5. Key Interfaces & Buffers

The Green Infrastructure strategy incorporates a series of design principles that address how:

- The development interfaces with the existing / wider landscape
- The Green Infrastructure features interface with the development

These interfaces are numerous. However, some are key to the success of the spatial opportunities presented by the development for integration and place-making. Design principles and example design areas for these key interfaces are set within this section.

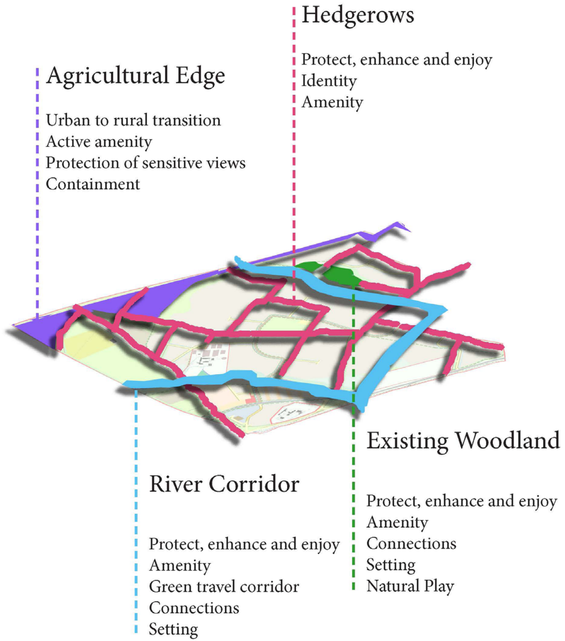

Figure 10 - Key green spaces

Buffer zones

Where interfaces are with existing, retained habitat/landscape features, a buffer zone is applied.

Buffer zone values

Buffer zones are applied to Hedgerows, Dark corridors, woodland and the riparian corridor. The buffers are there to protect and enhance these features, the habitat they provide and the associated fauna and flora.

The buffer zones provide supporting habitat and space for fauna to move freely into, out of and around the habitat. This space is free from fast moving, noisy or polluting items such as motor vehicles but their use by humans and for human movement, particularly at the periphery of these zones is encouraged. Encouraging human interaction with these features will help to integrate them with the development and in becoming a treasured part of daily lives. This will be of benefit to both the residents and the features. Residents will benefit from enjoyment of access to nature, the features will benefit if residents value them highly and therefore take care with them.

Buffer zone features

Buffer zones can contain foot and cycle ways and it is intended that these items are used to assist in softening the edges of the buffer zones. This is particularly important for the hedgerow buffers which form very linear features in the landscape. This will be achieved by creating a meandering path. For hedgerows, the paths will be placed no closer than 6m from centre but will in places extend beyond the buffer zone and assist in the formation of defined spaces for other uses. Some example scenarios are provided on the following pages.

Natural Play is also permitted within buffer zones. This will be play that embraces the features of the particular buffer zone (for example tree climbing within woodland), providing creative play opportunities and enhancing the experience of the journey for all users. Formal or prescriptive play equipment is not permitted. Children can use their imagination to interpret natural play elements such as grassed mounds, logs on end, hollow logs, boulders and long grasses in ways of their choosing. In the more 'wild' places children can climb trees, get muddy and play hide and seek to name but a few activities.

The need for and benefits of natural play are too numerous to set out in this document. Further information can be found in the following publication:

Lester, S & Maudsley, M., 2007. *Play, naturally. A review of children's natural play.* London: The National Children's Bureau for Play England

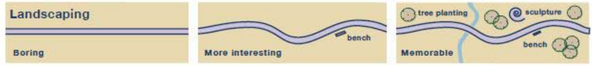

Figure 11 - Connect2 and Greenway Design Guide. Sustrans

Natural play precedent images

Agricultural Edge

Development Edge

How the development sits within and relates to the Green Infrastructure is fundamental to the way in which the future residents and visitors use the landscape as a resource and the way in which it functions for biodiversity.

Defining Principles

The masterplan site perimeter, in particular, the agricultural interface, is important to the way in which the development is sited and interfaces with the wider landscape. 'Edges' occur at the borders between two habitats, be it human or ecological. 'Edges' can be highly productive and rich layers of spatial design, particularly important in Green Infrastructure.

'The place where two eco-systems or habitats meet (e.g. woodland and meadow) is generally more productive and richer in the variety of species present than either habitat on its own. In ecology this is called 'ecotone'. This is central to the idea of using edges as a design method. The logic is simple. If the most productive bit of woodland is the edge, then design it to have a bigger edge.'

The Permaculture Association, 2014

'ecotone, a transitional area of vegetation between two different plant communities, such as forest and grassland. It has some of the characteristics of each bordering biological community and often contains species not found in the overlapping communities. An ecotone may exist along a broad belt or in a small pocket, such as a forest clearing, where two local communities blend together. The influence of the two bordering communities on each other is known as the edge effect'

Ecotone definition – Encyclopedia Britannica, 2014

The development edge will be transitional, between the existing site landscape / townscape and the proposed development. This transition will mostly occur through the Green Infrastructure. The agricultural edge, in particular, will need to respond to sensitive views but without encasing the development with impenetrable screen planting. This can be achieved through woodland copse planting, a feature of the existing landscape, laid out to promote views out to the wider landscape whilst buffering / mitigating sensitive views from predominant angles. Although the site topography is dramatic, laying out features, such as woodland copses, to follow contours can help the Green Infrastructure to appear naturalised, within which development plots and south facing allotments, etc, can be nestled.

Community routes and footpaths should meander through a variety of environments and layers of the development edge. These routes should offer the user a varied experience of the landscape to help intuitively understand site context and to increase activity and natural surveillance where beneficial. e.g.

Providing good access to allotments and houses. Development edges should incorporate opportunities for:

- Activity (e.g. Informal play, fitness trails)
- Productivity (e.g. Food / energy / resource production / harvesting)
- Delight (e.g. Reinforce sense of place / identity, public art, access to nature)
- Protection (e.g. Habitat preservation, shelter, natural surveillance, well-being)

Key Interface Area

An example area of the defining principles of the development edge in practice is provided in Figures 17 and 18. This area north of the railway line typifies the whole western perimeter of the masterplan site as it sits within a wider agricultural landscape.

Forming part of a proposed Country Park the design of this interface has several key objectives:

- Provide good access to GI from the development
- Mitigate sensitive views to the development
- Interface development with Country Park
- Respond to landscape context and character
- Provide deeper penetration of GI corridors into the masterplan site
- Integrate community routes and recreation corridors within wider site network

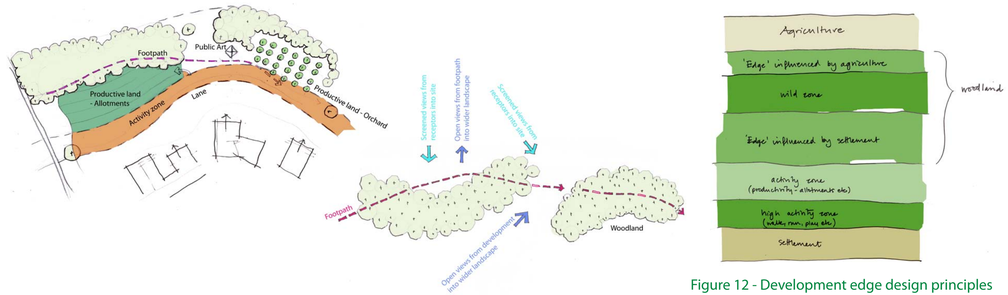

Figure 12 - Development edge design principles

Activity - play - excercise - green gym - educate - get involved

Productivity - food production - connection to agricultural landscape - water harvesting - energy production

Delight - public art - identity - connection to historic land use - legibility - entertain - educate - contemplate - surprise - engage - access to nature - inspire

Protect - biodiversity - wellbeing - views - landscape - natural surveillance - mitigate - enhance - shade - shelter

Figure 13 - Development edge defining principles

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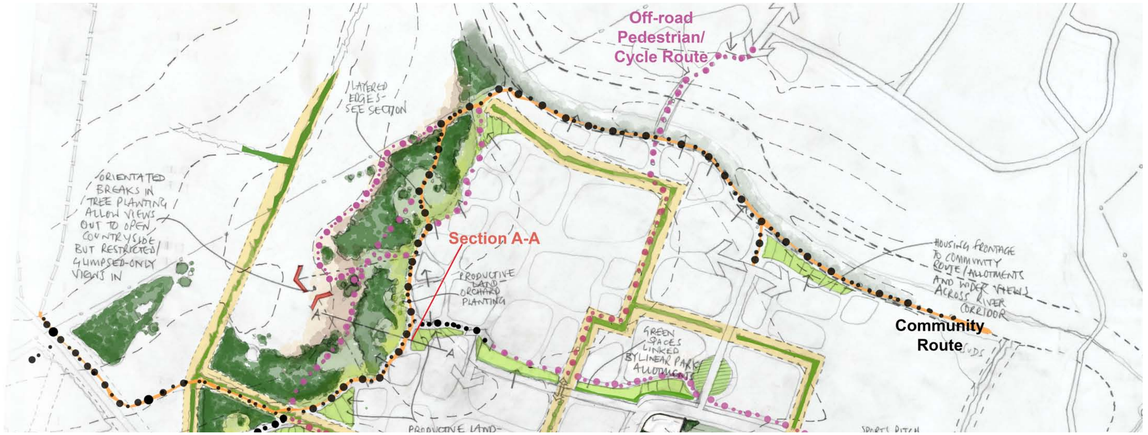


Figure 14 - Development edge sketch plan

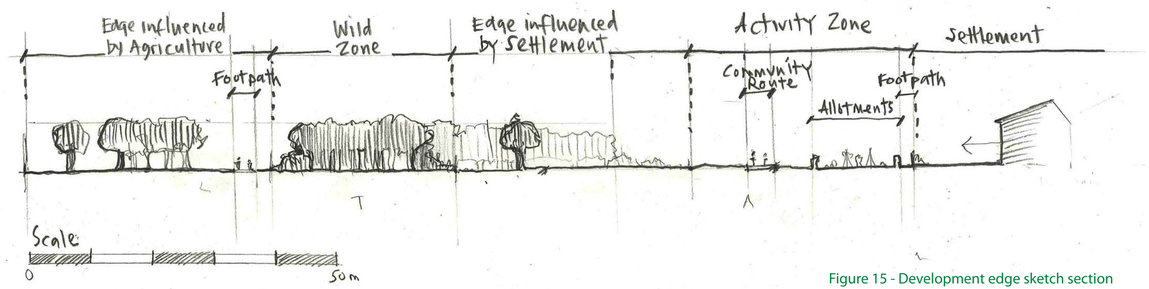
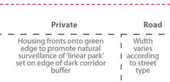


Figure 15 - Development edge sketch section

Retained Hedgerows (hedgerow buffers and dark corridor hedgerow buffers)



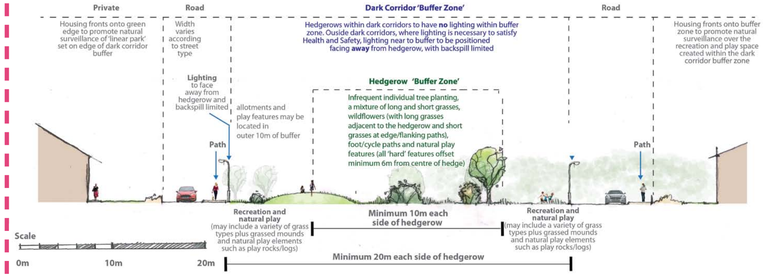


Figure 16 - 20m (dark corridor) hedgerow buffer design principes - sketch plan and section

Dark Corridor Buffer
(20m buffer each side of hedgerow)

Hedgerows within dark corridors have **no** lighting within the buffer zone.

Where lighting is necessary in areas adjacent to dark corridors, lighting positioned facing **away** from hedgerow, with backspill limited.

Paths to be situated at outside edge of buffer.

Within outer 10m of buffer, activity/elements excluded from non dark hedgerow buffers may be included; allotments and formal play equipment.

Retained Hedgerows

Maximising the retention of existing hedgerows is an important aspect of the biodiversity net gain strategy. They are also a key characteristic of Bicester's landscape pattern, and can beneficially contribute to the compartmentalisation of the development plots.

By bringing the existing hedgerows into better management and supplementing the hedgerow habitat with adjacent complimentary habitats the overall hedgerow corridors can be significantly enhanced. The supporting habitat, or 'buffer', should be a minimum of 10m either side of the hedgerow. Some lengths of hedgerow will form part of the longer 'dark corridors' identified for commuting bats (see section 3 and Figure 4). Dark corridors should reserve a minimum of 20m either side of the hedgerow as 'buffer' to development. Both 10m and 20m 'buffer zone' examples are provided on sample area Figures 16 to 18.

The sample areas and design principles shown illustrate treatment at the interface of hedgerows and their associated 'buffer zones' with proposed housing. Hedgerows are kept within the public domain.

Biodiversity

The hedgerow buffers would support long-grass habitat to maintain and enhance the value of these features for invertebrates. Some buffers would be sown with a native plant mix that would be flower-rich in order to be visually appealing to the local residents. New habitats of value to the hedgerows fauna that would be created within the hedgerow buffers include wildflower-rich grassland, species-rich scrub, trees and tall grassland swales. Where it is proposed to provide a pedestrian/cycle route within the hedgerow buffer there would be at least 6m from the centre of the hedge to the edge of the leisure route. This would ensure that the biodiversity value of the hedgerows is maintained. Notwithstanding this the area potentially occupied by the cycle/pedestrian routes has been excluded from the net gain calculation using the Defra metric. Use of the metric has revealed that the green infrastructure associated with the Masterplan would deliver an increase in biodiversity and therefore a net gain in biodiversity.

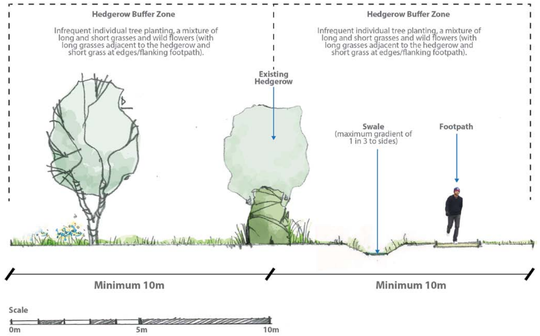
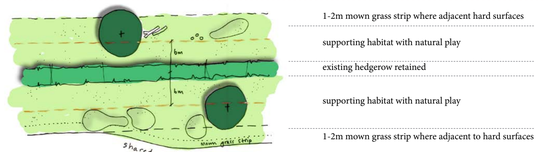
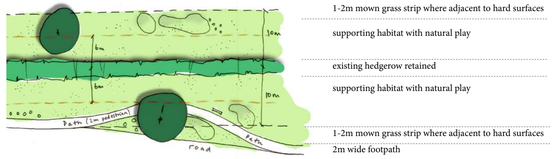


Figure 17- 10m (non dark corridor) hedgerow buffer design principes - indicative section



1-2m mown grass strip where adjacent hard surfaces
supporting habitat with natural play
existing hedgerow retained
supporting habitat with natural play
1-2m mown grass strip where adjacent to hard surfaces

Example 1: Hedgerow buffer no paths



1-2m mown grass strip where adjacent to hard surfaces
supporting habitat with natural play
existing hedgerow retained
supporting habitat with natural play
1-2m mown grass strip where adjacent to hard surfaces
2m wide footpath

Example 2: Hedgerow buffer with 2m wide footpath

Acceptable Inclusions:

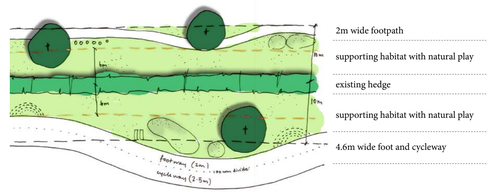
Certain activities are acceptable within the hedgerow corridors without adversely disturbing the habitat wildlife. 'Hard' features are located with a minimum offset of 6m from the centre of the hedgerow. All features are only permitted where they will not adversely affect the root protection area of the hedgerow or existing trees. Acceptable inclusions are:

- Passive recreation and natural play
- Footpaths / Cycleways (max width 4.6m (extends beyond 10m buffer)
- SuDs and similar landscape features (e.g. low mounds)
- Infrequent individual tree planting / localised adjoining copse
- Street furniture e.g. benches
- Public art
- Lighting - only where necessary to comply with safety requirements and where placed facing away from hedgerow with shield to prevent backspill. Lighting to be located in furthest possible location from hedgerow, no closer than 6m from centre of hedge. NO lighting within dark corridors.

All other activities/features are excluded including:

- Allotments
- Extensive tree cover
- Formal play or similar activities

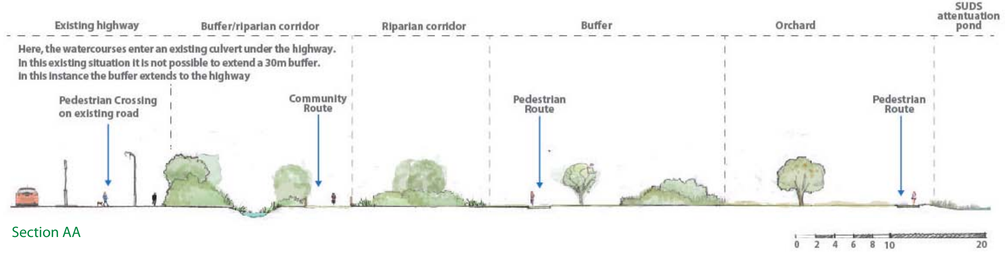
However allotments and more extensive play provision are permitted within the outer 10m of dark corridor buffers



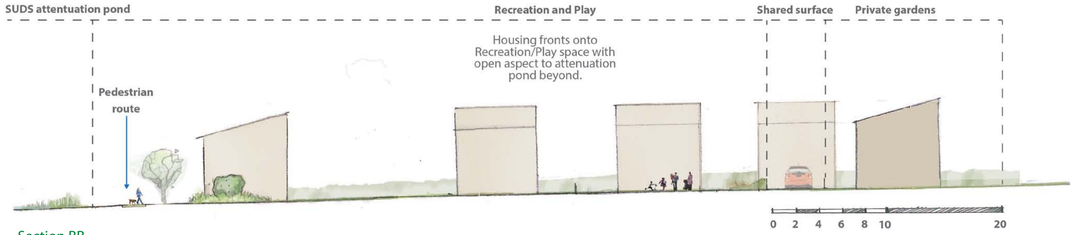
Example 3: Hedgerow buffer with 4.6m wide foot/cycleway + 2m wide footpath

Figure 18- 10m (non dark corridor) hedgerow buffer design principes - indicative plans

River Corridor



Section AA



Section BB

Figure 19 - River corridor sketch sections

Key Interfaces - River Corridor

The River Bure and its tributaries, including Langford Brook, are important local water courses. The opportunity to protect and enhance these is recognised through the Green Infrastructure Typology and Biodiversity Strategy. By agreement through the Green Infrastructure and Biodiversity workstream group the establishment of a minimum 60m wide corridor to the water courses (30m either side of the centre line) is provided to secure sufficient offset for development. Although some are brooks / tributaries for the purposes of masterplanning they are collectively called 'river corridors'.

Whilst the primary establishment of the river corridors is to offset development, they will also have the capacity for other functions. The interface with development plots and the integration of recreation, movement, water management and biodiversity are typical requirements of the river corridors. A design example of how this might work in practice is illustrated in Figure 20.

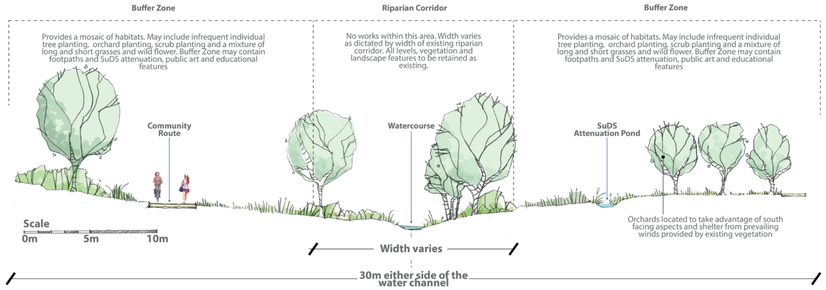
Acceptable Inclusions

Mosaic of habitats
Individual/small group tree planting
Footpaths
Cycleways
SuDS attenuation
Public Art
Educational features
Wayfinding
Natural play features

Exclusions

Lighting
Allotments
Extensive tree cover
Activities including formal play
Any works withing the existing riparian corridor

Figure 20 - River corridor sketch layout



Note that the following items are excluded from the River Corridor:

Allotments
Extensive tree cover (except where existing)
Lighting
Activity such as formal play areas

Figure 21 - River corridor buffer design principles