

The value of green space in Bicester to local people

Summary

This note presents evidence on the value of Bicester's green spaces to local people, which was gathered by the University of Oxford using two different methods:

1. A public survey in summer 2017, using interviews, a focus group and an online app;
2. A new online tool called ORVal that estimates the welfare value of green spaces for recreation anywhere in England.

The public survey reached 136 people and gathered strong qualitative evidence that Bicester's green spaces provide benefits for health, wellbeing and community cohesion. It also collected information on factors that block delivery of these benefits, ranging from familiar problems such as litter to more general issues such as loss of green space to development, or lack of joined-up routes. The ratio of benefits to 'blocking factors' averaged 2.5 to 1, but ranged from a high of 4.7 to 1 in Bicester East and Launton to a low of just 1.7 to 1 in Bicester North and Caversfield.

The ORVal tool estimated that the green space in Bicester provides welfare benefits worth over £1.5 million per year, based on the expected number of visits per year.

We have also mapped the straight line distance of people's houses from the nearest green space using the Natural England Accessible Natural Green Space standards (ANGSt). This shows a lack of accessible natural green space in Bicester. Only 13% of properties in Bicester are within 300m of a natural green space over 2 hectares (Bure Park and Charbridge Way), and no properties are currently within 2 km of a large (20 hectare+) natural green space.

These results have been used to draw up a list of options for improving provision of green space in Bicester. This includes improving wildlife habitats in the larger amenity green spaces (Langford Meadows, Southwold and Launton Road) so that they provide more 'natural' green spaces, enhancing the Skimmingdish Lane green spaces to fill a gap in provision in north-east Bicester, protecting / enhancing smaller green spaces in the Avon Crescent / Shakespeare Drive area, tackling problems with litter and pollution in certain areas, and improving links between green spaces including by providing road crossings at key points. The proposed community woodland at Burnehyll, together with the new country park and nature reserve in NW Bicester, could provide access to a large natural green space (within 2km) for 59% of the households in Bicester. There is a gap in provision for households in east Bicester which, could in theory, be met if access could be provided to the local wildlife site at Gavray Meadows.

About the study

This work is part of a project called "Tools for Planning and Evaluating Urban Green Infrastructure: Bicester and Beyond", which runs from February 2016 to April 2018. It is funded by the Natural Environment Research Council (NERC) and is being carried out by a partnership including the University of Oxford, Forest Research, Cherwell District Council, Bicester Town Council, Oxfordshire County Council, Bioregional and others. The study aims to find simple and practical tools that local authorities can use to assess the value of the green space in their areas and plan how to protect and enhance it.

The term 'green infrastructure' in the title of the study just refers to all the different types of green and blue space that provide services to people both in the town and the wider countryside. This includes parks, woodlands, churchyards, playing fields, playgrounds, allotments, grass verges, footpaths, cycle paths, rivers and lakes, as well as 'engineered' green and blue infrastructure such as green roofs, green walls and sustainable drainage systems such as swales and balancing ponds.

We have tested a range of different tools for mapping and assessing the many services provided by green spaces, including air quality regulation, flood protection and wildlife habitat, but this note focuses purely on the value of green space for recreation and other cultural benefits. This was assessed using two approaches: a public survey, and a free online evaluation tool called ORVal.

The public survey

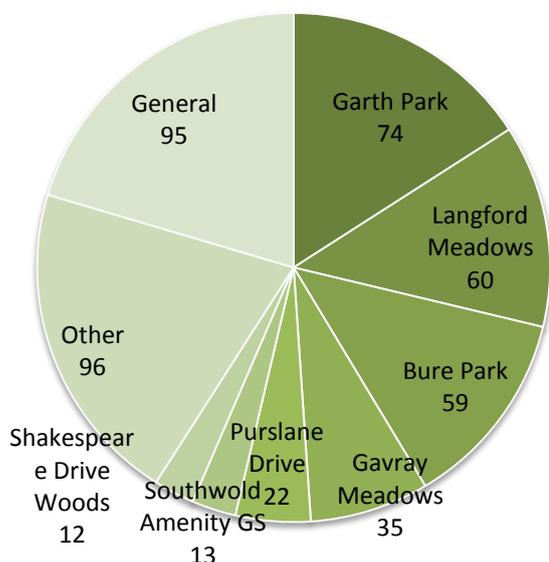
Public views on green space in Bicester were gathered using various methods:

- semi-structured interviews at the Bicester Big Lunch (4 June 2017);
- semi-structured interviews during a week-long drop-in consultation at Bicester Library (8-14 July 2017);
- a focus group workshop at the library (15 July 2017);
- an online questionnaire using the Map-Me app (July 2017).

The interviews, focus group and app were led by Helen Mason, as part of her MSc thesis. She asked people what green spaces they used, what activities they did there, what benefits they got from the green space and whether anything about the green space could be improved.

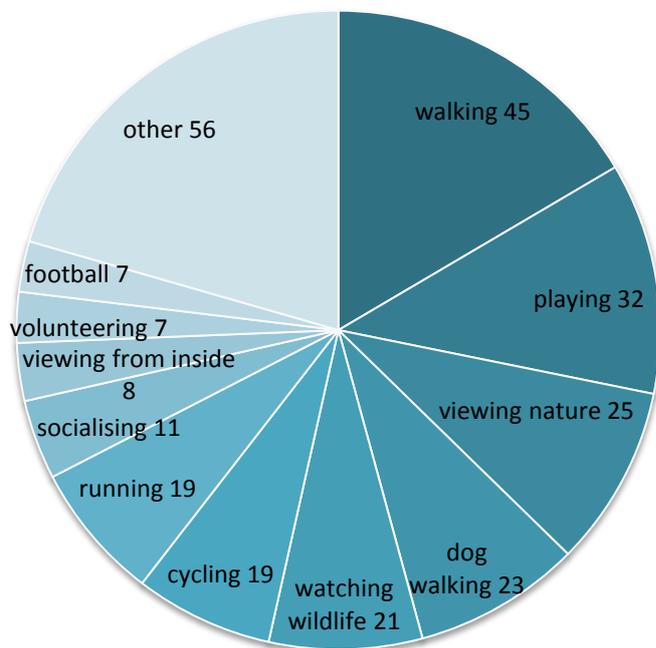
In total, 136 people were surveyed including 109 from the interviews, six at the focus group workshop and 21 via the online app. All the responses were entered into a database that recorded details of the person responding (age range, gender and electoral ward where they live) and the green space they were referring to. Helen then classified the comments according to the type of activity (e.g. walking, cycling, playing), the type of benefit (e.g. health, social connection, local identity), and whether the comment referred to a positive benefit or a negative (blocking) factor. If comments referred to more than one activity or benefit then they were split into separate responses. This produced a dataset of 540 responses related to 64 specific green spaces, as well as 104 comments on green space in general (Figure 1).

Figure 1: Number of responses related to different green spaces in Bicester



People said they used Bicester’s green spaces for 33 different activities including walking (45 people), playing with children (32), viewing nature (25), dog-walking (23), watching wildlife (21), cycling (19) and running (19) (Figure 2; see Appendix Table 1 for full list).

Figure 2: What do people use Bicester's green and blue spaces for?



The results show that Bicester’s green spaces deliver a wide range of benefits, with local people reporting 390 examples of benefits across 28 categories (Figure 3). The most frequently reported category of benefits was for health and wellbeing, mainly from physical activity and recreation but also from relaxation, ‘calm and quiet’ and ‘escape and freedom’. The next most often reported category was from connection to nature, mainly from seeing wildlife but also from just being in a natural green landscape. Other commonly reported benefits included attractive views of nature (aesthetic value), opportunities for social connections, and a sense of local identity and heritage.

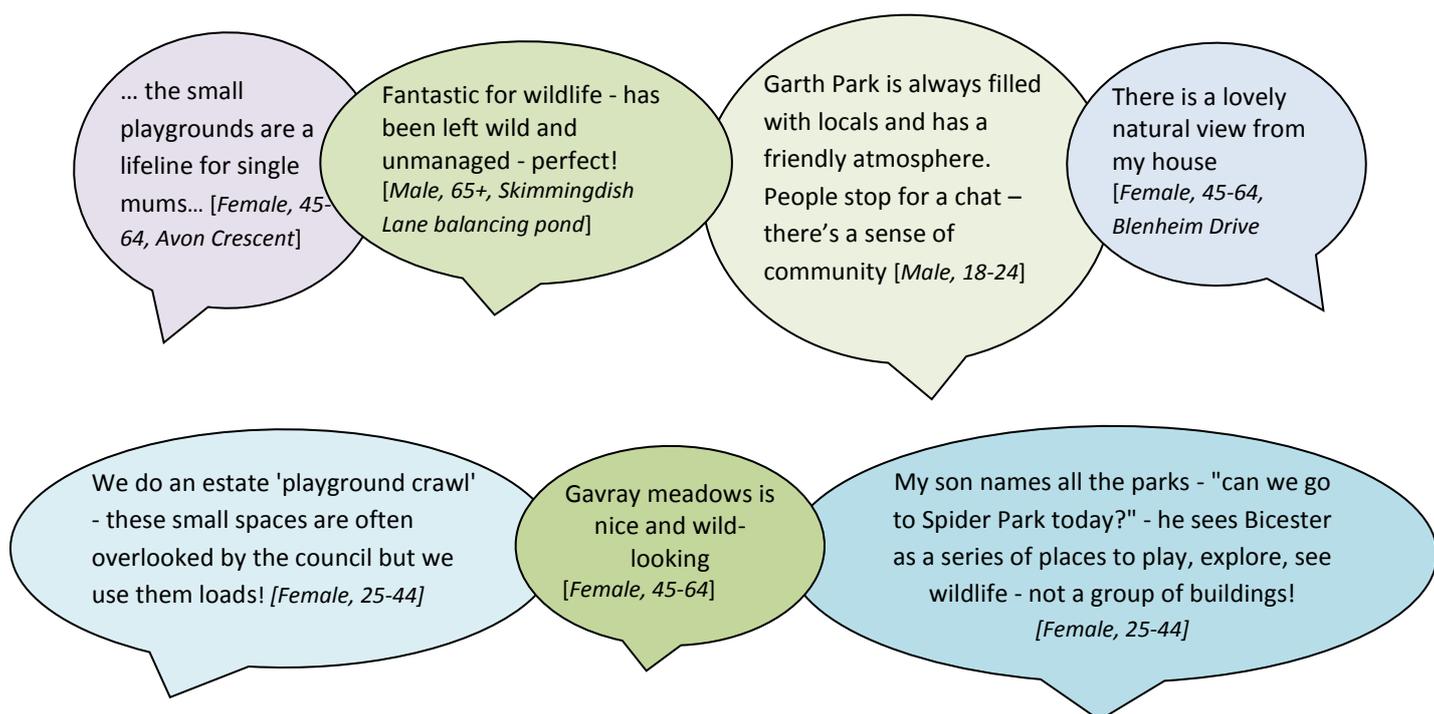
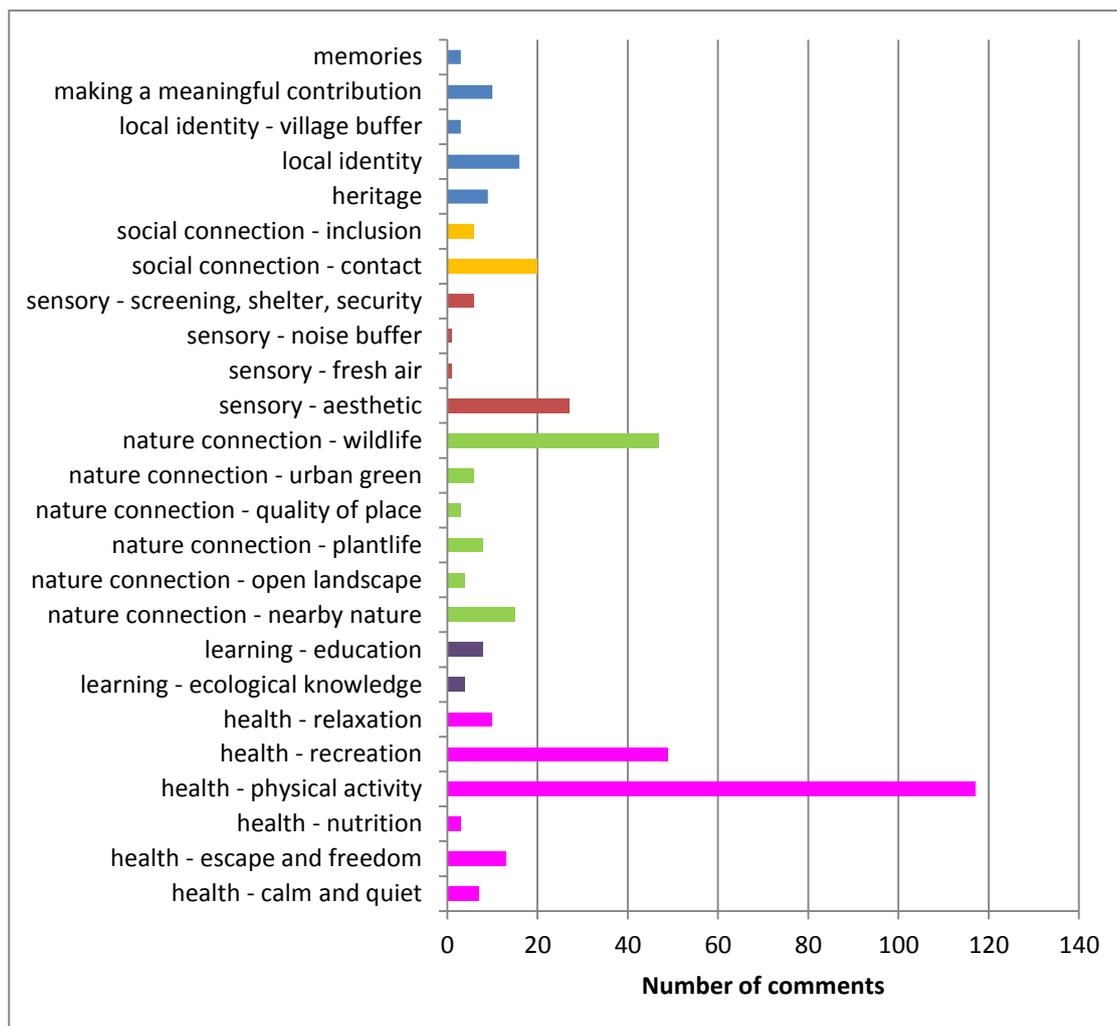


Figure 3: Benefits of green spaces in Bicester from the public participatory mapping exercise



These benefits apply to all types and sizes of green space, with 60 examples in Garth Park, 53 in Langford Meadows, 42 in Bure Park and 19 in Gavray Meadows, but also many benefits from smaller amenity green spaces, play areas, cemeteries, churchyards, allotments, playing fields, cycle paths, street planting, flowers on roadside verges and even a roundabout that is “a lovely dash of green” (Southwold).

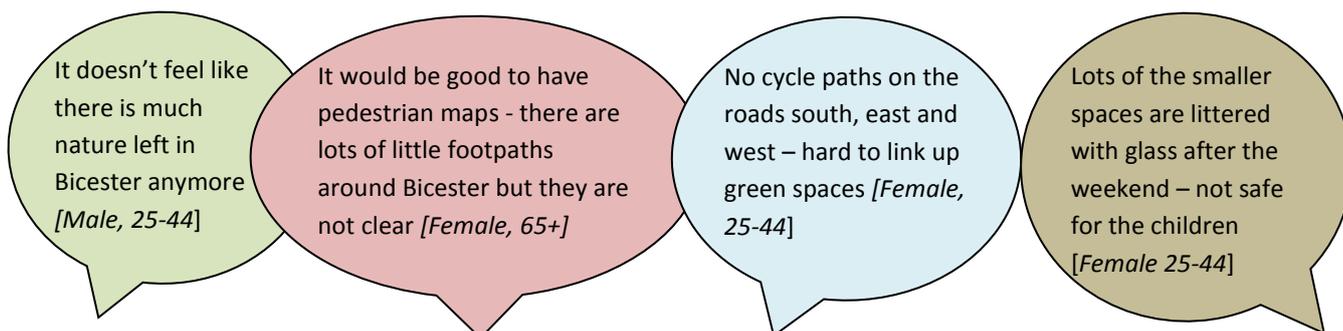
The survey reveals interesting detail and differences in views. For example, several people reported that they value the numerous small playgrounds in West Bicester, but this view was not shared by everyone - one focus group participant said that a larger play area was needed, with equipment suitable for children of different ages, and more space for picnics and meeting friends.

Although the survey shows that green spaces have the potential to deliver a wide range of benefits for health, wellbeing, social connections and local identity, people also mentioned factors that block or reduce the delivery of these benefits. These factors include widespread concern over the degradation and loss of green space and trees due to development, both large-scale development and also smaller scale (e.g. felling of trees in the Avon Crescent area by a private developer hoping for planning permission). There were 147 reported examples of factors blocking delivery of benefits, including:

- footpaths and cyclepaths being overgrown, badly surfaced, not signposted and not mapped;
- poor footpath access out to the surrounding countryside and villages; access to dog walkers being restricted at the airfield;
- conflicts between walkers / cyclists / quad bikes / dog-walkers / children / wildlife / fishermen;

- lack of seating / shade / interpretation signs / appropriate play equipment in certain locations;
- problems with litter, needles and broken glass in a few places, including Shakespeare Drive and Charbridge Way;
- lack of accessible woodland, with people looking forward to opening up access to Graven Hill and planting the new Burnehyll Community Woodland at Chesterton;
- lack of large areas of green space, with 40 out of the 136 respondents mentioning that they travelled out of Bicester to visit green space;
- general lack of wildlife, and the Bure Park Nature Reserve being “too manicured”;
- lack of access to the Wetland Reserve and to Gavray Meadows;
- poor water quality and silting up of Langford Brook;
- the concrete water play area in Garth Park was felt to be unsafe (sprinklers would be better).

There were many comments about the connectivity of footpaths and cycle paths in and around Bicester. The existing network was appreciated, e.g. the cycle paths in Langford Village, the new ‘blue line’ 5km health walk and especially the Skimmingdish Lane cycle path, because of the screen of trees providing a buffer from the road. There was demand for more paths like this, especially along Howes Lane, and also demand for safer crossing points at Middleton Stoney Road. Many people felt ‘trapped’ in Bicester, with a circle of busy roads and lack of links to the wider countryside – they wanted to be able to go on longer walks, runs or bike rides away from traffic, and to get to and from the villages more easily and safely.



Across Bicester as a whole, there were more than twice as many benefits as blocking factors, with an overall ratio of 2.3 to 1. However, this ratio varied from over 4.0 for those living in Bicester East and Launton to as little as 1.7 in Bicester North and Caversfield (Figure 5 and Figure 6). In other words, people living in Bicester North and Caversfield appear to experience more negative factors blocking their enjoyment and use of green spaces compared to people in Bicester East and Launton.

Figure 4: Number of reported benefits and 'blocking factors' in different wards of Bicester

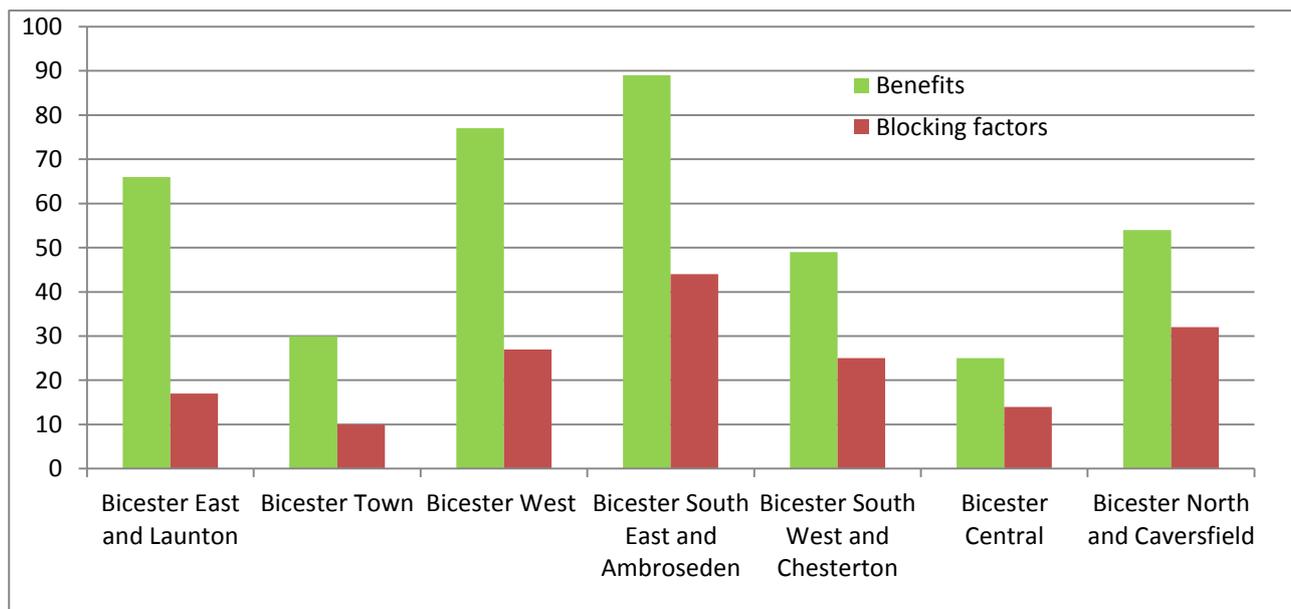


Figure 5: Ratio of benefits to 'blocking factors' in different wards of Bicester



Figure 6 shows the ratio of benefits to blocking factors for all the green spaces that had at least four responses, and this is also shown on a map in Figure 7. Most spaces had far more reported benefits than blocking factors, but some reported more blocking factors than benefits. These included:

- Gavray Meadows: restricted access, overgrown paths, poor signposting, lack of permission for conservation volunteers to maintain the habitats; threats from development; pollution in the Langford Brook upstream.
- Graven Hill Woods: currently no access - people hope that access will be opened up as part of the new development; concern over loss of green space to development; perceived loss of nightingales that used to be in the woods.
- Pingle Fields: part has been lost to development including a wetland area and the rugby club pitches (people now have to drive out of town to train).
- Shakespeare Drive Amenity Space: problems with litter, broken glass; too many dog walkers.
- Charbridge Way: Langford Brook silting up; quad bikes not good for wildlife.

Figure 6: Number of reported benefits and blocking factors for each green space

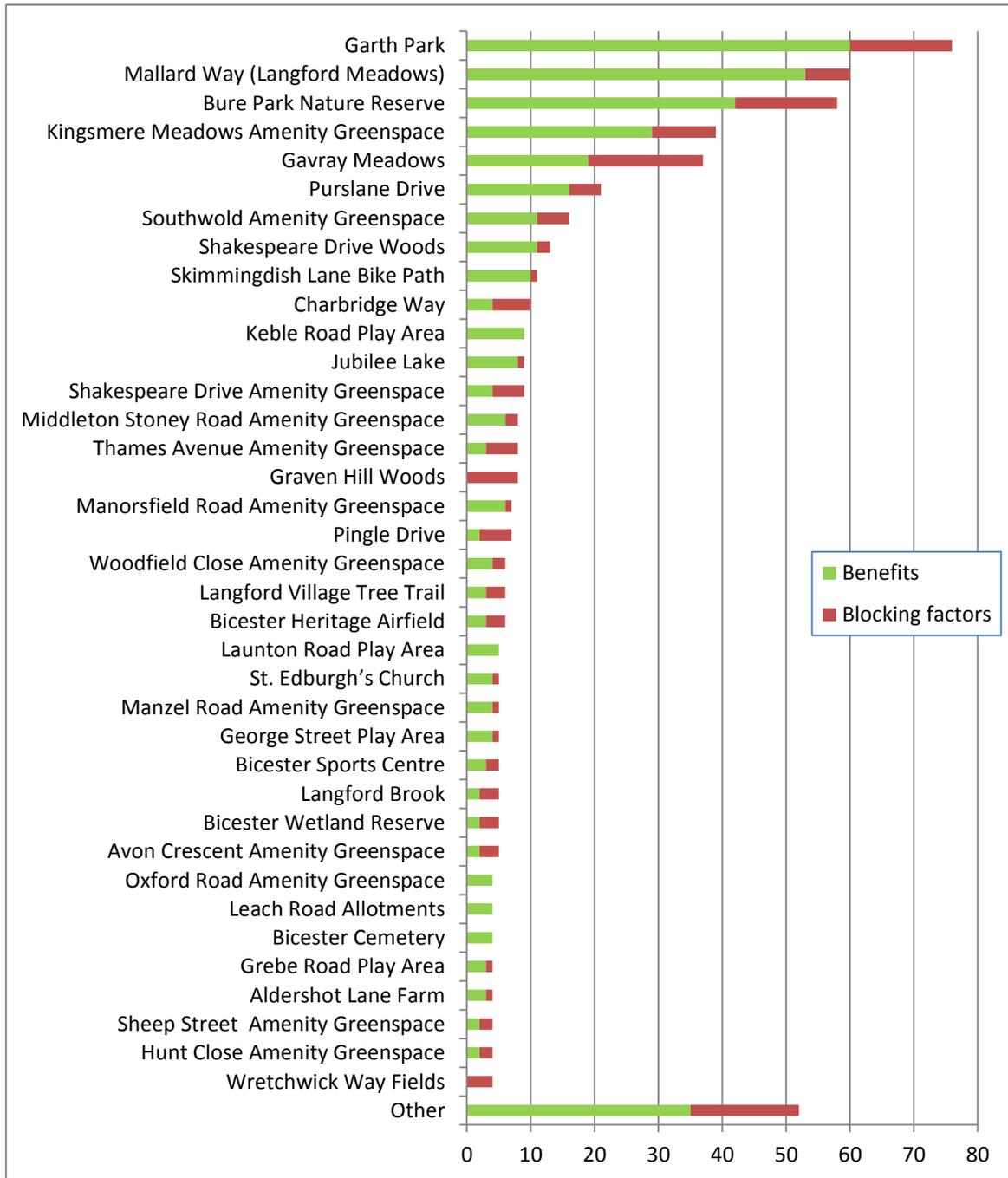
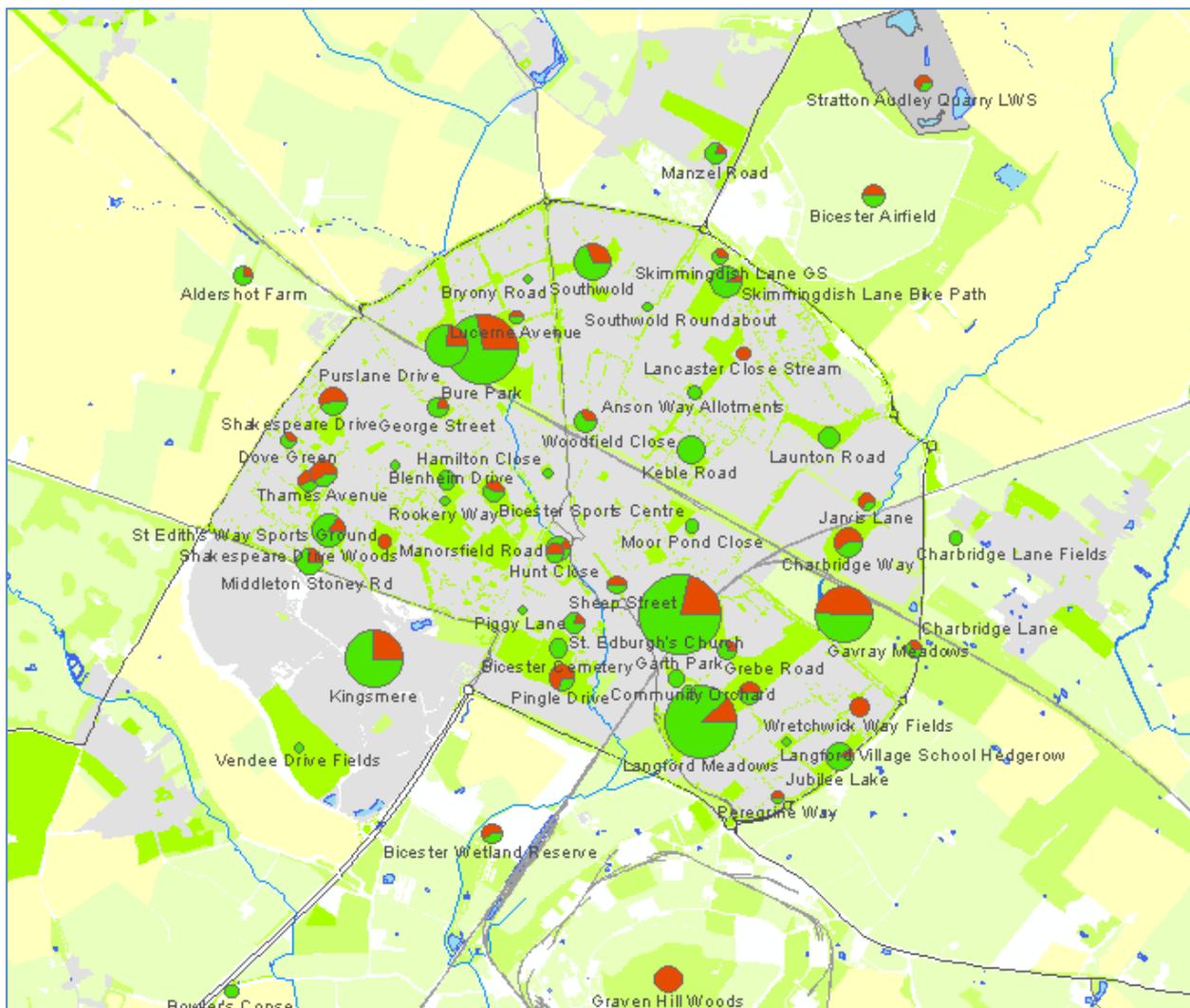


Figure 7: Distribution of benefits and blocking factors across Bicester. The circles show the number of benefits (green) and blocking factors (red) for each green space across Bicester. The size of the circles is proportional to the total number of factors reported for each space.



Distance to nearest natural green space

We have also mapped the straight line distance of people’s houses from the nearest accessible natural green space (NGS) using the Natural England Accessible Natural Green Space standards (ANGSt). This analysis shows a lack of accessible natural green space in Bicester. Only Bure Park and Charbridge way meet the definition of a ‘natural or semi-natural green space’ over 2 hectares in the CSC 2011 Open Space Survey, and only 13% of properties in Bicester are within 300m of these areas (Figure 8). However, if the definition of ‘natural green space’ is expanded to include amenity green spaces and parks/gardens, of which Langford Meadows, Garth Park, Southwold Amenity Green Space and Launton Road Park are over 2 hectares, then 45% of properties are within 300m (Figure 9).

No properties in Bicester are within 2 km of a large (20 hectare+) accessible natural green space, although if Langford Meadows, Mallard Way Green Space (including the community orchard) and Garth Park are taken as one linked unit, they add up to almost 20 hectares. Efforts to improve the natural character and wildlife value of these areas could therefore help to meet the demand for more natural green space in Bicester. The analysis also shows the importance of the proposed new 36 ha community woodland at Burnehyll, which would bring 8365 (43%) of the properties in Bicester within 2km of a 20ha+ natural green space, not including new properties yet to be built at Kingsmere (Figure 10).

Figure 8: ANGSt analysis: 2530 out of 19594 buildings (13%) are within 300m of an accessible natural green space over 2ha in size (using the CDC Open Space survey 2011 definition of natural green space).

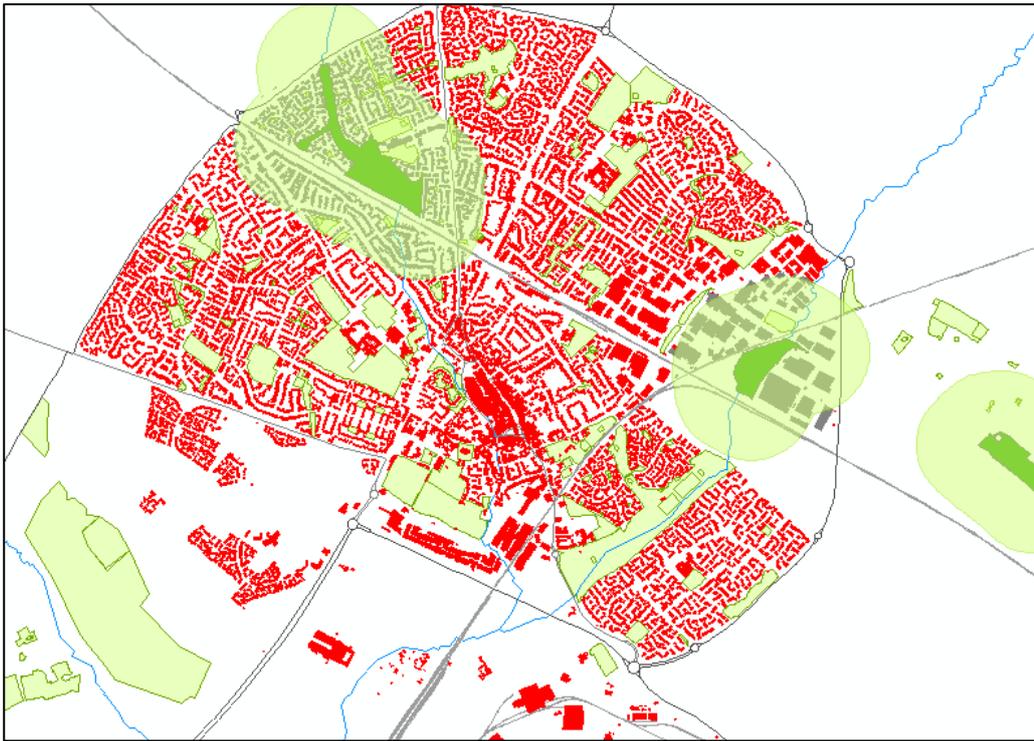


Figure 9: ANGSt analysis: Including amenity green space and parks, 8882 out of 19594 buildings (45%) are within 300m of a green space over 2 ha in size.

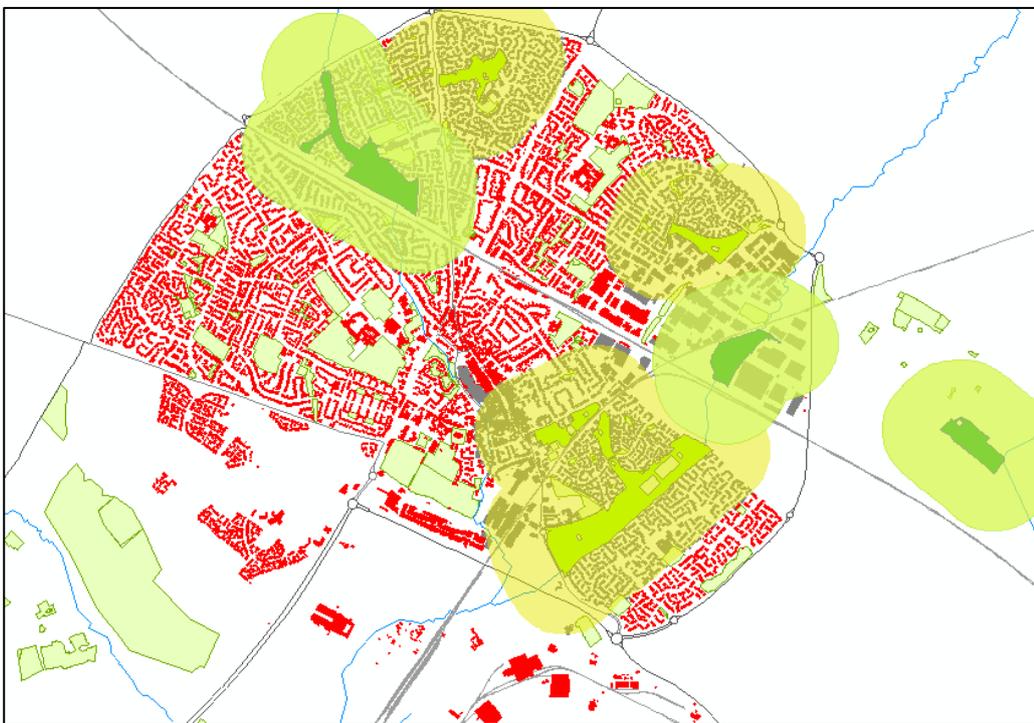


Figure 10: Properties within 2km of a 20 hectare accessible natural green space after Burnehyll Community Woodland is created (43%)

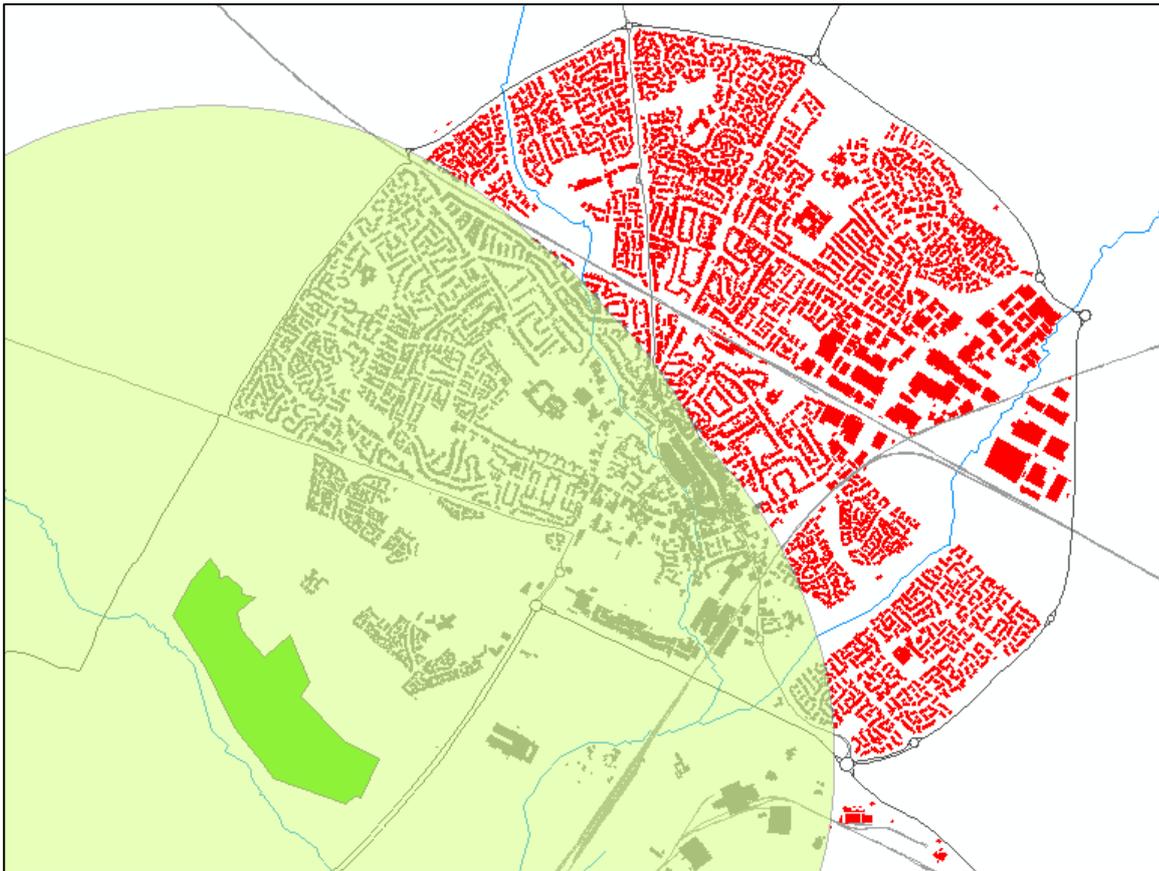


Figure 11 shows a summary of all the results of the ANGSt analysis. It reveals that even after the new community woodland is created, 20% of all buildings in Bicester will lack access to both 2ha and 20ha natural green spaces (shown in red). The deficit in accessible natural green space provision within Bicester identified from this ANGSt analysis is consistent with many of the comments from the public mapping survey, e.g. ‘it doesn’t feel like there is much nature left in Bicester any more’; ‘I’ve seen Bicester’s nature go in my lifetime’. There is also evidence of a demand for areas of a reasonable size (‘areas smaller than Langford Meadows are no good for walking and running’), and for linking areas together to provide wider networks (‘Kingsmere meadows need to be better connected together and to the rest of Bicester green space’).

The properties without access to natural green space are concentrated in North East and Central Bicester (consistent with the relatively high ratio of benefits to blocking factors reported in these areas), plus a strip close to Jubilee Lake. The Jubilee Lake properties are currently close to open countryside and footpaths towards Launton, but one resident reported that the ‘dangerous crossing over the ring road prevents us going further out of Bicester’ towards Wretchwick, and another said ‘green spaces are not well connected (especially from Langford out east) and footpath routes are not clear’. Planned development around Wretchwick would result in loss of this open countryside, but a resident of Ambroseden hoped that ‘when that bit of Bicester is developed they may build in new routes to walk to Bicester via Graven Hill or Wretchwick Road’.

Figure 11 Summary of ANGSt analysis results

	No. of buildings	
Within 300m of a 2ha NGS and 2km of a 20ha NGS (Burnehyll)	792	4%
Within 300m of a 2ha NGS	1767	9%
Within 300m of a 2ha amenity GS or park and 2km of a 20ha NGS (Burnehyll)	876	4%
Within 300m of a 2ha amenity GS or park	5476	28%
Within 2km of a 20ha NGS (Burnehyll)	6697	34%
None of the above	3986	20%



The ORVal valuation tool

ORVal (Outdoor Recreation Valuation) is a new online tool developed by the University of Exeter, freely available at <http://leep.exeter.ac.uk/orval/>.

ORVal estimates the welfare value of green spaces based on data in the national MENE database (Monitor of Engagement with the Natural Environment). MENE is an ongoing survey run by Natural England which conducts 800 face to face interviews every week throughout the year with randomly chosen people in England, asking them about their visits to green space within the last seven days. It has been running since 2009. ORVal uses this database to estimate the typical time that people take to travel to particular green spaces, and then converts this time into an equivalent monetary value using Department for Transport guidelines (ranging from £2.30 per hour for trips under 8km to £9.45 per hour for trips over 160 km). This is added to the estimated fuel cost that would be involved in driving to the green space (assuming a value of 9p/km). This travel cost is used as input to an econometric model that estimates the welfare value of a typical green space anywhere in the country, taking into account the size of the green space, its type (e.g. natural green space, golf course, sports field etc), its land cover (e.g. % woodland, grassland, etc) and what other alternative green spaces are nearby.

There are some limitations to this method. Firstly, it will undervalue green spaces that are ‘on the doorstep’ and thus involve no travel cost. Secondly, the MENE database is only used for day trips, not for overnight visits such as weekends away or holidays. Thirdly, the model is very complex and uses a long series of assumptions and estimates to correct for various issues with the MENE data. For example, respondents do not always identify the green spaces they have visited by name, so the model has to ‘guess’ which of the green spaces within, say, a 2 km range has actually been visited. Therefore the output should be treated with caution. The model is currently being revised and a new version is expected shortly. The results presented here are based on the first version to be released.

Despite these caveats, the ORVal tool is recognised and supported by Defra. It is very easy to use. It presents a map of England, and you can click on any green space to get an instant estimate of the total welfare value and the split by socio-economic class. You can also estimate the value for all the green spaces in an administrative district (aggregated by middle super-output area). Finally, the tool also estimates value for segments of path networks between ‘access points’ where paths intersect roads. Figure 12 shows the estimate for Bure Park: ORVal estimates that it attracts 28,000 visits per year which are valued as being worth £113,096 per year in terms of recreational use.

ORVal can also be used to estimate the value of new green spaces or footpaths. You can draw the outline of a new space on the map, and specify the proportion of woodland, grassland, water etc. The tool will estimate the value, taking into account the other green spaces that exist nearby as alternative destinations. This could be useful for analysing different options for creating new green spaces – though it must be remembered that ORVal only indicates the recreational value, not the value for biodiversity, flood protection, carbon storage etc.

Figure 12: The ORVal tool, showing the estimated welfare value of Bure Park as £113,096 per year

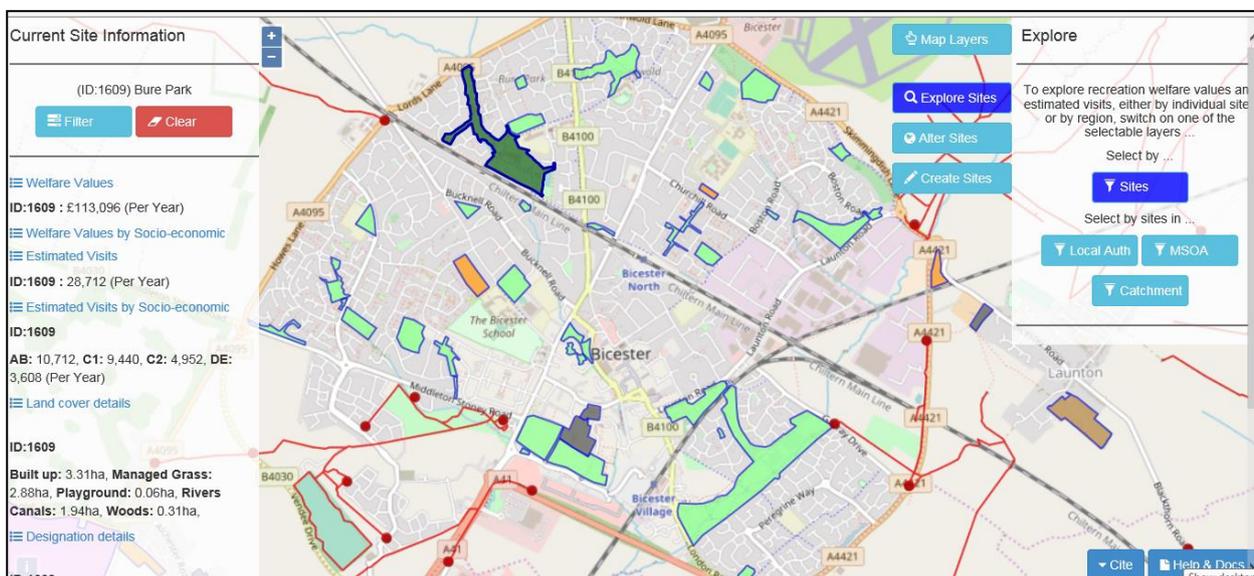
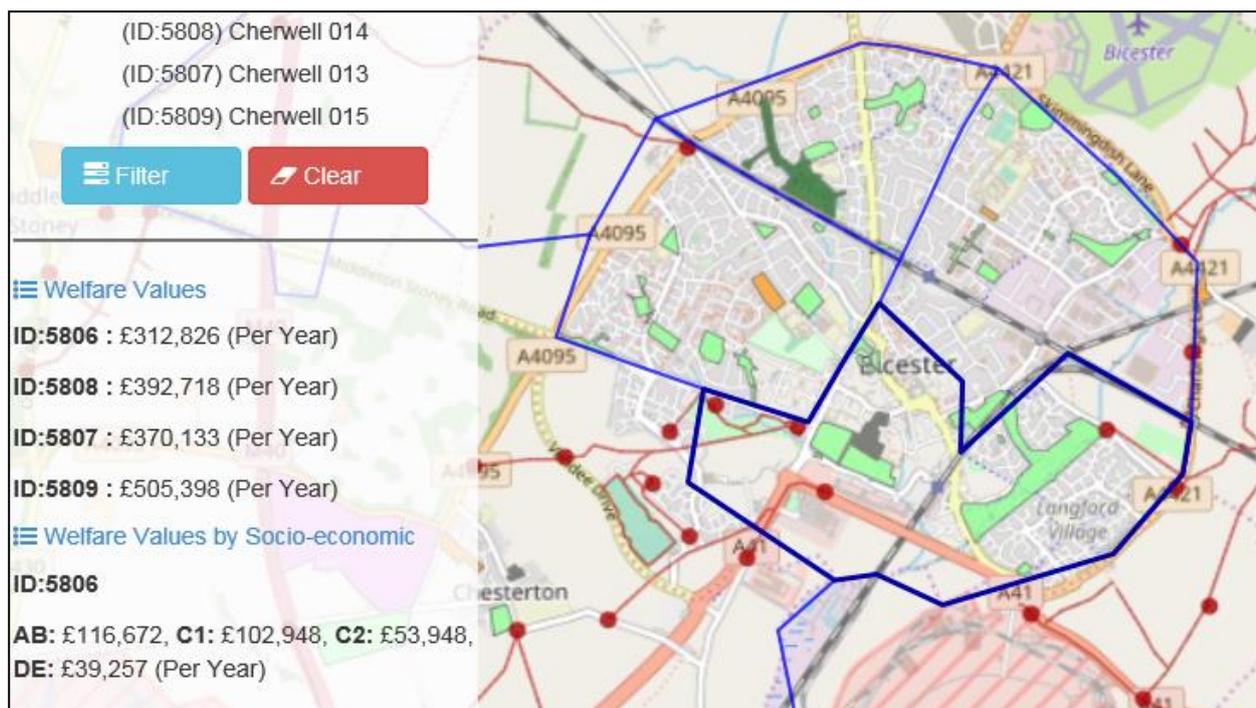


Figure 13 shows the estimated total value for all the green spaces in four wards of Bicester, which are estimated to attract 410,000 visits per year valued at £1.6 million / year.

Figure 13: ORVal, showing total values for four wards of Bicester



Implications for future spend and provision

These results can help to identify where new natural green space is needed, and where enhancements may be needed to existing green space. It is important to remember that the ANGSt analysis only indicates the demand for 'natural' green space. Separate analysis is needed (e.g. via the CDC Open Space Survey, which is currently being updated) to assess provision for other types of green space including sports facilities, allotments and playgrounds. There may be trade-offs: for example, one resident commented on Bure Park 'there are no goal posts for my teenagers to play football. There are bushes around where the football can get lost'. This clearly conflicts with other residents who wanted a wilder space that was better for nature.

It is also important to note that the ANGSt analysis only looks at the straight line distance from buildings to green spaces. The actual walking distance will almost always be over 300m, and the route may be blocked by busy roads.

With these caveats in mind, we have identified some potential options for reducing the deficit in Bicester's existing and future green space provision.

1. **Providing new natural green space in north-east and south-east Bicester.** Almost 4000 properties in north-east, central and south-east Bicester (shown in red on Figure 11) are not within 300m of a 2ha NGS, amenity GS or park, or within 2km of a 20 ha NGS. Three options could mitigate this:
 - a. Protecting and enhancing the 2.5 ha natural green space at Skimmingdish Lane would bring an extra 775 properties within 300m of a natural green space (of which 417 were not within 300m of even the amenity green space at Southwold). Currently residents cannot easily access this space ('it is blocked off by hedges so we can't access it'), although some do find a way in ('Fantastic for recreation - has been left wild and unmanaged - perfect!'). Habitats on part of this space have recently been damaged by developers, though the remainder is a target for SEMLEP funding for enhancement.

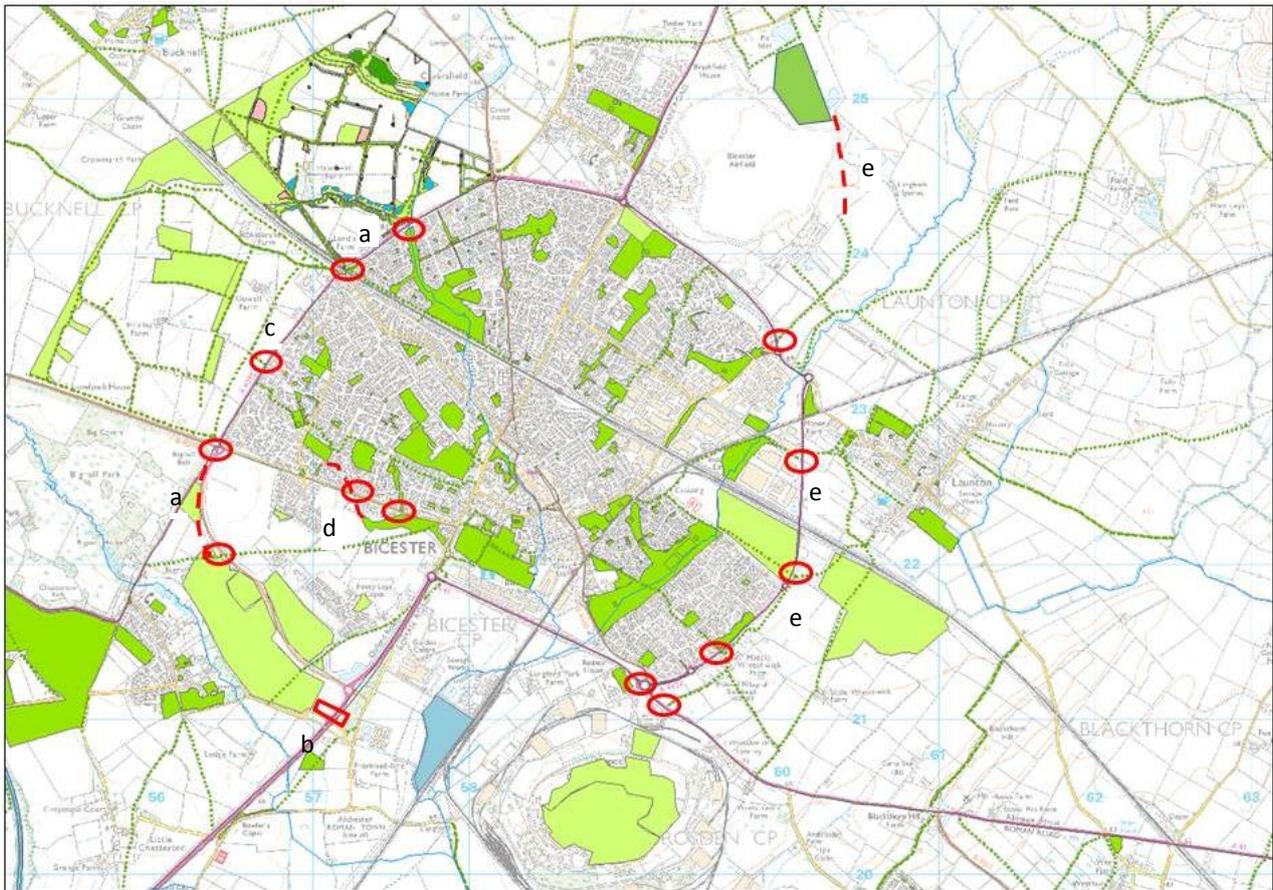
- b. Improving access to the green space around Bicester airfield could also contribute to provision for north-east Bicester, provided that there is a way of crossing Skimmingdish Lane safely.
 - c. If access to Gavray Meadows could be provided, this would bring 617 buildings within 300m of a natural green space (although 449 of these are within 300m of amenity green space at Langford Meadows).
2. **Enhancing existing natural green space.** The public mapping survey revealed problems with the two existing natural green spaces at Bure Park and Charbridge Way. Comments for Bure Park included 'Bure Park is not great for wildlife any more - too surrounded by houses'; 'dogs on the loose scare away the wildlife'; 'it would be good to get the waterways and lakes clean to encourage more birds to come to the nature park'; and 'not a good nature reserve - too managed and manicured'. SEMLEP funding could play a part in enhancing wildlife habitats here. For Charbridge Way, comments included 'Access is unclear and it is unsafe for children and recreation - factory waste goes straight into the stream; isolated, noisy, dirty'; and 'seems to be a clash between recreation (quad bikes) and wildlife here'. Although it is mainly surrounded by commercial facilities and therefore plays a lesser role in providing local natural green space for people, it could be an important link in the wider network of green spaces for both recreation and wildlife, if problems such as pollution from the industrial estate are tackled.
 3. **Protecting and enhancing smaller green spaces in west Bicester.** Residents of west Bicester lack access to larger areas of green space and so are very dependent on the network of small green spaces in the Avon Crescent and Shakespeare Drive area. Comments show that these spaces are highly valued but they are under threat from speculative developers, e.g. trees have been felled in the Avon Crescent area, and there are also problems with litter and broken glass in the Shakespeare Drive green spaces.
 4. **Upgrading amenity green spaces to natural green spaces.** Launton Road Park, Southwold Amenity Green Space and Langford Meadows could be enhanced to give more 'natural' characteristics and wildlife habitat, such as natural grassland, woodland and shrubs. This would help to tackle the deficit in natural green space in areas not close to Bure Park and Charbridge Way. However, there still needs to be adequate provision of 'amenity' areas for those who value short grass for informal sport and play, or those who prefer a more manicured appearance. For this reason we have not suggested 'naturalising' Garth Park, as this is the only formal park / garden in the area.
 5. **Providing new large natural green spaces.** The new Burnehyll community woodland will be within 2km of 43% of the houses in Bicester. The new country park planned for NW Bicester Eco-town is around 17 ha, and will cover a further 17% of properties. This still leaves 40% of Bicester residents over 2km from a large green space. However, if access could be provided to the local wildlife site at Gavray Meadows then this would cover all the remaining properties so that every household in Bicester would be within 2km of a large natural green space (Figure 14). Although the main part of Gavray is only 15 ha, it could be linked with Langford Meadows (15 ha) or with the proposed Ray Meadows wildlife corridor to create a much larger area.

Figure 14: Providing access to larger areas of natural green space in Bicester (within 2 km)



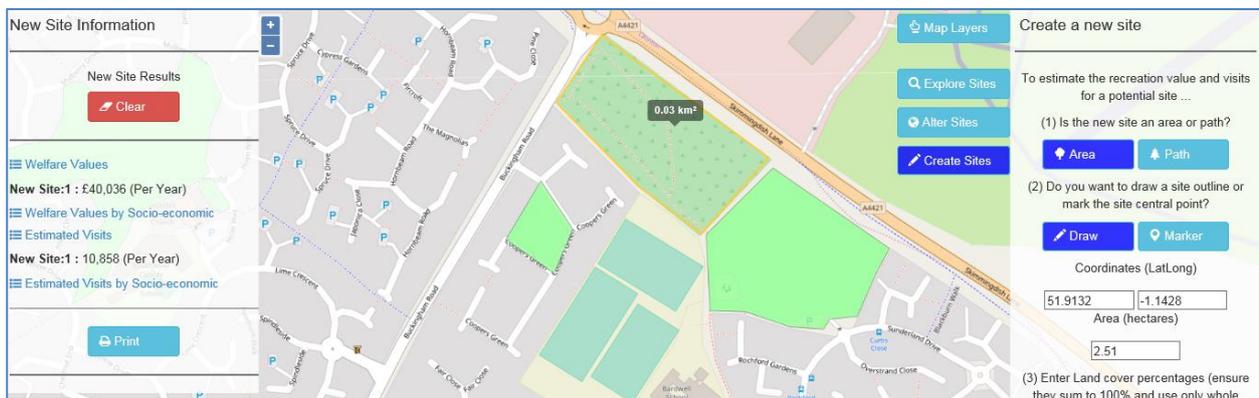
6. **Improving connected networks of green space.** Linking smaller green spaces together can help to satisfy the unmet need for larger areas of green space. The public mapping work also recorded strong demand for better-connected walking and cycling routes and better road crossings, e.g. ‘it would be great to have an even greater cycling network to be able to get out further into the countryside rather than be restricted to reserves or cycle paths around busy traffic areas’. Specific potential opportunities have been identified from the map (**Error! Not a valid bookmark self-reference.**), though some of these may already have current or planned crossing points:
- linking the new green spaces planned in NW Bicester to Bure Park, Burnehyll woodland and the Shakespeare Drive area, via safe crossings of the ring road (e.g. green bridges or tunnels);
 - ensuring that the planned park and ride development on the A41 at the east end of Burnehyll woodland allows a wildlife corridor and road crossing to help link the woodland to the Graven Hill area and the wetland reserve;
 - Providing a walking / cycling route along Howes Lane which currently has no pavement (in the long term, this may be achieved via the plans for road realignment in that part of NW Bicester);
 - Providing better and safer crossing points over Middleton Stoney Road to link Kingsmere with the rest of Bicester, including at the Pingle Brook crossing point, at the end of the Kennedy Way green space and across the A41 onto the Pingle Drive green space.
 - Ensuring that there are pleasant and well-signposted walking routes between Bicester and the surrounding villages (Chesterfield, Ambrosden, Launton, Caversfield and Bucknell). There could be opportunities to create a round-Bicester walking route, e.g. by filling in missing links such as around Bicester airfield to Stratton Audley Local Wildlife Site. There was specific demand for a buggy-friendly route from Chesterfield to Bicester town centre.

Figure 15: Potentially important links and crossing points to create green space networks



We used ORVal to estimate the recreational benefits of some of these options: £40,000 per year for the 2.5 ha Skimmingdish Lane site (assuming land cover of 10% marsh, 80% natural grass and 10% woodland), (Figure 16), £67,000 per year for the 14 ha Gavray Meadows site and £100,000 per year for Burnehyll. We could use other tools (GI-Val / iTree) to assess additional benefits such as carbon storage, flood protection and air quality regulation, and there would also be considerable biodiversity benefits.

Figure 16: Using ORVal to estimate the recreational value of the Skimmingdish Lane site



Conclusion

We have used a range of methods to assess the demand for green space in Bicester. A public survey showed that Bicester residents value their green space very highly, identifying a wide range of benefits for health, wellbeing, local identity, connection to nature and community cohesion. The ORVal tool, developed by Exeter University and Defra, estimates that Bicester’s green spaces attract over 400,000 visits per year,

with an estimated welfare value of £1.6 million per year. However, some parts of Bicester (especially north-east and central) lack easy access to natural green spaces over 2 hectares, and all parts currently lack access to larger areas of natural green space (over 20 hectares). In addition, factors such as litter, lack of connected routes or poor signposting block access to the benefits of green space in several areas. Based on these findings, we have identified some options that could help to tackle these problems and ensure that all Bicester residents have access to a network of high quality green space that meets their needs for recreation, health and wellbeing.

This analysis is not complete because it focuses primarily on the value of natural green space for recreation and contact with nature. CDC's ongoing update to their Open Space survey could help to complement this with an analysis of needs for other types of space (allotments, sports fields etc). We also aim to produce further analysis of the potential to create connected networks of green space for wildlife, as well as further work on valuing the other benefits of green space such as for carbon storage, air quality regulation and flood regulation.

Appendix 1

Number of people mentioning different activities in Bicester's green spaces

Activity	Number of people mentioning the activity
walking	45
playing	32
viewing nature	25
dog walking	23
watching wildlife	21
cycling	19
running	19
socialising	11
viewing from inside	8
volunteering	7
football	7
other	56
visiting cafe	6
birdfeeding	5
environmental education	5
sitting	4
picking berries	3
picnic	3
growing food	3
listening	3
reading	3
skating	3
visiting historical sites	2
watching gliders	2
relaxing	2
basketball	2
outdoor gym	2
bug collecting	2
drone photography	1
organised activities	1
fishing	1
Tennis	1
kite flying	1
tree climbing	1