which provide linkages to schools ...



...and other facilities including employment areas, all within easy walking distance



density profiles match accessibility and irrigate services, retail ...



... and public transport ...



... suggesting a series of neighborhoods of differing character

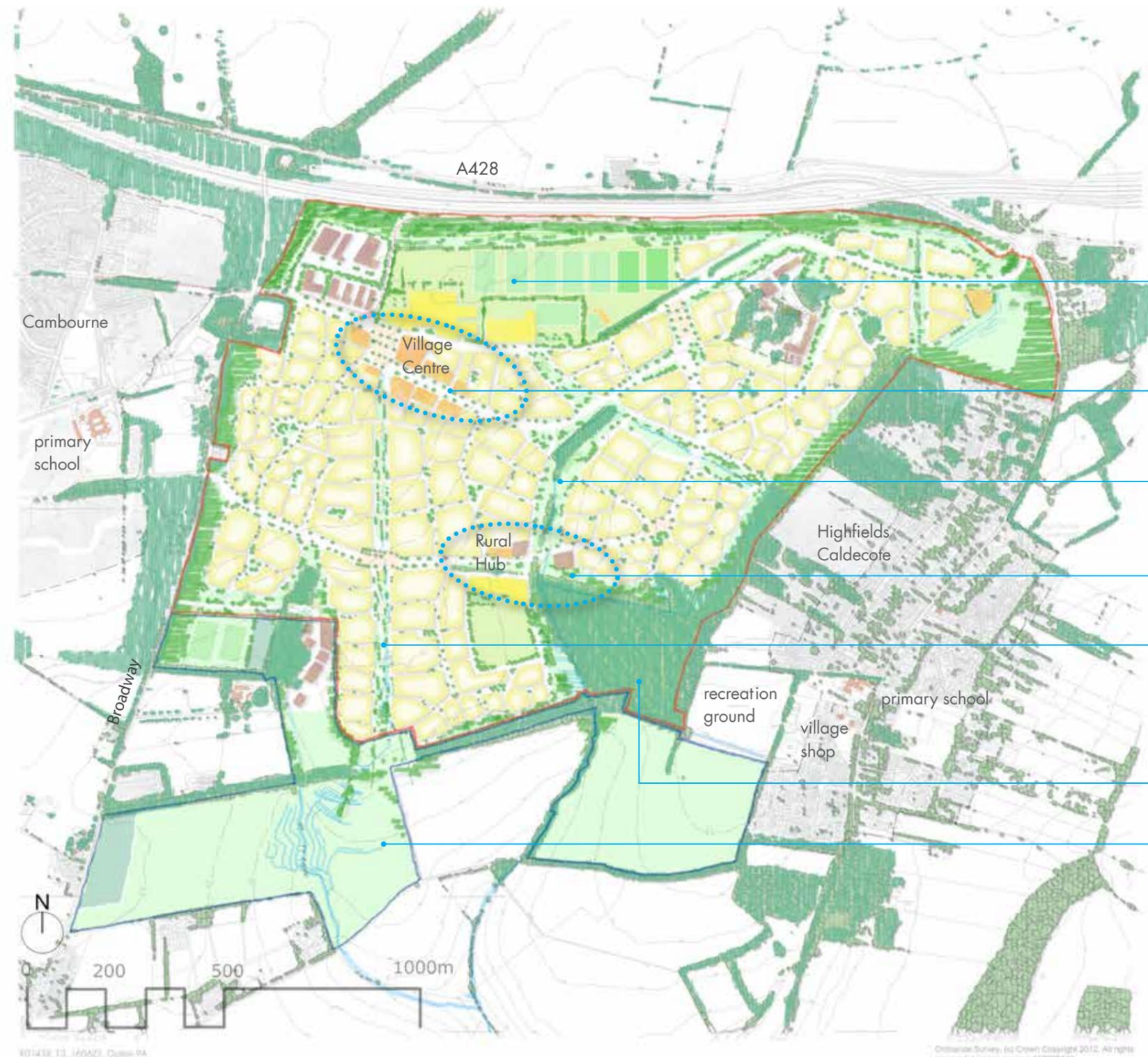


local precedent



← density increases density decreases →

An emerging framework for a landscape-led proving masterplan



The proving masterplan has been subject to a rigorous process of analysis and testing based on early studies of the landscape character. This masterplan is essentially context-based relating to the constraints identified; the A428 to the north, the east and western separate settlements, the fall of the site, water, heritage, landscape and biodiversity constraints and the need to provide a practical and 'place-making' transport system.

Inevitably the emerging proving masterplan results in a slightly different MDA boundary from that suggested by SCDC although this masterplan meets policy requirements.

education campus with adjacent secondary and primary school with linked community sports area and playing fields allowing flexible shared/partitioned use

village centre - provides high street, foodstore and other retail, services, community facilities and civic space

core green space in valley around watercourses and existing woodland forming key village park

rural hub - lower intensity local facilities based around primary school and work/community spaces

runway 36 space reinvented as mixed social, park and play space with walkways, courts, PV shade canopies and rain gardens

Bucket Hill Plantation retained and actively enhanced and conserved, with wildlife management areas, natural play, glades and rides

country park with wetland /fens, ponds, scrapes and shallow bogs, alongside meadow and scrub. walkways provide leisure trails and links to Bourn valley footpaths

coalescence and landscape; aerial digital model seen from the north east



Landscape strategy

The land available with its varied topographical and environmental conditions gives great scope for a variety of landscape types, some apparently natural others obviously man made. Woodlands, grasslands, wet woodlands and wetlands will all be required but so will community orchards and amenity landscapes.

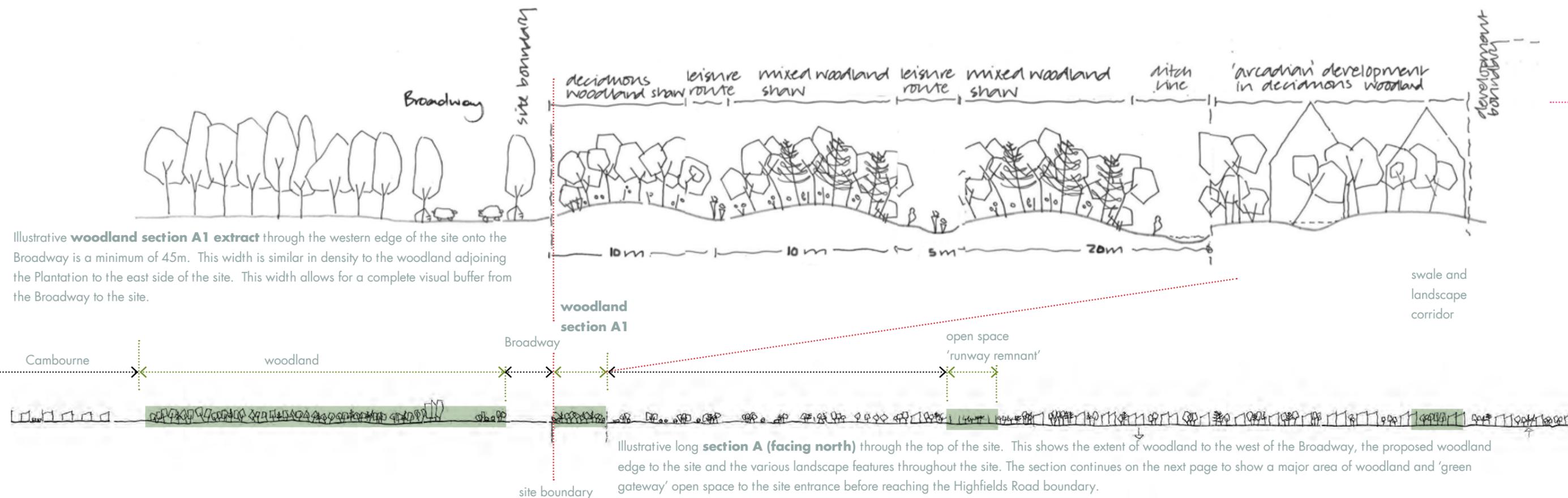


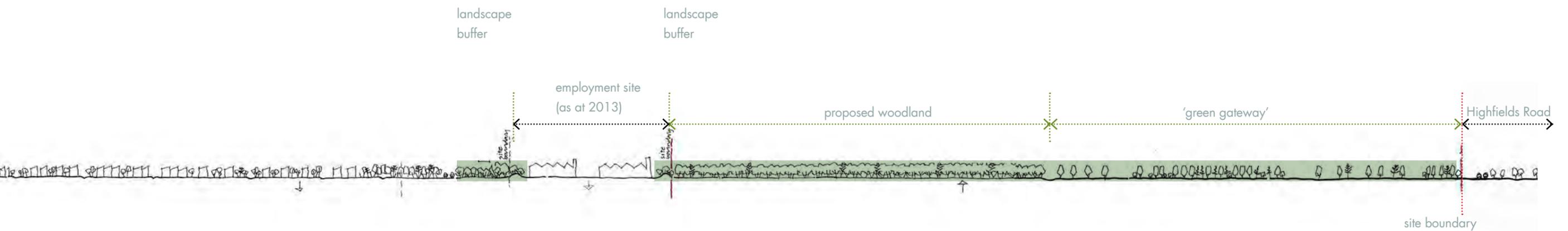
section A facing north



section A

This is the long east/west section through the north of the site at its widest. It shows the wide woodland between the Broadway and Cambourne to the left of the section followed by the proposed woodland to the east of the Broadway on the site. The detailed extract section shows this 45m woodland in greater detail and how dense a 45m varied, linear, native woodland is. To the right of the section and east once the section passes through the employment site the landscape is a dominant feature with woodland and open space (green gateway) including water and providing a minimum length of 400m landscape to Highfields Road





Landscape strategy

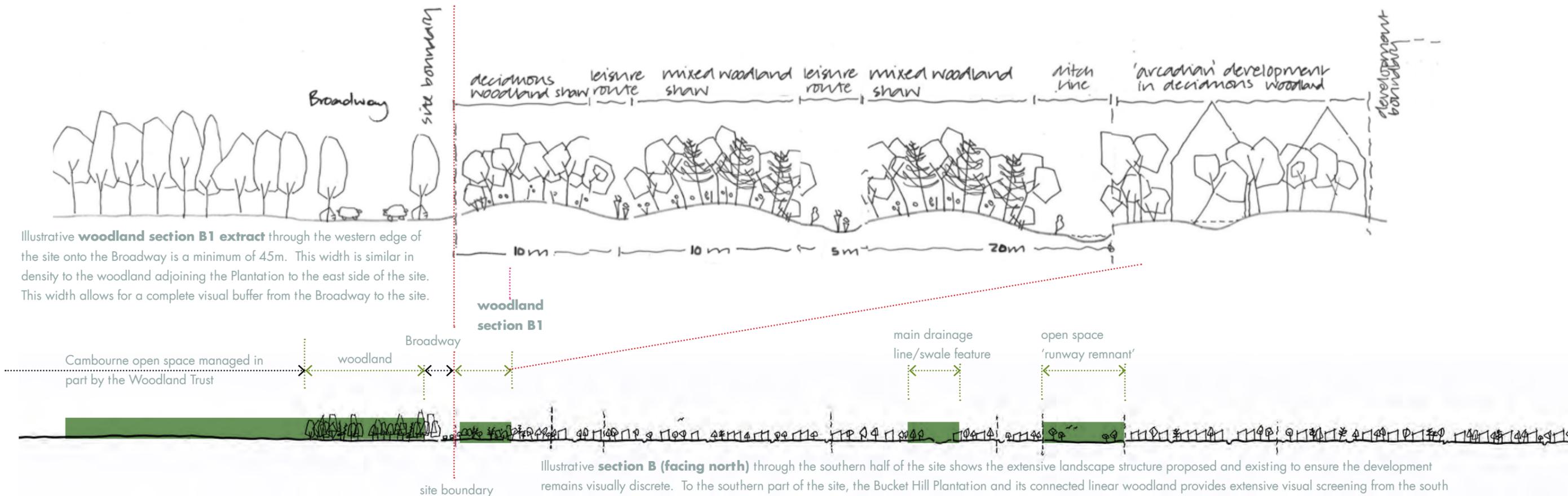


section B facing north

section B

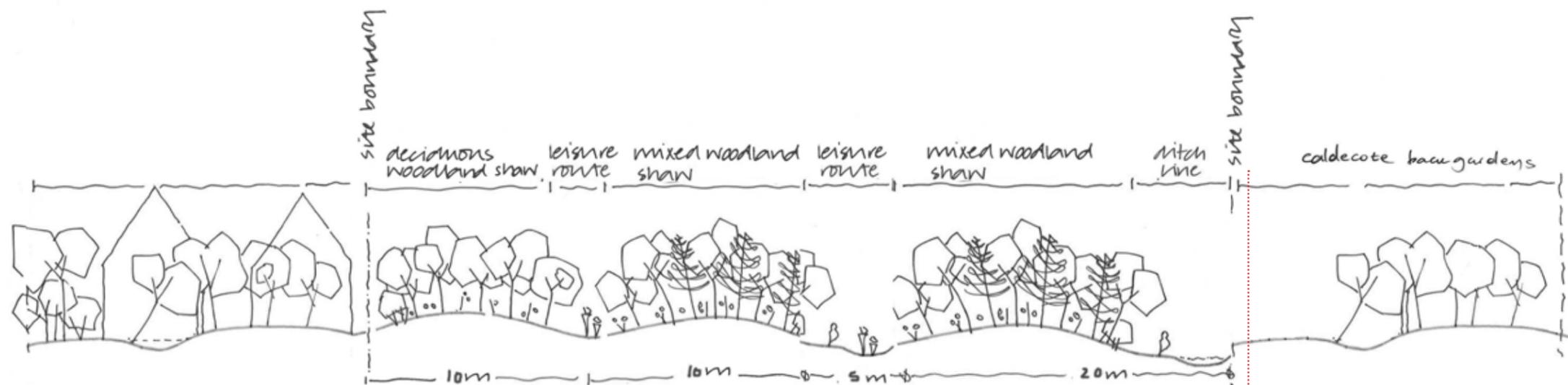
This is the long east/west section through the southern half of the site. It shows the wide woodland between the Broadway and the south of Cambourne to the left of the section followed by the proposed woodland to the east of the Broadway on the site of minimum 45m. The detailed extract section shows this 45m linear and connected woodland in greater detail and how dense a 45m varied, linear, native woodland is. To the right of the long section and east side of the site, the section passes through existing dense Bucket Hill Plantation before continuing into the long rear gardens to the properties in Caldecote Highfields.

The extract section B2 is taken further to the north of the Plantation. This section to the site boundary mirrors the minimum 45m Broadway woodland ensuring that no visual coalescence would occur between Caldecote and Bourn Airfield. This width is roughly equivalent to the existing linear woodland connected to the north eastern corner of the Plantation and therefore how visually impenetrable the site will be from Caldecote.

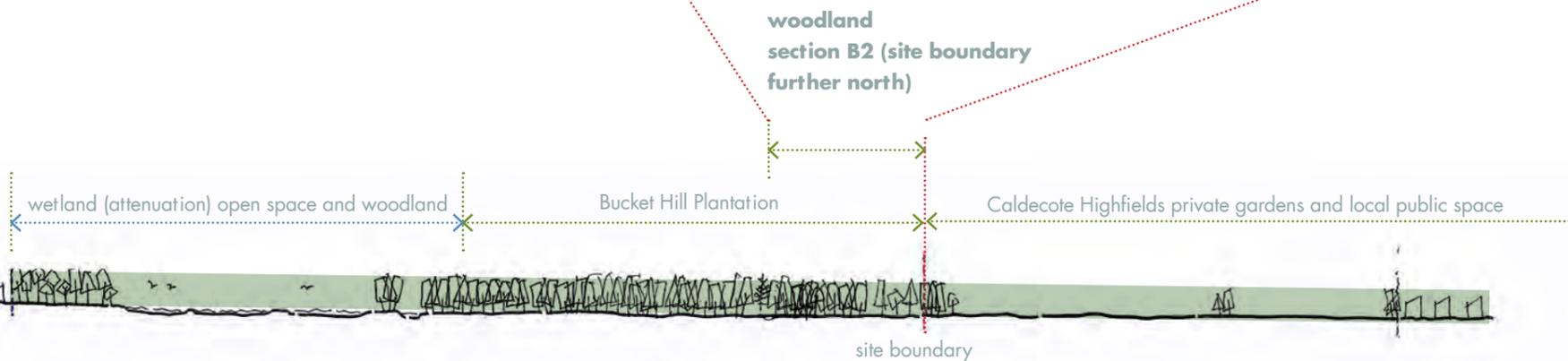


Illustrative **woodland section B1 extract** through the western edge of the site onto the Broadway is a minimum of 45m. This width is similar in density to the woodland adjoining the Plantation to the east side of the site. This width allows for a complete visual buffer from the Broadway to the site.

Illustrative **section B (facing north)** through the southern half of the site shows the extensive landscape structure proposed and existing to ensure the development remains visually discrete. To the southern part of the site, the Bucket Hill Plantation and its connected linear woodland provides extensive visual screening from the south and east. Section B2 shows this screening continuing northwards up to the woodland around the employment land.



Illustrative **woodland section B2 extract** through the eastern edge of the site onto the long rear gardens of Caldecote Highfields. These are typically used to create a strong woodland with public access, a variety of woodland types including evergreen and deciduous native trees, understorey tree types and woodland edge shrub types. The width of a minimum 70m is sufficient to create a natural ecosystem to emerge if connected to existing woodland and for it to thrive in the short term. A woodland of 2 hectares would be sufficient to create a valuable degree of structural diversity and equally protect the edge of a village from settlement coalescence by controlling visual, habitat and access proposals.



Landscape strategy



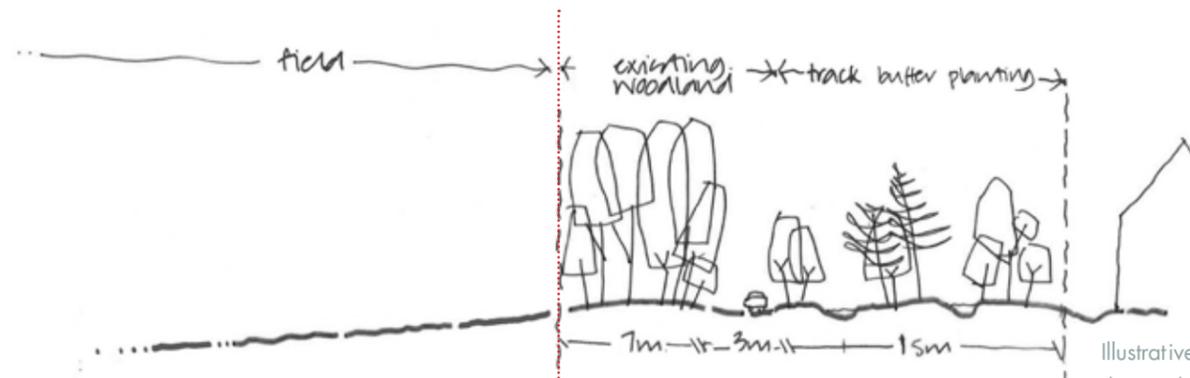
section C looking east

section C

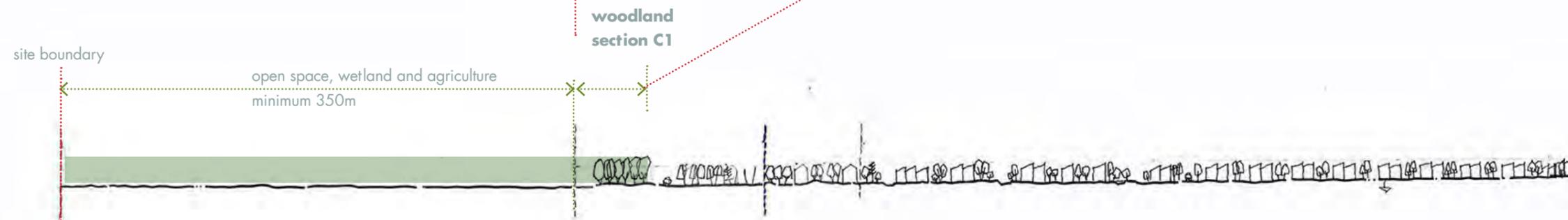
This section cuts through the centre of the site north/south and faces west towards Cambourne. The section shows three major areas of woodland. The first area (section extract C1) is to the southern edge of the development area and enhances the existing established windbreak planting. This enhanced 25m wide area provides additional visual buffering from southern views and along with the wetlands and farmland to the south provides a minimum of 350m (up to 500m) of on site open space to ensure there is no visual or physical coalescence to the village of Bourn to the south west.

The second woodland lies to the centre of the site separating the rural centre from hamlet 3 and varies from 30m to 100m in width.

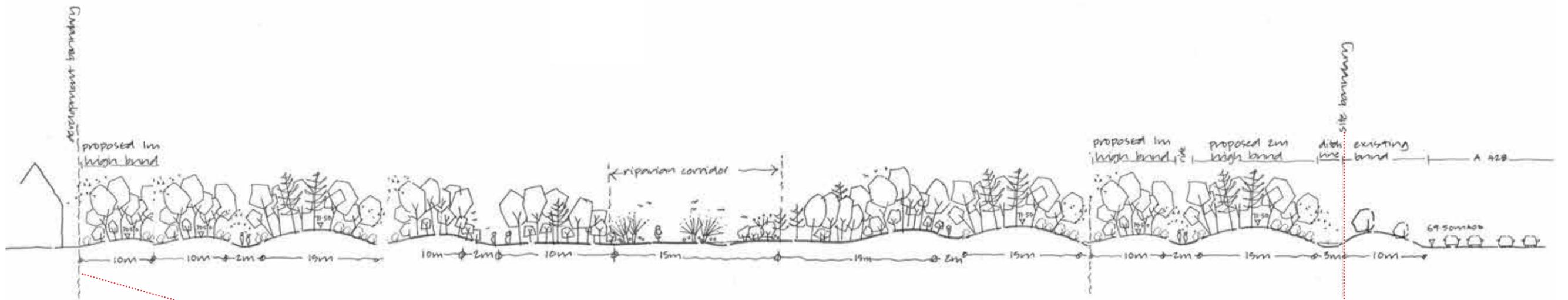
The detailed section to the north (and right of the long section - extract C2) onto the A428 showing a 100m minimum width of woodland and acoustic landform bunding rising up from the road. This width and height will ensure that when established there will be no visual coalescence when viewed along the A428 or acoustic issues for housing to the northern edge of the site.



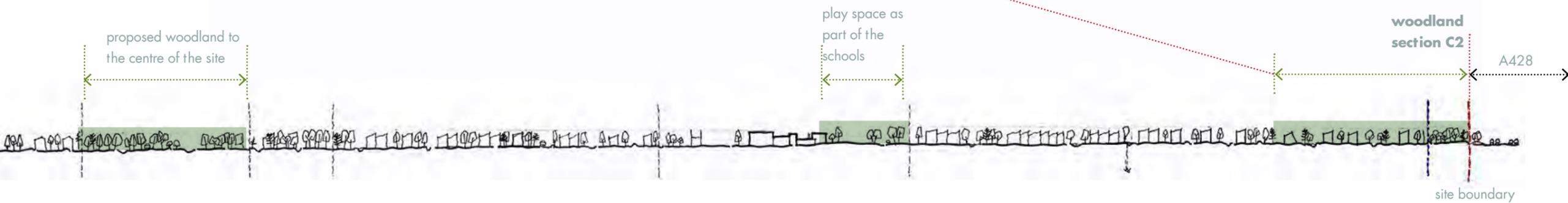
Illustrative **woodland section C1 extract** (looking west) through the southern edge of the site development area onto the open space beyond (also part of the site). This will enhance the windbreaks already in place to create a greater visual buffer from the south.



Illustrative long **section C (facing west)** through the centre of the site. This section shows the extensive open space provided to the southern position of the site providing a minimum of 350m (up to 500m) distance from the development area to edge of the public footpath ensuring that no visual or physical coalescence is possible. The northern edge of the site shows a 100m woodland that will contain a variety of landscape features for public amenity.

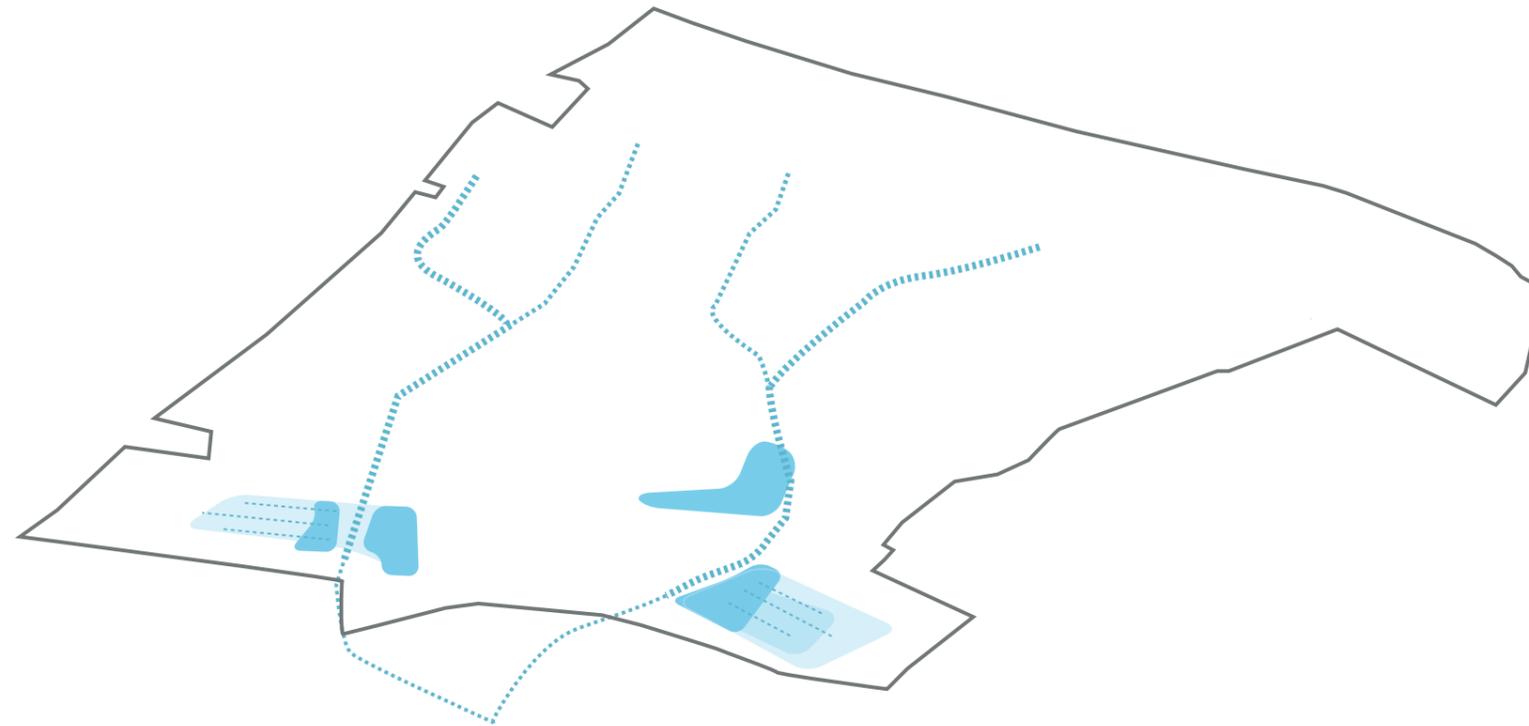


Illustrative **woodland section C2 extract** (looking west) through the northern edge of the site showing the 100m visual and land formed acoustic buffer to the A428. This area will contain a variety of woodland, open and natural play spaces, walks and wildflower glades to create a rich and diverse amenity for the residents.



Surface water strategy

The water strategy will have a direct relationship with the extent and nature of biodiversity on the site since it will allow the creation of a rich matrix of habitats; grassland, wetland, wet woodland, new deciduous woodland and aquatic vegetation.



The surface water strategy shows how the runoff from the site will contribute to a varied and site specific landscape character. Surface water currently collects in two drainage channels to the east and west of the site, either side of the main north/south runway. These two channels meet at the south of the site, flowing into the Bourn Brook, downstream from Bourn village. It is proposed to enhance these channels and provide additional tributaries to them to capture the increase in runoff from the development areas. These new and enhanced channels will be connected to on site alleviation ponds and other sustainable urban drainage features (SUDS) such as rain gardens, swales, greywater domestic collection, amongst others.

Main drainage corridors

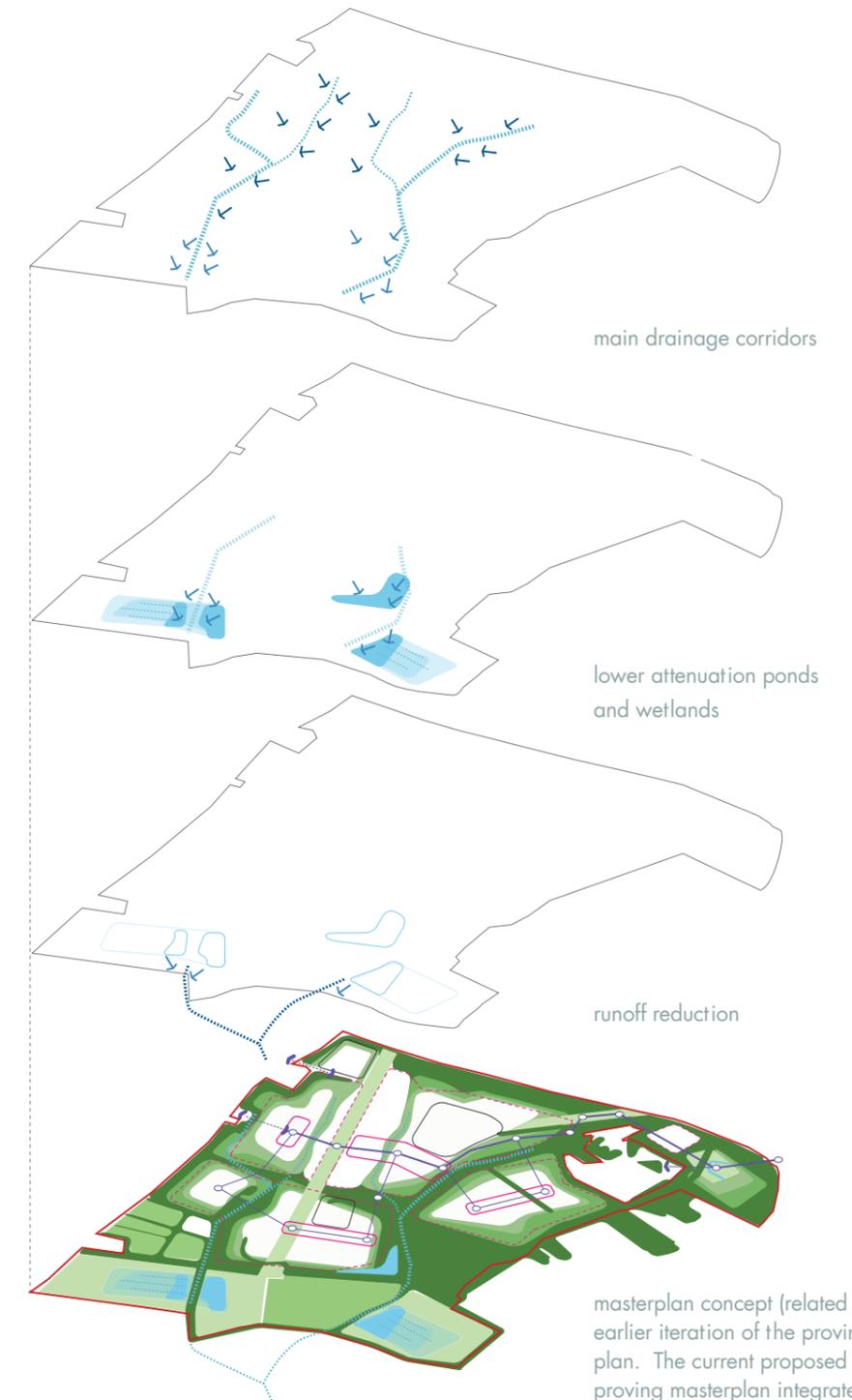
The two main and secondary drainage channels will become key features in the landscape and used to help define the character of the individual village and hamlets. The channels, when used to separate settlements will become part of the structural planting strategy. When part of the settlements, could become swales, open spaces or narrow channels alongside tight urban streets.

Lower attenuation ponds

The clusters of attenuation ponds to the southern areas of the site will be used as part of the wider landscape, creating major opportunities for a varied ecological biodiversity, in particular to the lower slopes where attenuation ponds connect to smaller drainage channels becoming bird 'scrapes' whilst providing attenuation in periods of flood events.

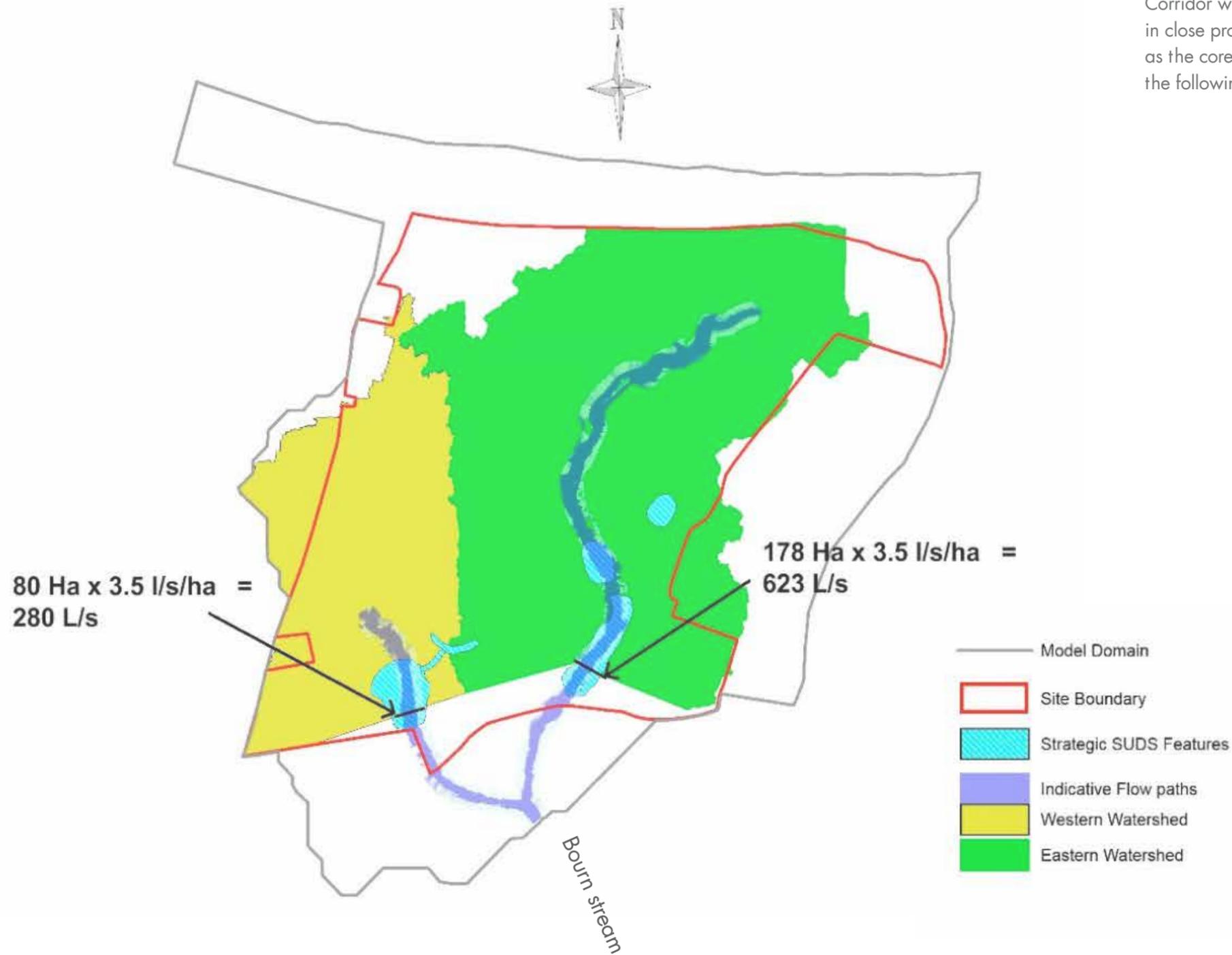
60% runoff reduction

This strategy, whilst providing a varied approach to using water in the landscape is also to ensure that the development reduces runoff into the Bourn Brook. The strategy, detailed in the drainage appendix shows a 60% reduction in surface water runoff compared to current flow rates, a major improvement.



Drainage

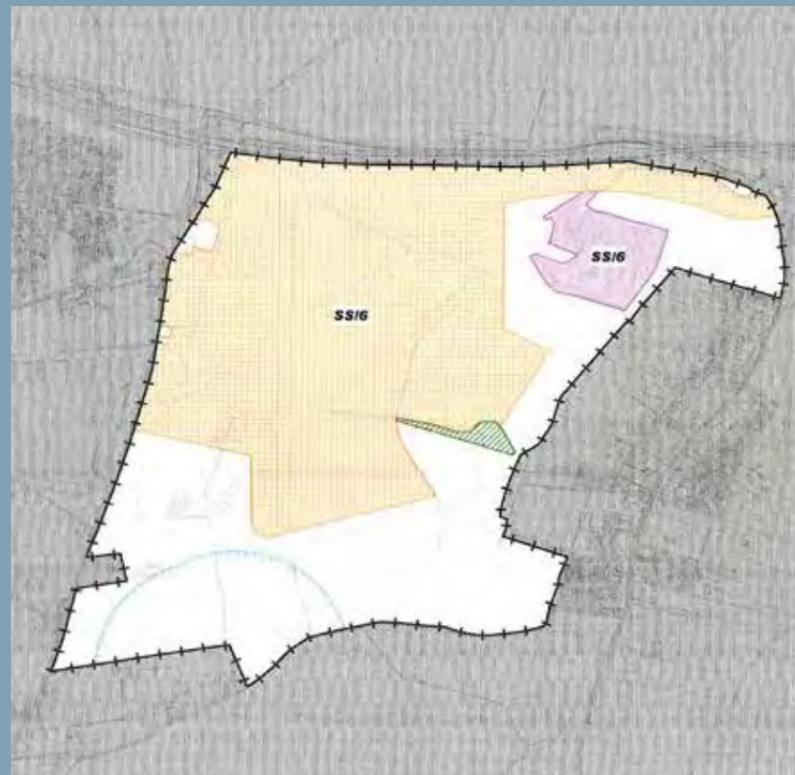
The Y shaped stream pattern as observed on the site in the initial landscape analysis could be used to act as the primary collectors for water run off for hard standings, roofs, roads etc although a variety of means will be used to slow down catchment run off. Some streams will be controlled to allow permanent water whilst others will seasonal be seasonal. A key water catchment will be the Runway Corridor which runs through relatively high density areas but is also in close proximity to the southern lower area where new wetlands as the core of a country park would be appropriate, as illustrated on the following page.



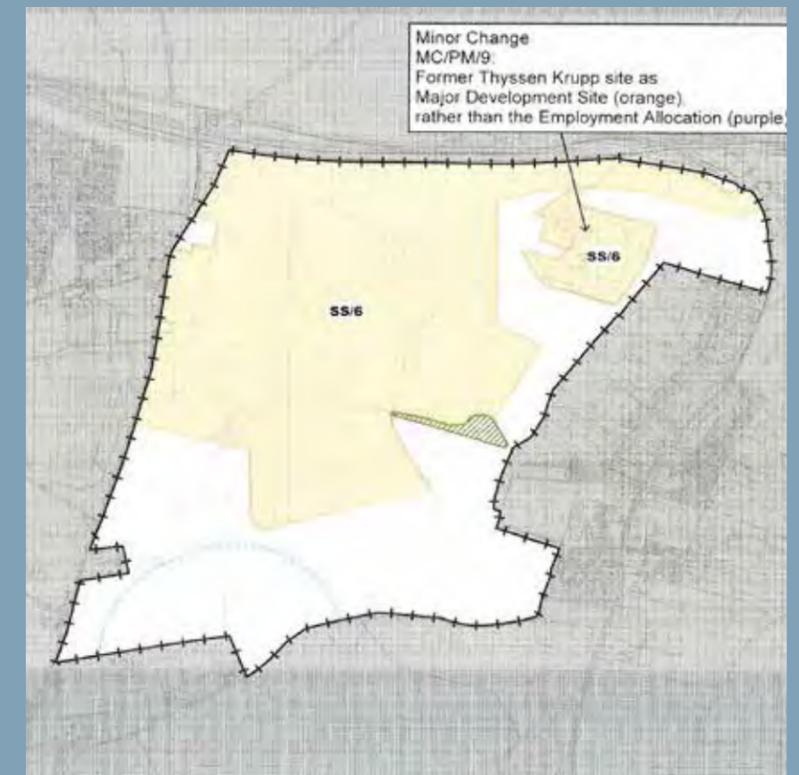
Drainage ... to provide attenuation and create a wetland country park



5 Proposed MDA, development yields and density

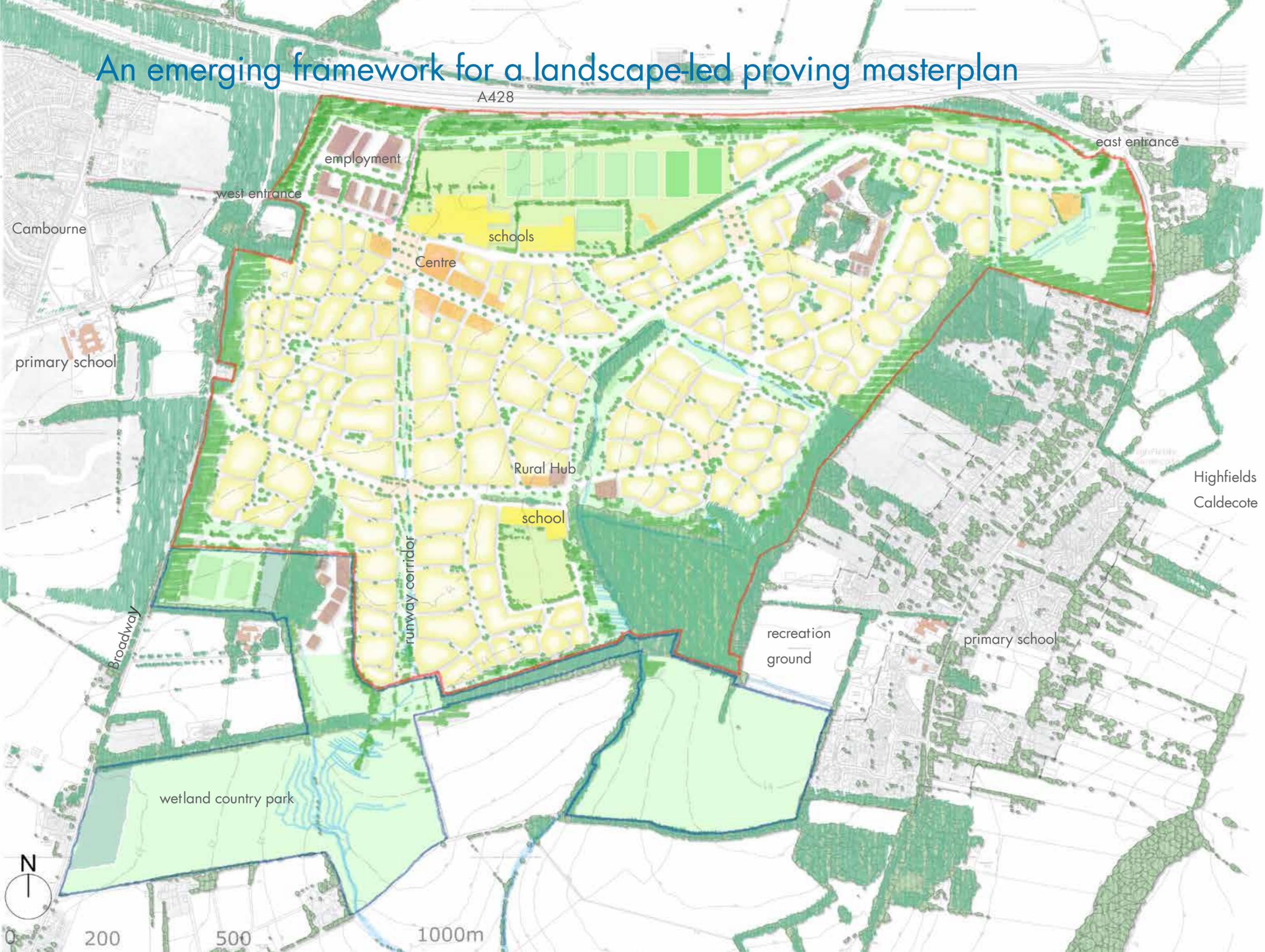


SCDC pre-Submission MDA July 2013



SCDC MDA with minor change July 2013

An emerging framework for a landscape-led proving masterplan



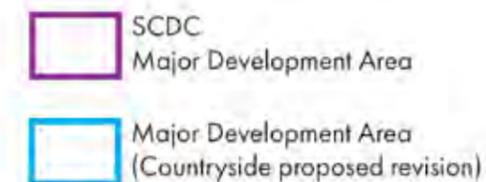
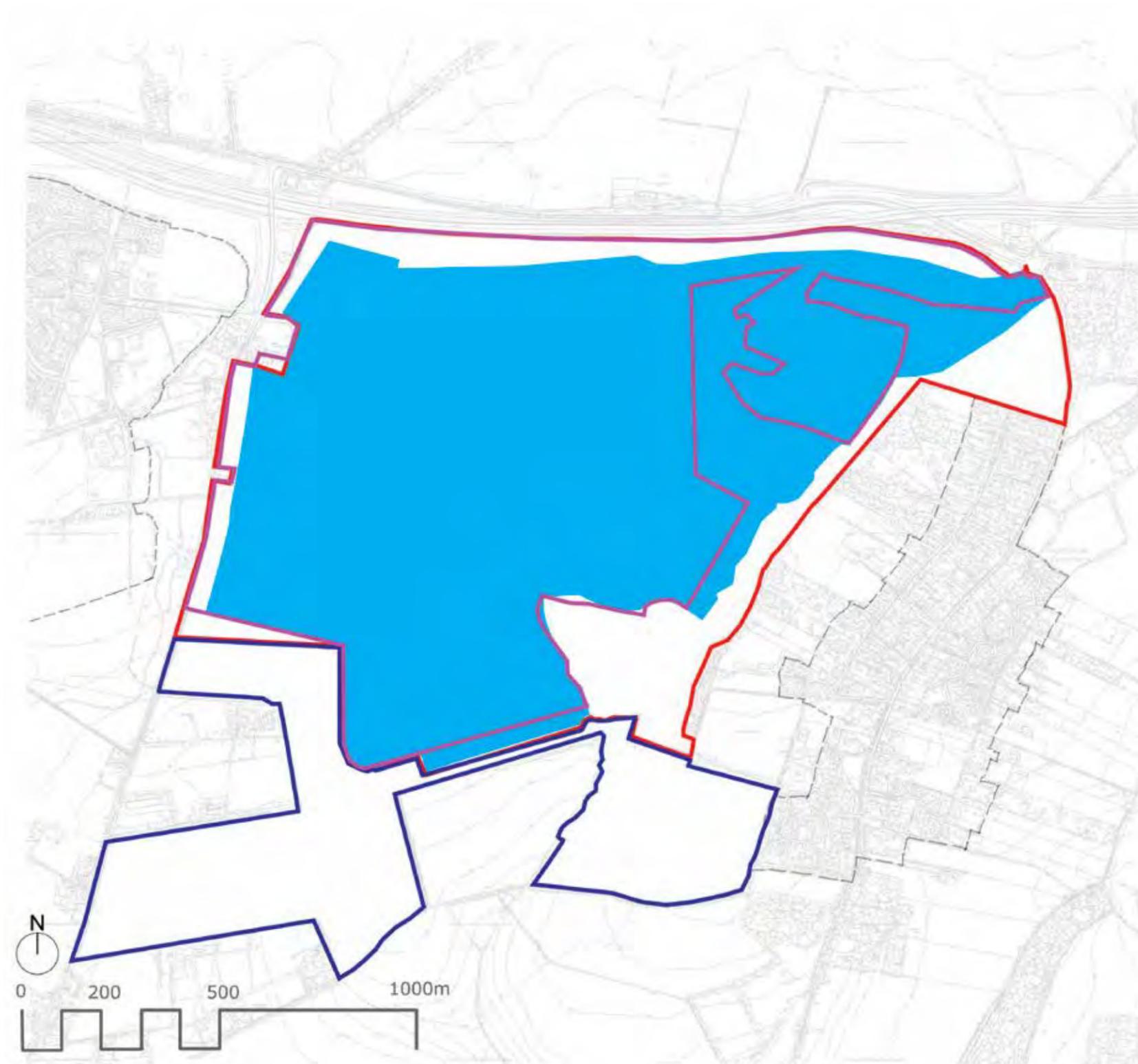
The SCDC MDA and the proposed MDA comparison

The proposed MDA obviously differs from that previously suggested by SCDC. This difference results from three year's work on site, contextual, ecological and aspirational studies in providing for all the needs of the community and the natural environment in terms of land use and landscape based on the capacity of the site to accommodate them.

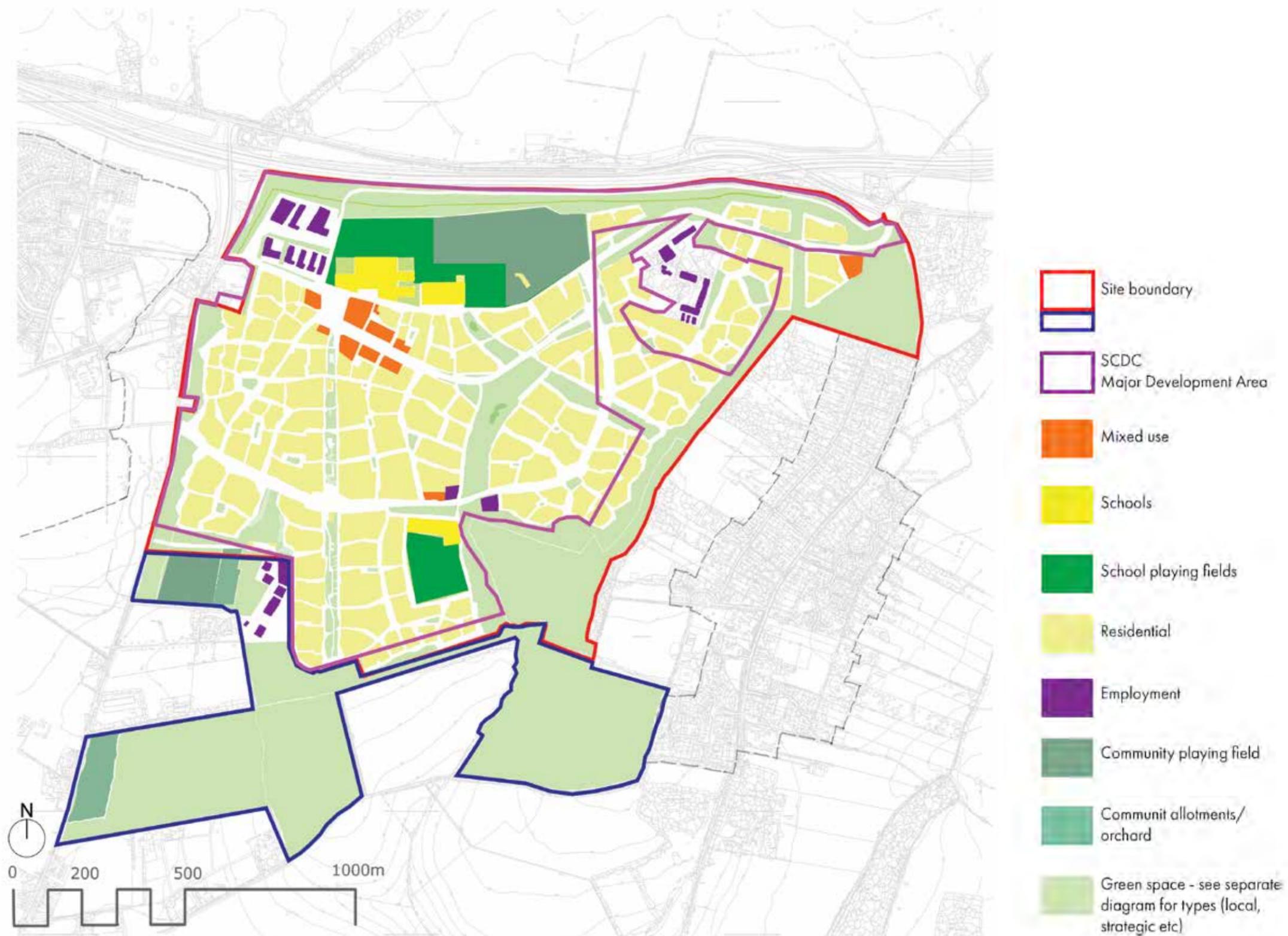
Land for the important perimeter landscapes to the north, east and west of the site have been excluded from the proposed MDA though they were included in SCDC's original MDA.

The diagram shown here illustrates both together. There are further differences in that the land around the north eastern employment area was largely excluded in the SCDC MDA, but this area is included in this proposed MDA since this land will accommodate residential development and important landscapes.

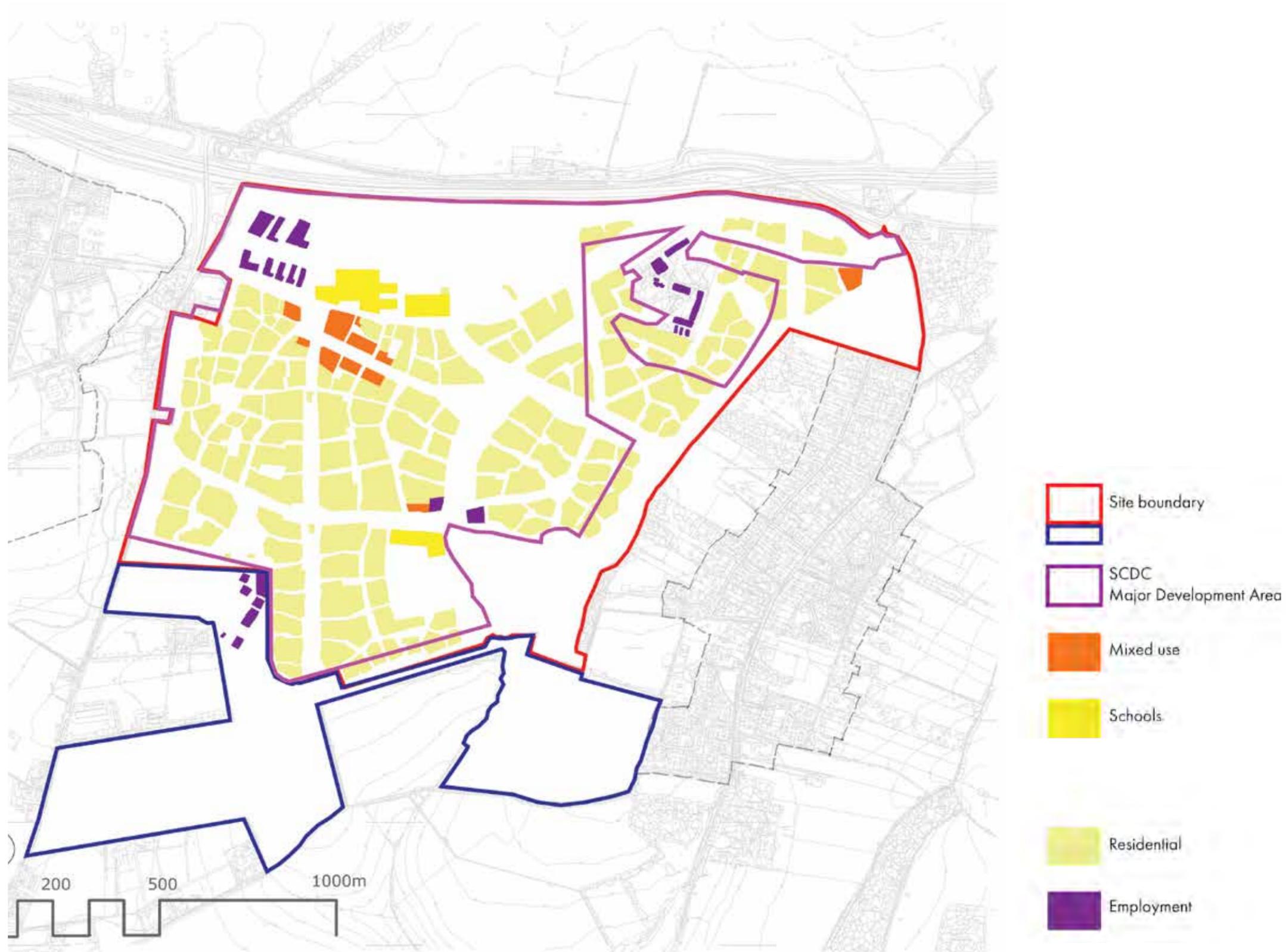
Overall, the proposed MDA is slightly larger than the SCDC published MDA, but the net residential area is 5 hectares smaller on the proposed MDA.



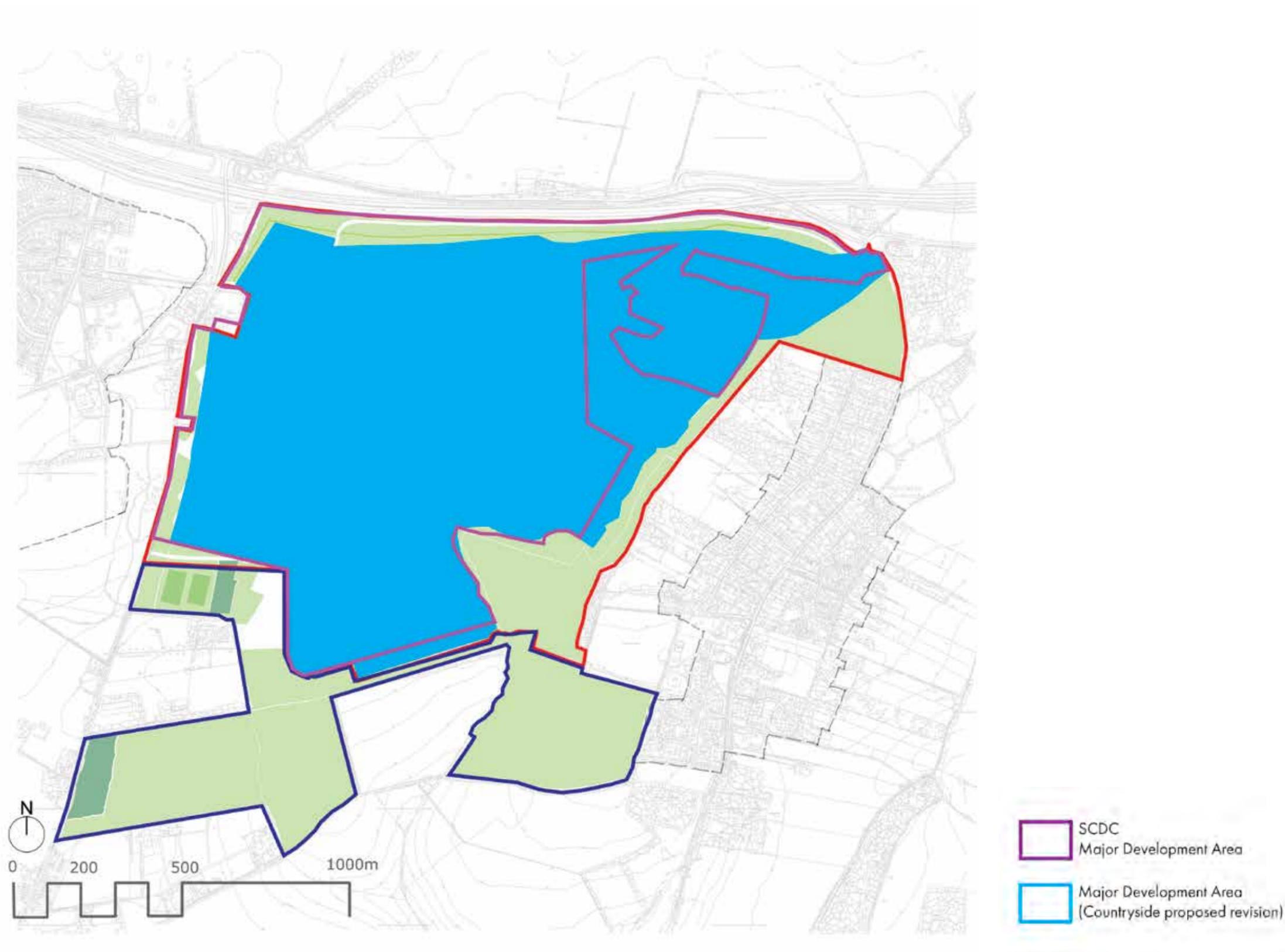
Proving masterplan land uses compared to the SCDC MDA



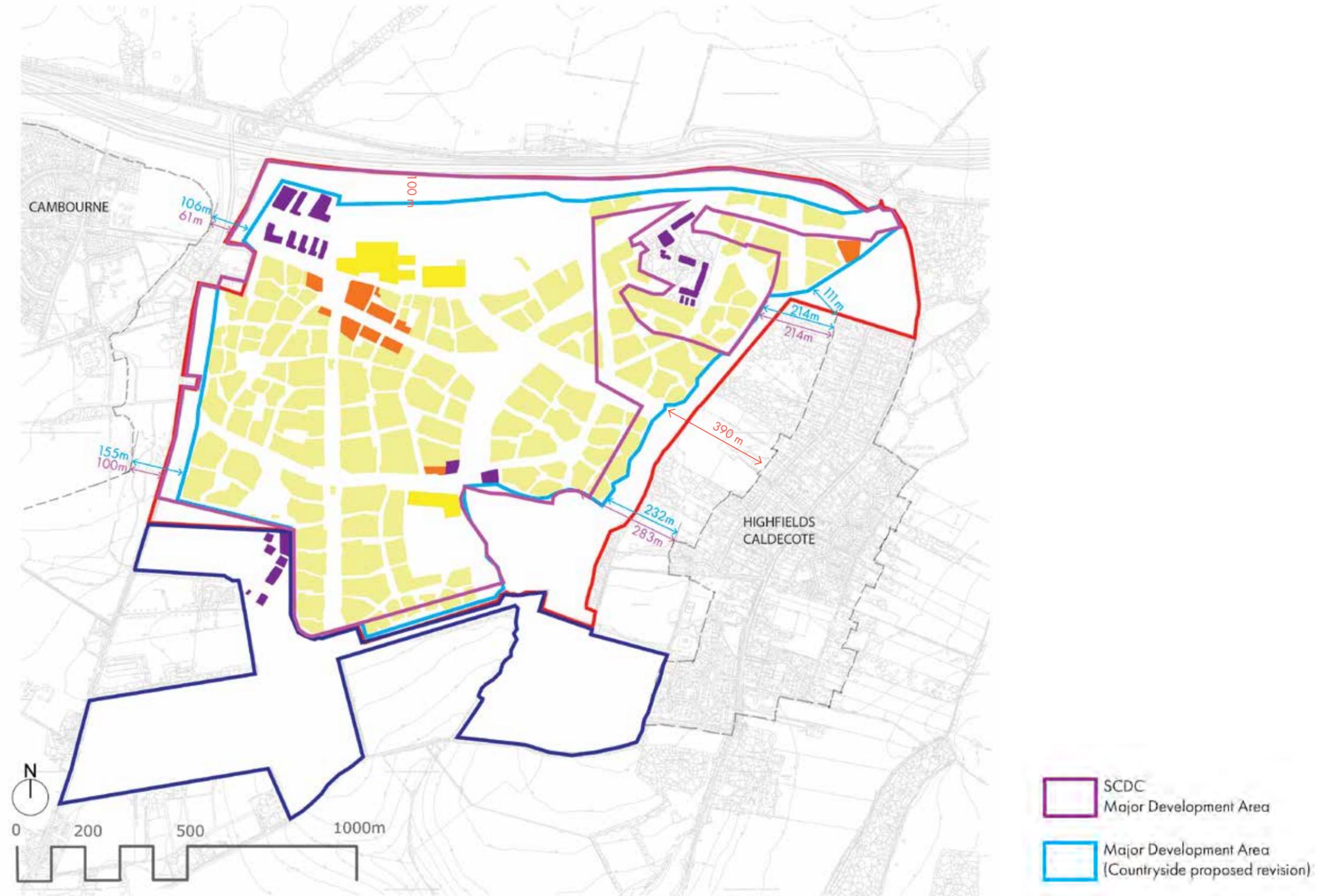
Proving masterplan built uses compared to the SCDC MDA



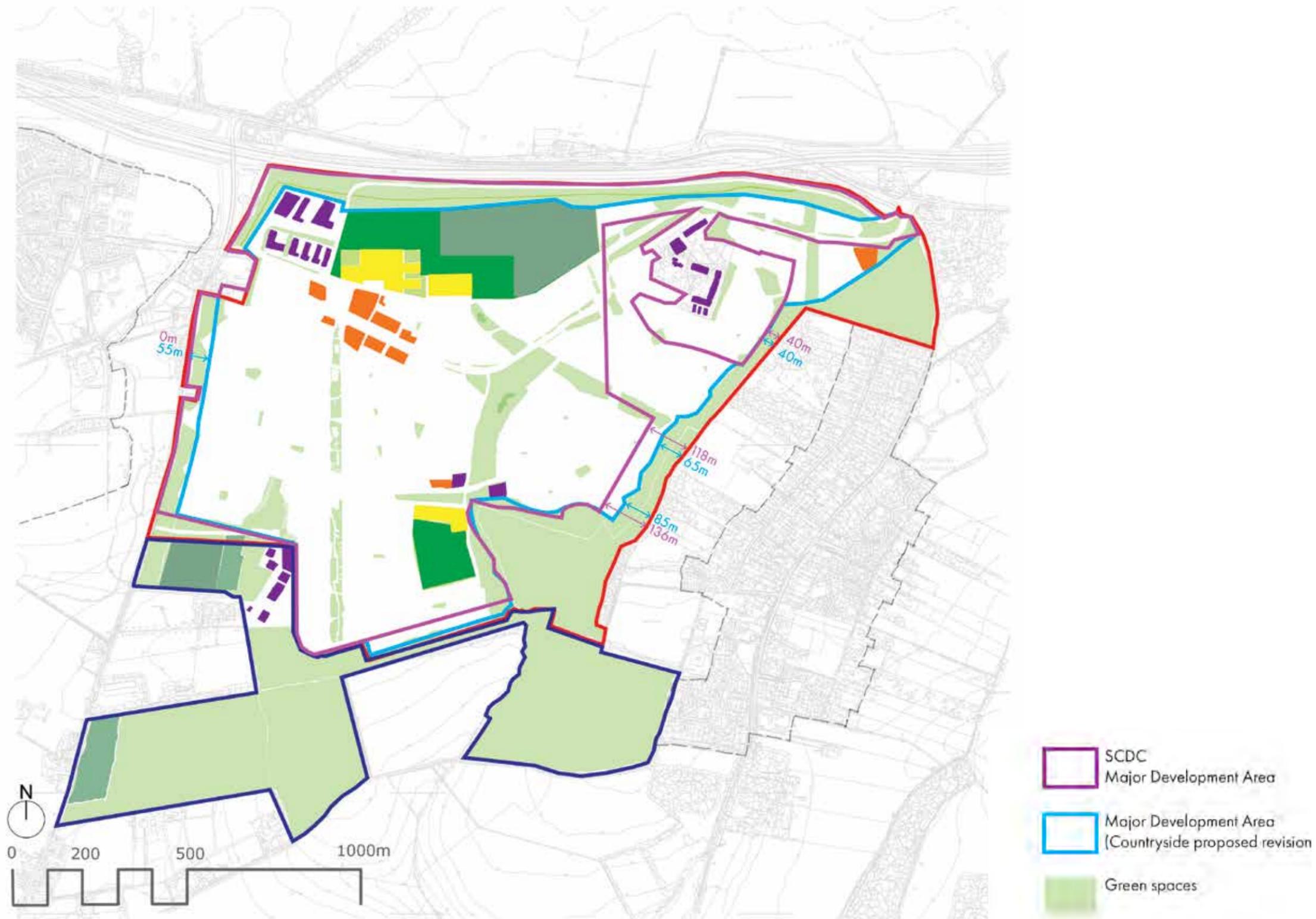
Proving masterplan strategic landscape compared to the SCDC MDA



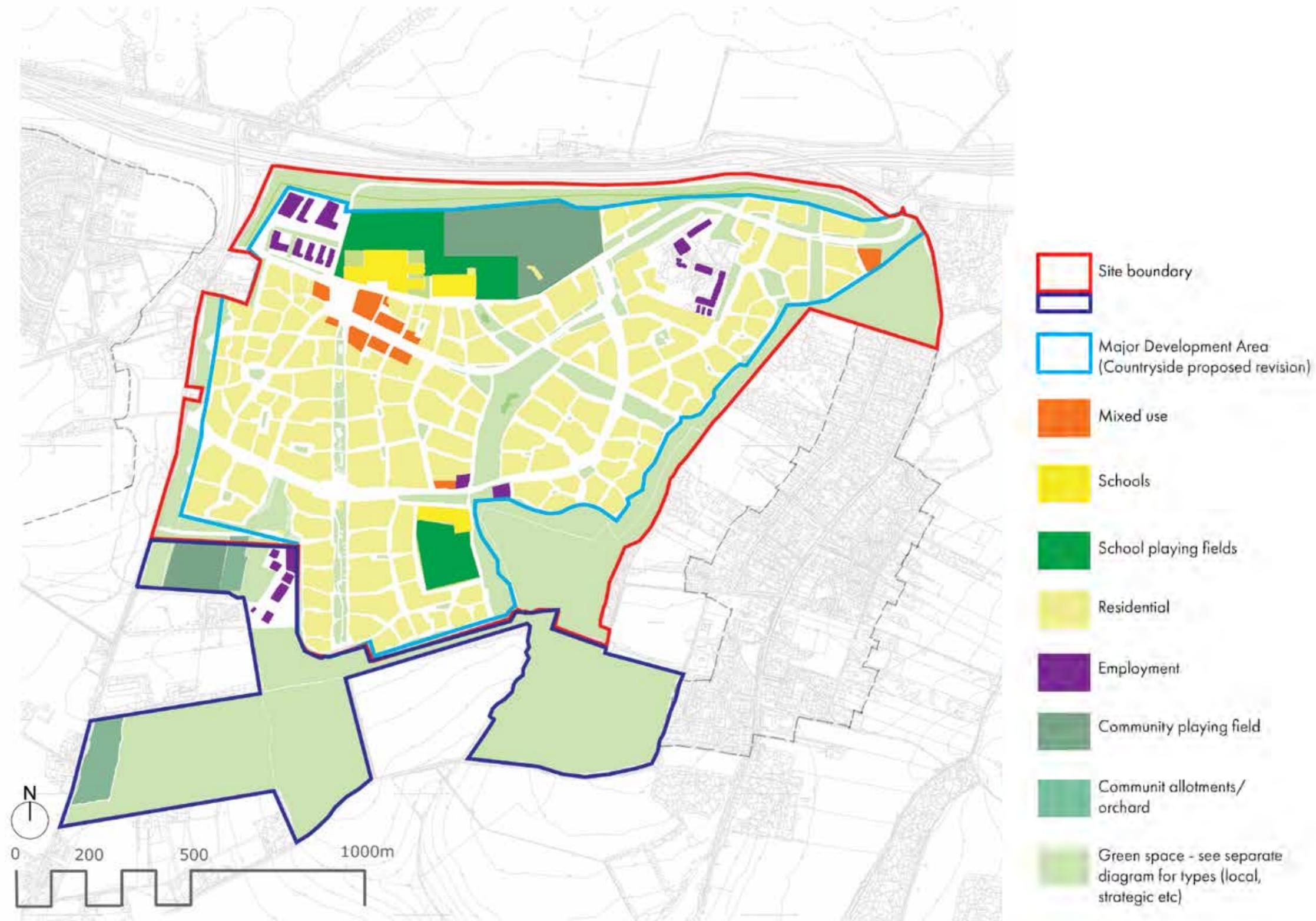
Proving masterplan dimensions to settlement edges compared to the SCDC MDA



Proving masterplan dimensions to structural landscape edges compared to the SCDC MDA

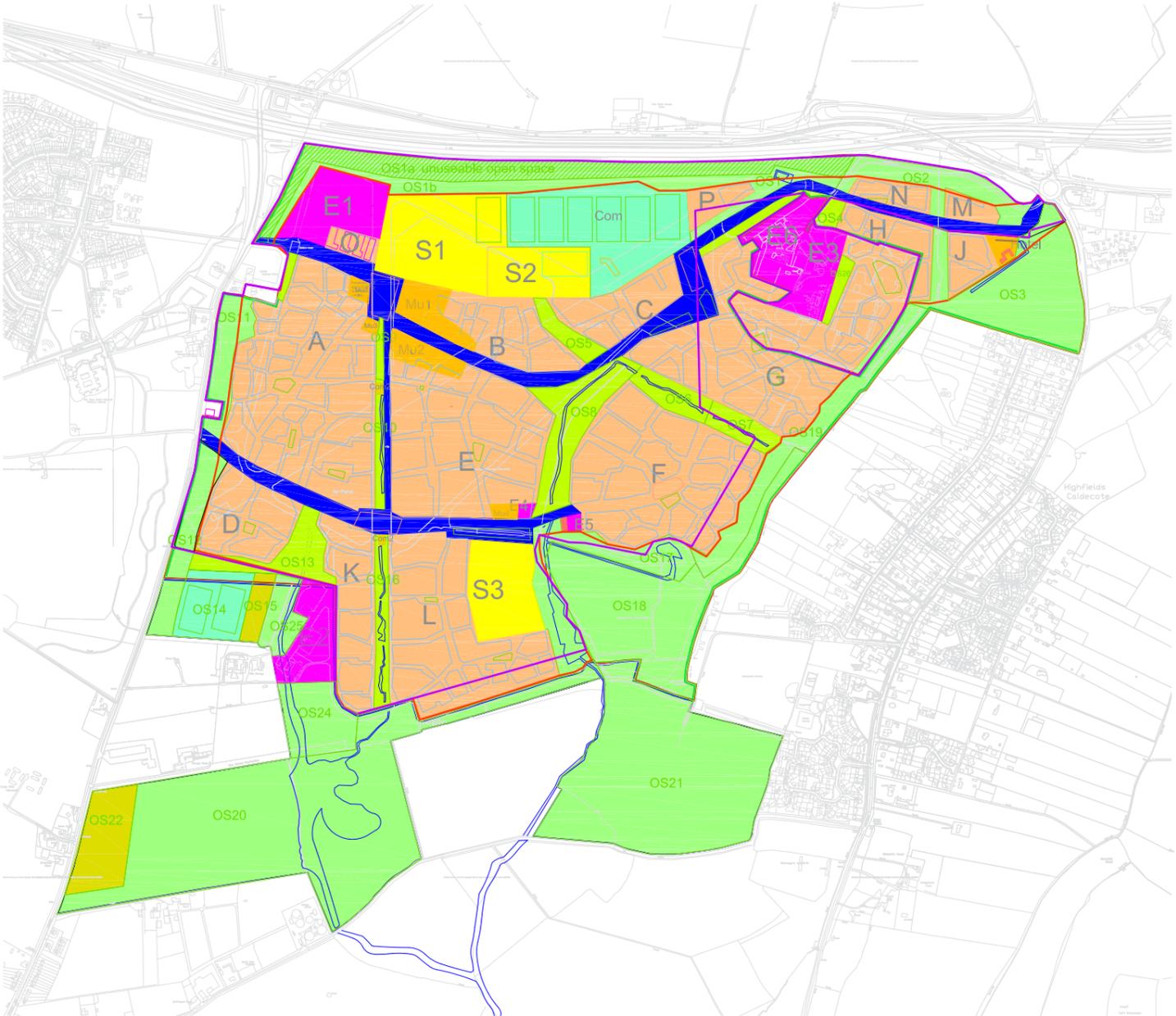


Proving masterplan and the proposed MDA



Schedule of yields and land uses related to Option 9A, the landscape-led proposed MDA boundary masterplan

residential parcels	93.82 ha.
development open space	13.37 ha.
mixed use	3.56 ha.
schools	13.32 ha.
other community	0.08 ha.
allotments and orchards	3.93 ha.
sports pitches	10.82 ha.
structural open space/landscape	91.70 ha.
employment	9.83 ha.
main streets	13.60 ha.
total land uses areas	254 ha



Bourn Airfield Masterplan

MEASUREMENT BY LAND USE AREAS

OPTION 9A-2

CAD 161008_RD1438_GA-100-MPLAN 9A

08/10/2016 (with 2.76 household multioplier)

	ha	sq metres	Density dph			total in parcel
			Low	Med	High	
RESIDENTIAL			30	37	47	
A	16.84	168440	168	206	261	635
B	3.99	39881			187	187
C	3.38	33751		125		125
D	4.14	41382	124			124
E	12.78	127773		378	120	498
F	13.18	131815		488		488
G	12.61	126095		467		467
H	6.55	65510	197			197
J	1.43	14342	43			43
K	4.78	47839	95	58		153
L	11.47	114653	258	106		364
M	0.79	7939	24			24
N	1.17	11655	35			35
O	0.71	7143			34	34
P	1.05	10474		39		39
total	93.82	948692	943	1827	602	3412

MIXED USE	ha	parcel area	Mixed use housing yield		
Mu1 Village Ctr	1.50	15013		107	* 107
Mu2 Village Ctr	1.08	10816		12	12
Hotel	0.39	3860			0
Mu3 Village Ctr	0.35	3526		30	30
MU4 Rural hub	0.24	2383		12	12
total	3.56	35598			149

TOTAL dwellings 3561

EMPLOYMENT	ha	parcel area
E1	3.35	33517
E2 (Grange Farm)	2.62	26171
E3	2.20	22042
E4	1.45	14501
E5	0.20	2033
E6 (DB site)	2.31	23077
total	9.83	

site area **redline** ha 199
blue line 55
254

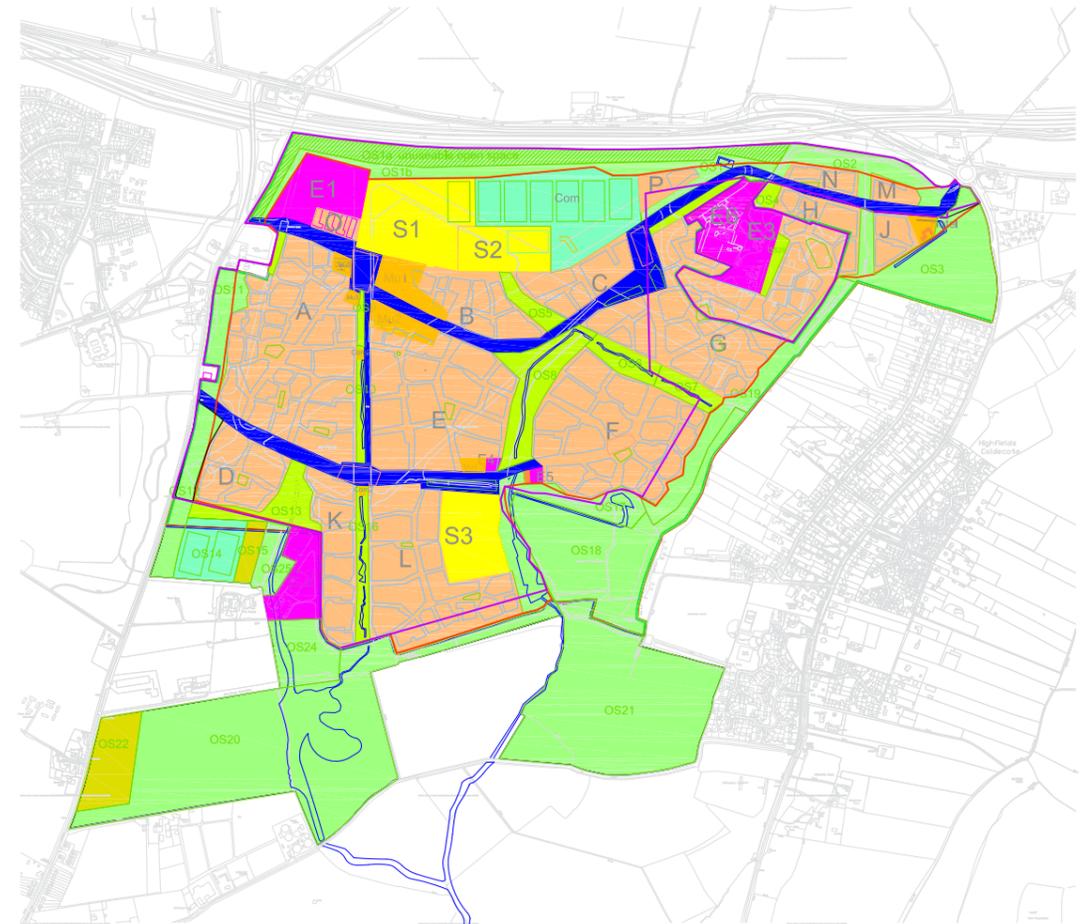
SCDC MDA 154.79
 proposed MDA 159.66

36.4 ave. density

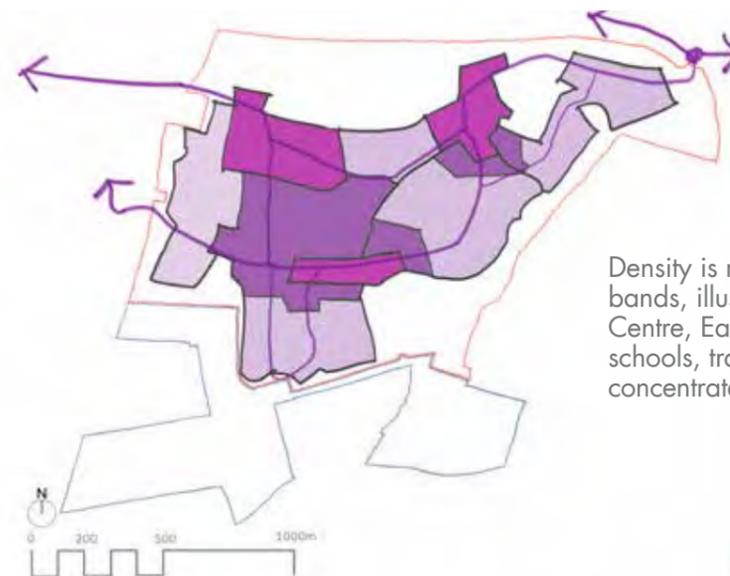
* inc 60 Extra Care Home

SCHOOL-COMMUNITY	ha	parcel area
S1	6.47	64655
S2	3.13	31317
S3	3.72	37247
total	13.32	133219

Com2- halls	0.08	800
total north school campus	17.66	176577



Within in each area a broad density assumption has been made relative to its context, location and size. The spreadsheet shows low, medium and high density assumptions within each parcel, resulting in a total dwelling yield of 3,561.



Density is related to movement. Density, in three bands, illustrated left, with the greatest density at the Centre, East Square and Rural Hub, where bus stops, schools, transport and retail/facilities are concentrated.

Schedule of open space

STRUCTURAL OPEN SPACE			
	type	ha	m2
OS1a	unuseable noise barrier		6.4 63553
OS1b		4.4	43605
OS2		2.8	27651
OS3		7.5	75024
OS11		2.1	21225
OS12		2.7	26670
OS17		4.3	42795
OS18	Bucket Hill Pl	10.0	100339
OS19		4.2	41985
OS23		1.1	10814
OS24		2.8	28296
OS25		1.4	14305

a. total structural open space **49.6**

DEVELOPMENT AREA OPEN SPACE			
		ha	m2
OS4		1.2	12274
OS5		0.9	8707
OS6		1.3	12703
OS7		1.1	10997
OS8		3.7	36883
OS9	runway (N)	0.3	2522
OS10	runway (C)	0.7	7227
OS13		2.4	23632
OS16	runway (S)	1.4	14050
OS26		0.5	4719

b. total development area open space **13.4**

informal open space sub total (a + b) **63.0**

* unuseable open space

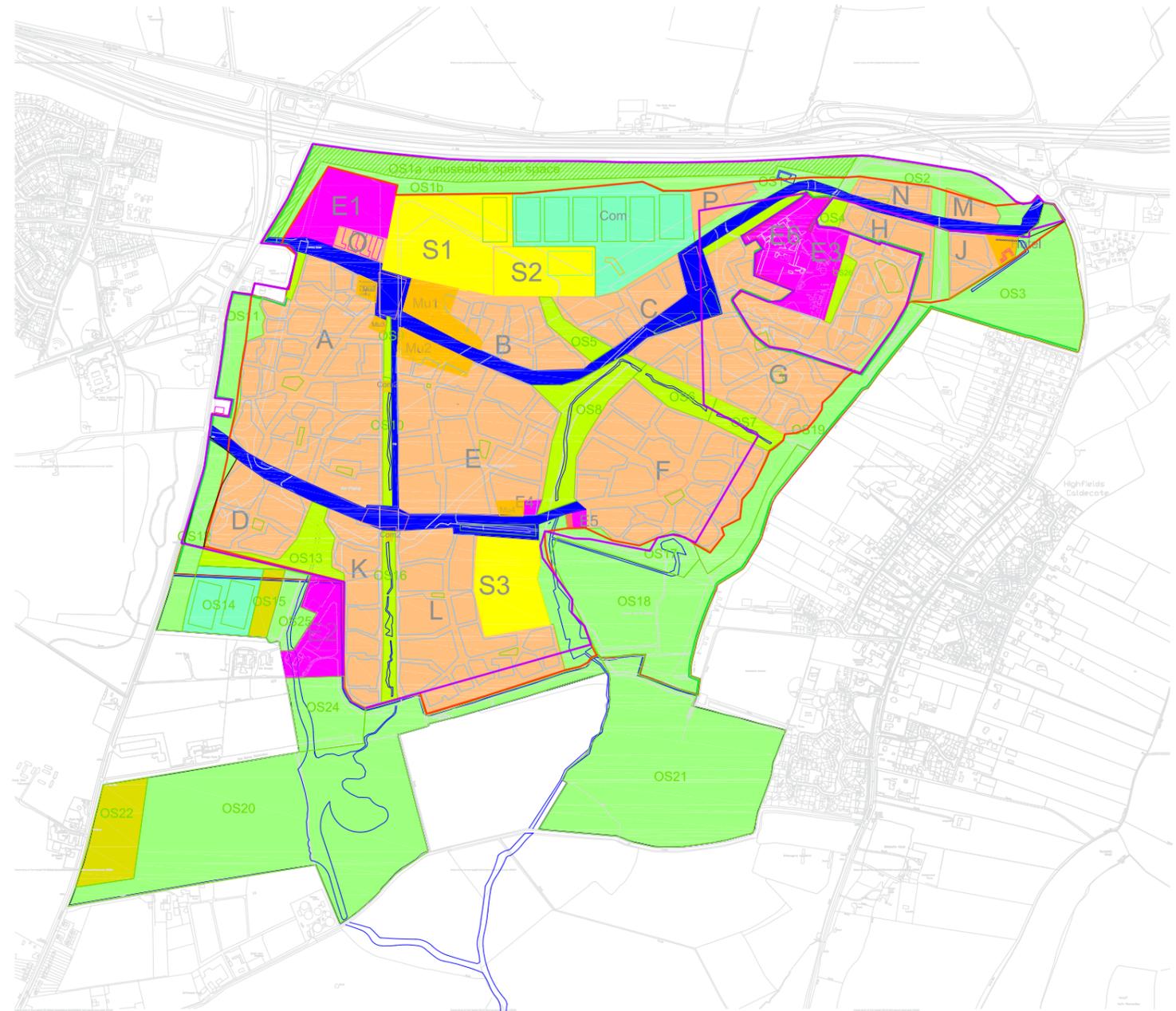
** informal open space inc play total **56.6**

areas for play

OS15	orchard/allot	0.9	8593
OS22	orchard/allot	3.1	30753
orchard/ allot total		3.9	

OS14	sports - Grand	2.8	27688
Com1- sports pitches	sports - north	8.0	80488
total sports		10.82	

OS20	west field	24.8	248307	Struct OS
OS21	east field	17.2	172115	Struct OS
country park		42.0		



	persons per household	houses in current plan	population forecast
population	2.76	3561	9829

* includes noise area next to A428, water bodies and nature reserves/ecology areas.

** includes play areas - which needs to be deducted to create final informal OS total

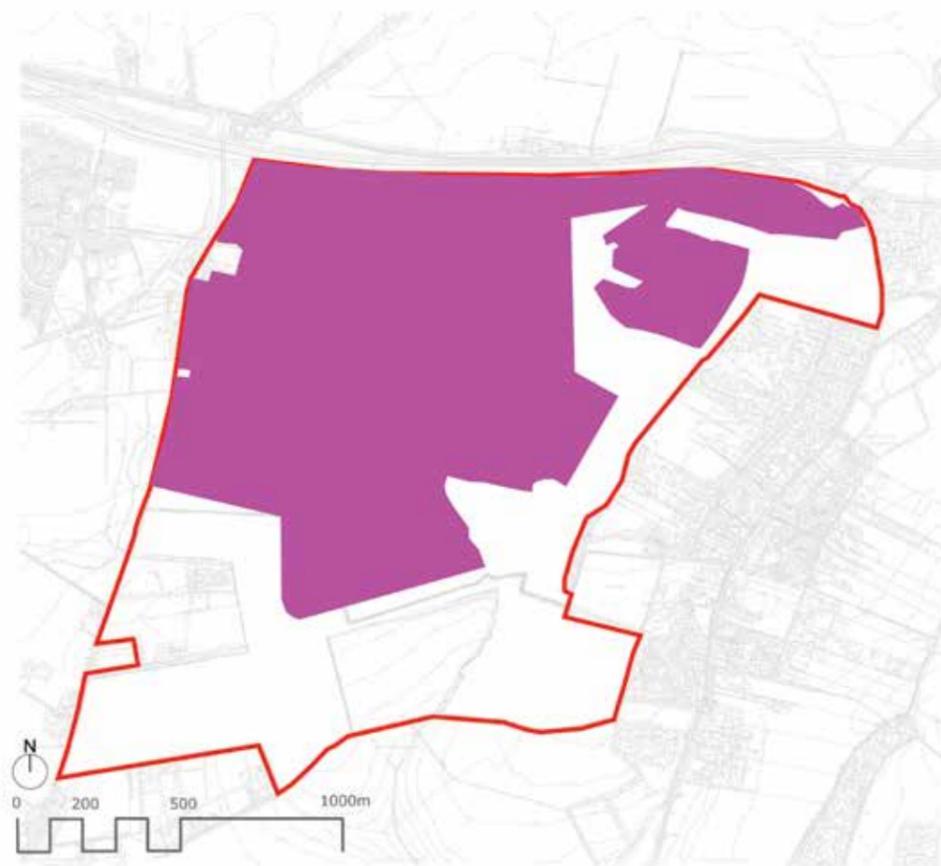
Major Development Areas - a comparison

Policy areas

Area Action Plan Area	282 ha
Planning Policy Major Development Area (MDA)	154.79 ha
Residential yield area (net developable area ie net residential area)	112 ha
Non-residential area (inc. schools, shops/community)	29.7 ha
Strategic landscape area, employment and park & ride	140 ha

Developer design-led areas

Site area redline 199 ha. + blueline 55 ha.	254 ha
Proposed Major Development Area (p-MDA)	159.66 ha
Residential yield area (net developable area i.e. net residential area)	107.2 ha
Mixed use area (inc. schools, shops/community, sports pitches and allotments)	31.7 ha
Strategic landscape area, employment (inc. main streets)	115.1 ha



SCDC boundaries as SS/6 policy

AAP (as SHLAA) boundary
 SCDC Major Development Area



Countryside proposed boundaries

Major Development Area (Countryside proposed revision)

Rummey design

South Park Studios, South Park
Sevenoaks, Kent, TN13 1AN
Tel. 00 44 1732 743753

www.rummey.co.uk

RD1438-D6-161021



COUNTRYSIDE

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