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people spaces places



Lickey End Recreation Ground Management and Maintenance Plan 2022 – 2027



people spaces places

Lickey End Recreation Ground Management and Maintenance Plan

June 2022

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Lickey End Recreation Ground

Management and Maintenance Plan

June 2022

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1 Where are we now?

1.1 Site

1.1.1 Location

As shown in **Figure 1**, Lickey End Recreation Ground is located in Norton Ward, to the south of the village of Lickey End. The Alcester Road (B4096) borders it to the southwest, which then leads to open farmland. Its northern and western sides are bordered by urban development and to the northeast is rural farmland.

1.1.2 Site Description

Lickey End Recreation Ground is classified by Bromsgrove Council a neighbourhood park. It covers 1.74 hectares and is 0.20 km at its longest and 0.12 km at its broadest. As shown in **Figure 2** overleaf, the car park to the southwest of the site has space for 15 cars and a height restriction barrier to prevent illegal parking. A pathway from the car park leads to the site's inner zone containing the main recreation features. These include a 0.08-hectare play area with toddler and junior play provision, with a spider's web climbing net linked to two three-meter climbing rocks and a slide, rope walk, tyre swings, rope swing and play tunnels. There is also a Multi-Use Games Area and an Outdoor Gym. The playing fields provide space for one junior or two mini football pitches. There are also changing rooms on site.

As well as provision for play and recreation, Lickey End Recreation Ground contains valuable wildlife habitat. The Spadesbourne Brook runs along the northern and western boundary of the park and continues through Bromsgrove Town Centre, where it meets the Battlefield Brook in Sanders Park. The bankside forms a vital wildlife corridor, and a wetland area with wildlife ponds has been created at the western aspect of the Spadesbourne Brook. A viewing platform and interpretation signage overlooking the wetland area was introduced in 2011 to increase public awareness of the enhancement programme and the importance of restoring and sustaining the habitat. Notably, the site hosts one of the two last known remaining water vole (*Arvicola amphibius*) colonies in Worcestershire.

Several small wooded areas and hedgerows also enhance the wildlife value of the site. A small coppice, planted in 2000, complements and connects the original native hedgerows with the wider open countryside. Also, along the southern edge, a 'Midland' style hedge was planted to improve the water vole habitat along this section of the brook course. Trees and hedges to the northern and eastern sides of the site provide screening to site visitors and neighbouring residents.

Lickey End Recreation Ground can be accessed via a car park off the Alcester Road to the south of the site. Pedestrian access may also be gained via entrances from Little Heath Lane to the north-west and Alcester Road

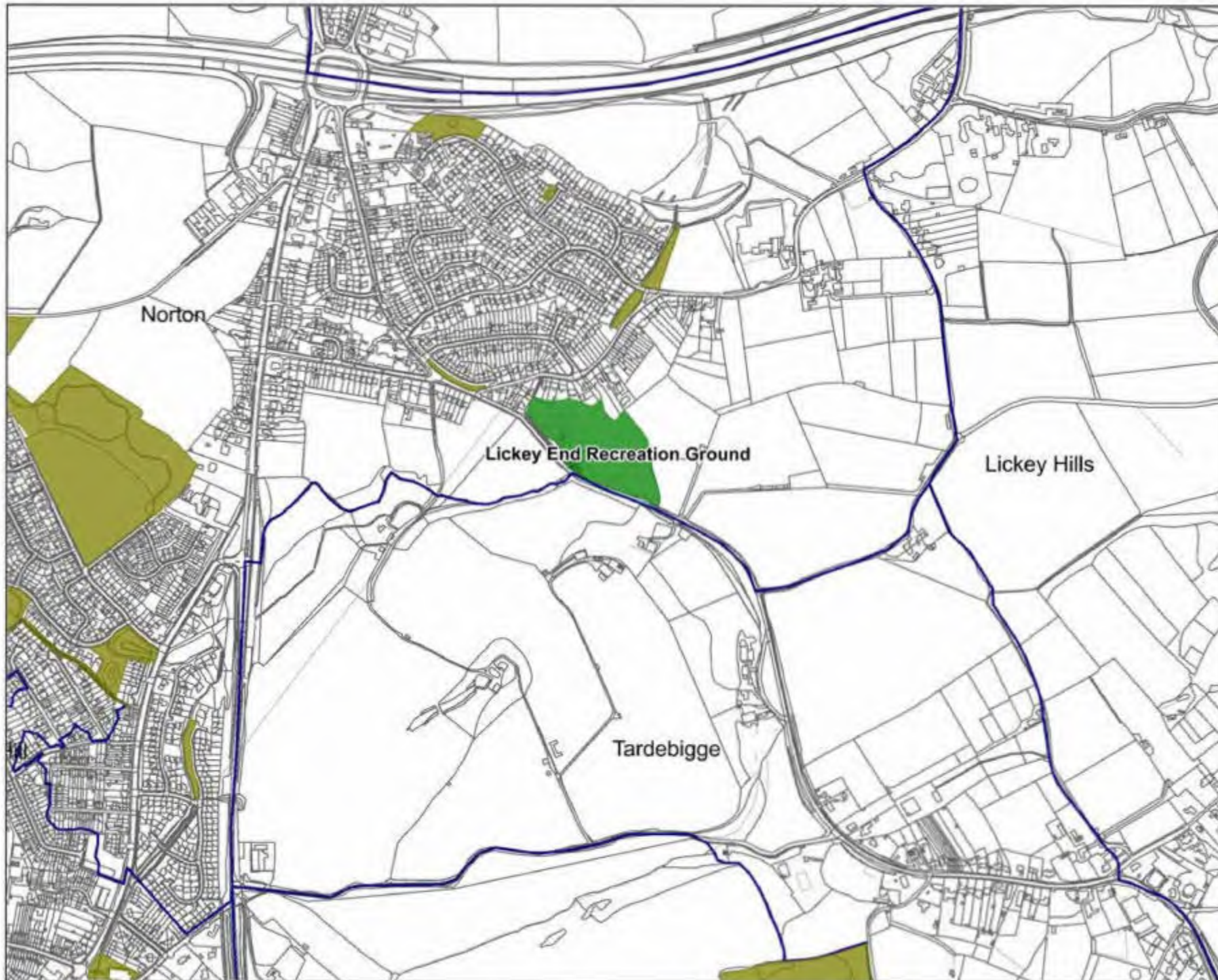
to the south-east. A public right of way crosses the site along the western boundary from Alcester Road to Little Heath Lane (see **Figure 2**).

Lickey End Recreation Ground Management and Maintenance Plan

Figure 1
Lickey End Recreation Ground Location Plan

LEGEND

-  Lickey End Recreation Ground
-  Other Open Spaces
-  Ward Boundaries
-  Bromsgrove District



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**Lickey End Recreation
Ground Management
and Maintenance Plan**

**Figure 2
Lickey End Recreation
Ground Site Plan**



LEGEND

- Site Boundary
- Vehicle access
- Pedestrian access
- Public Right of Way



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1.1.3 Designations & Legal Issues

Ownership

The tenure of land known as 'Lickey End Recreation Ground' is freehold with the tenure of the land held by Bromsgrove District Council. The land was conveyed to the Urban District of Bromsgrove on 6 October 1952.

Covenant and Restrictions

Only one covenant applies to the land. A personal covenant exists on behalf of the Council to erect and maintain a fence at the rear of No16a Littleheath Lane.

The land has the benefit of a Deed of Grant dated 04.08.1997 for mains services to the Recreation Ground. The route of the services is included in the title for 10 Littleheath Lane and runs between that property and the pathway at the side.

Licences

There are no licences in effect at Lickey End Recreation Ground.

Leases

There are no leases in effect at Lickey End Recreation Ground.

Planning Status

Lickey End Recreation Ground is protected in perpetuity as a Queen Elizabeth II Field by the charity, Fields in Trust. It is one of 1,396 sites designated to commemorate the Queen Elizabeth's Diamond Jubilee, and coinciding with the London 2012 Olympic and Paralympic Games and extending into the Glasgow 2014 Commonwealth Games. The site has been protected since July 2012.

Byelaws

There are no current byelaws affecting Lickey End Recreation Ground.

Access

There is one public right of way within the park LE 501 which runs for 75 metres from Spadesbourne Road to the eastern border of the park to the Alcester Road (this is shown in **Figure 2**).

Another right of way borders the site, LE 500 runs close to the site from Crows Hill and links to LE 548 towards Bromsgrove.

No formal easements or way leaves have been located / identified other than those for statutory services including easements in relation to Eon and Severn Trent Water Authority that allows inspection, maintenance, repair, cleansing, renewal, alteration, removal, replacement and enlargement of their services with 24 hours required notice excluding emergency.

Tree Protection Orders

There is a Tree Protection Order affecting the rear garden of No18 Little Heath Lane which abuts the Recreation Ground.

Wider legislation

Lickey End Recreation Ground is covered by a legislative framework, which seeks to address and control behaviour and activities within the Councils green spaces.

These issues are actively promoted and enforced in partnership with the Police, community wardens and other council departments and responsibilities are outlined in **Table 1** below.

Legislation	Relevance to green space	Responsible organisation
Dogs (Fouling of Land) Act 1996	Dog fouling, fines and disposal.	Bromsgrove District Council
Crime and Disorder Act 1998	Community safety e.g., anti-social behaviour and sight lines.	Police, Bromsgrove District Council & strategic partners
Disability Discrimination Act 1995	Access and participation for disabled people.	Bromsgrove District Council
Occupiers’ Liability Act 1984	Health & safety of visitors.	Bromsgrove District Council
Health and Safety Act 1974	Health and safety of visitors and workers.	Bromsgrove District Council
Road Traffic Act 1991	Illegal access by motorcyclists.	Police
Environmental Protection Act 1990	Litter, fly tipping and abandoned vehicles.	Bromsgrove District Council

Table 1 Wider Legislation

1.1.4 History

Baylies Charity School initially held the land where Lickey End Recreation Ground is now located under a charitable trust and leased income went to the school. The school, located on Tower Street, Dudley, was established in 1732 by Robert, Samuel and Anne Baylies. Its purpose was for "teaching, instructing and clothing 50 boys, to be elected and chosen out of the parishes of town and foreign of Dudley from such whose parents

would not be able to give them learning". The site was known as Lickey Meadows and described as "pasture and meadow land".

On 20 May 1936, the land was bought by a local farmer, Albert Albutt, who sold it to another local farmer, Joseph Edmund Strong, on 8 July 1936. Bromsgrove District Council purchased the land and adjoining fields, totalling 5,099 acres, from Joseph Edmund Strong in October 1952. It has been under Council ownership since.

1.1.5 Biodiversity

Bromsgrove District Council developed a Habitat Management Plan in 2011. The four objectives of management set out in the Plan were:

1. Maintain existing wildlife habitat areas in good ecological condition and enhance where possible with particular priority given to water vole habitat.
2. Maintain the network of interconnected woodland, wetland and grassland habitats to protect and enhance species biodiversity.
3. Remove barriers to habitat connectivity where possible.
4. Encourage and enhance wider public use and enjoyment while reducing the impact on key habitats and species.

As part of the Habitat Management Plan a number of compartment areas were set out with prescriptions for work, a copy of this is set out in **Appendix A Compartment Plan** for reference. The Council is no longer following the management prescriptions or compartments set out in the 2011 plan.

Habitats and Species of Note

Spadesbourne Brook is listed as a Local Wildlife Site, which gives some measure of protection in planning policy.

Lickey End Recreation Ground is one of the only three remaining sites in Worcestershire believed to be inhabited by **Water voles (*Arvicola amphibious*)** and countywide surveys have concluded that the Lickey End area was a critical location for water voles within Bromsgrove.

Following the recommendations of the Worcestershire Wildlife Trust, work that has taken place at the site has included a reduction in grass mowing, laying a Midland style hedgerow and tree planting and the creation of a small wetland area. Monitoring at the site which took place 12-months after the wetland area was created, concluded there had been a 400% increase in the water vole population. In 2009, a viewing platform and

interpretation boards were installed to raise awareness and contribute to the objectives of the water vole species action plan.

For more information see **Appendix B Water Vole Information** on page 46.

1.2 Organisation

Lickey End Recreation Ground is managed and maintained by Bromsgrove District Council. The council operates shared services with Redditch Borough Council for parks and open spaces and these are set out under the organisation structure section below.

1.2.1 Policy context summary

National Policies

National policies of relevance to this Management and Maintenance Plan (MMP) are summarised below.

Green Future: Our 25 Year Plan to Improve the Environment (Department for Environment, Food & Rural Affairs)

The Plan was published in January 2018 and updated in May 2019. It sets out six goals for improving the environment, including thriving plants and wildlife and enhanced beauty, heritage, and engagement with the natural environment. It also looks to manage environmental pressures by improving biosecurity. These will be achieved through ensuring there are high quality, accessible, natural spaces close to where people live and work and encouraging more people to spend time in open spaces to benefit their health and wellbeing. Relevant to this MMP, the Plan targets to create or restore 500,000 hectares of wildlife-rich habitat outside the protected site network, plant 180,000 hectares of trees by the end of 2042.

Environmental Bill 2020 (Department for Environment, Food & Rural Affairs)

The Bill was introduced into parliament on 15 October 2019 and re-introduced following the general election on 30 January 2020. The Bill will ensure environmental principles are implemented in law and provides measures to enhance and protect the natural environment, improve air and water quality and tackle waste and resource efficiency. Elements of the Bill relevant to this MMP include establishing the Office for Environmental Protection (a new body which will monitor progress towards improving the natural environment in line with government targets) and supporting the delivery of the 2017 Litter Strategy. The Bill will also make the development of Local Nature Recovery Strategies across England a requirement.

The Ten Point Plan for a Green Industrial Revolution (Department for Business, Energy & Industrial Strategy)

The Ten Point Plan was published in November 2020. It aims to mobilise £12 billion of government investment, and potentially another £36 billion from the private sector, to create and support up to 250,000 green jobs.

The Plan focuses on increasing ambition across ten areas, including promoting green public transport, cycling and walking, offering further funding for the Public Sector Decarbonisation Scheme to reduce emissions from public buildings and creating new National Parks and Areas of Outstanding Natural Beauty (AONB).

Public Health England Strategy 2020 to 2025

Published in 2019, the Strategy sets out priorities for delivering its key aims of keeping people safe, preventing poor health, narrowing the health gap and supporting a strong economy. Priorities include promoting healthier diets and weights by creating vibrant, health-promoting environments and ensuring children have the best start in life by developing healthy places for families that help to reduce inequalities, vulnerability and adversity.

Improving Access to Greenspace 2020 (Public Health England)

Published in March 2020, the report provides an update on the 2014 report. It reviews evidence on the health benefits of living in greener communities, the impact on inequalities in health and makes recommendations to help Local Authorities, policymakers and developers provide equitable greenspaces for communities. Priorities set out by the report include promoting the role of open space in health through interventions, such as green social prescribing initiatives and prioritising improving access to open space, especially in areas of deprivation or where there is poor or unequal access.

Space to Thrive Report

The Space to Thrive Report was conducted by researchers from Sheffield Hallam University and The University of Sheffield. It was produced with The National Lottery Community Fund and published in January 2020. Based on its findings, the Report recommends that open spaces be seen as social and physical infrastructure, with investments in both the physical state of the site and activities that encourage its use and bring the local community together. It also recommended open spaces should support health and wellbeing and promote connections with nature through their design and maintenance.

Local Policies

Local policies, including Worcestershire County Council and Council policies relevant to this MMP are outlined below.

Worcestershire Joint Health and Well-Being Strategy 2016 - 2021

The Strategy sets out a vision for Worcestershire to be "healthier, live longer and have a better quality of life", focussing communities and groups with the poorest health outcomes. Six fundamental principles underpin the Strategy, including empowering individuals and families and taking local action. A renewed focus is also placed on the prevention of poor health and wellbeing, with actions including creating a health-promoting environment and encouraging and enabling people to take responsibility for themselves.

Bromsgrove District Council the Plan 2019-2023

The Plan sets out the vision to "enrich the lives and aspirations of all our residents, businesses, and visitors through the provision of high-quality services, ensuring that all in need receive appropriate help and support". Among the Plan's purposes are to provide independent living and active, healthy lives and create communities that are safe, well-maintained and green.

Bromsgrove District Plan 2011-2030 (Adopted January 2017)

The Local Plan is based on the vision that "By 2030 Bromsgrove District and its communities will have become sustainable, prosperous, safe, healthy, and vibrant. People from all sections of society will have been provided with access to homes, jobs, and services. The attractiveness of the District in terms of its natural environment, built form and settlements will have been preserved and enhanced". It sets out 12 strategic objectives to deliver this vision, including improving quality of life, protecting and enhancing the natural environment, safeguarding natural resources, adapting to climate change, and fostering community pride. Two policies outlined in the Plan are relevant to the management and maintenance of open space. These are delivery of a high-quality green infrastructure network and providing high-quality, accessible open space, sport, and recreation facilities to ensure local communities have good health and well-being.

Bromsgrove Partnership

The Bromsgrove Partnership brings together different organisations from the public, private, voluntary and community sectors in its role as the Local Strategic Partnership (LSP). The LSP aims to provide a forum for local organisations to come together and address critical issues more effectively and cohesively. The LSP work to support the delivery of the Bromsgrove District Plan and work toward the vision to "...make Bromsgrove District the place to live, do business and to visit".

1.2.2 Organisational structure

Bromsgrove District Council and Redditch Borough Council share the same management team as shown in **Figure 3** overleaf. The Chief Executive Officer (CEO) is responsible for strategic planning alongside the Deputy Corporate Executive (DCX) and Strategic Director. The CEO and DCX form the Senior Management Team and are responsible for the Council's overall performance. The Director of Finance and Resources is responsible for managing the Council's resources, including facilities, personnel and budgets. Under the management of the CEO, DCX and Director of Finance and Resources are the Council's departments, each with its own service head, as shown in **Figure 4**. Bromsgrove and Redditch Council's operate a number of shared services.

Figure 4 on page 12 shows the fourth-tier managers who report to the Head of Planning, Regeneration and Leisure Services.

Figure 3 Heads of Service

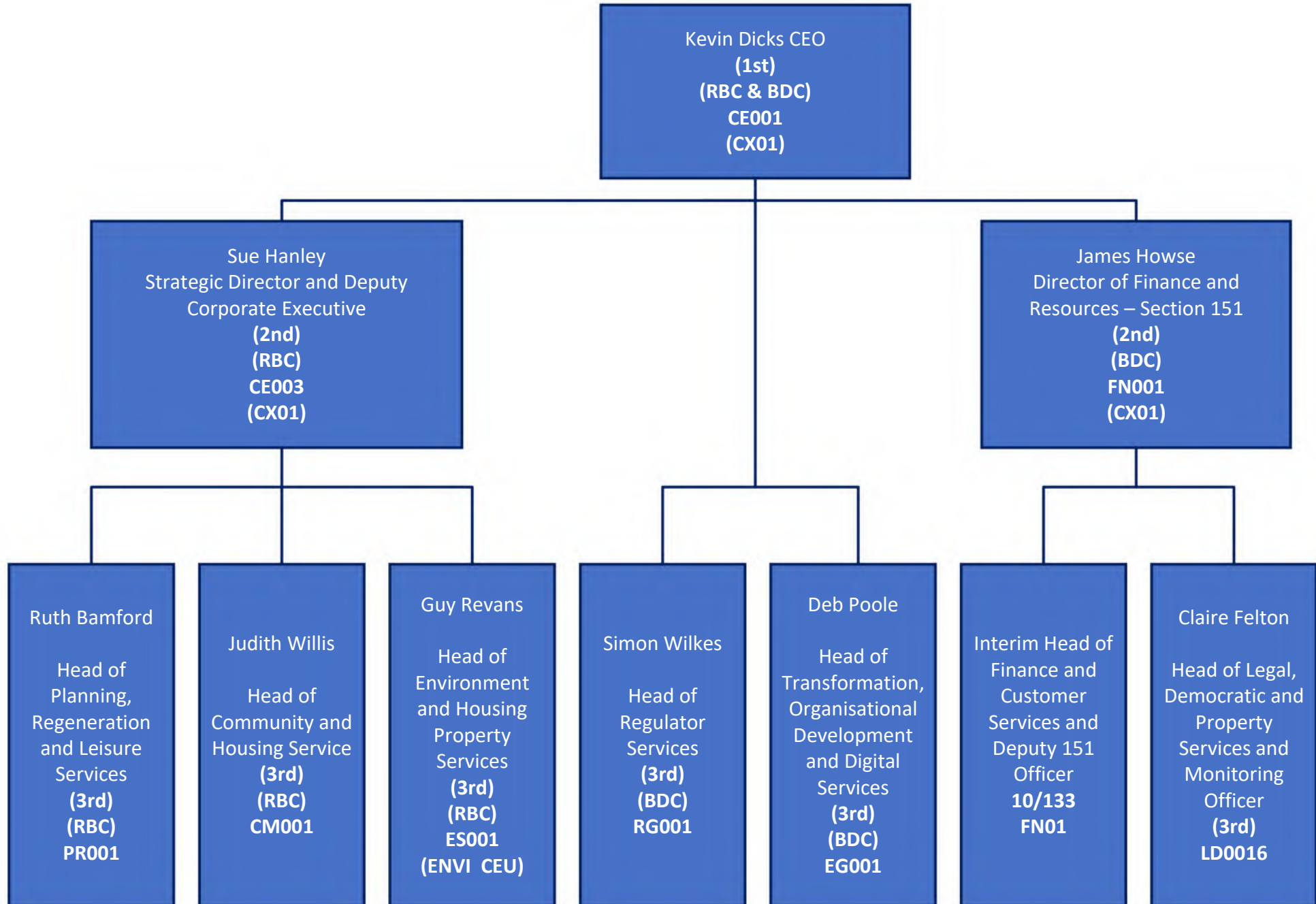
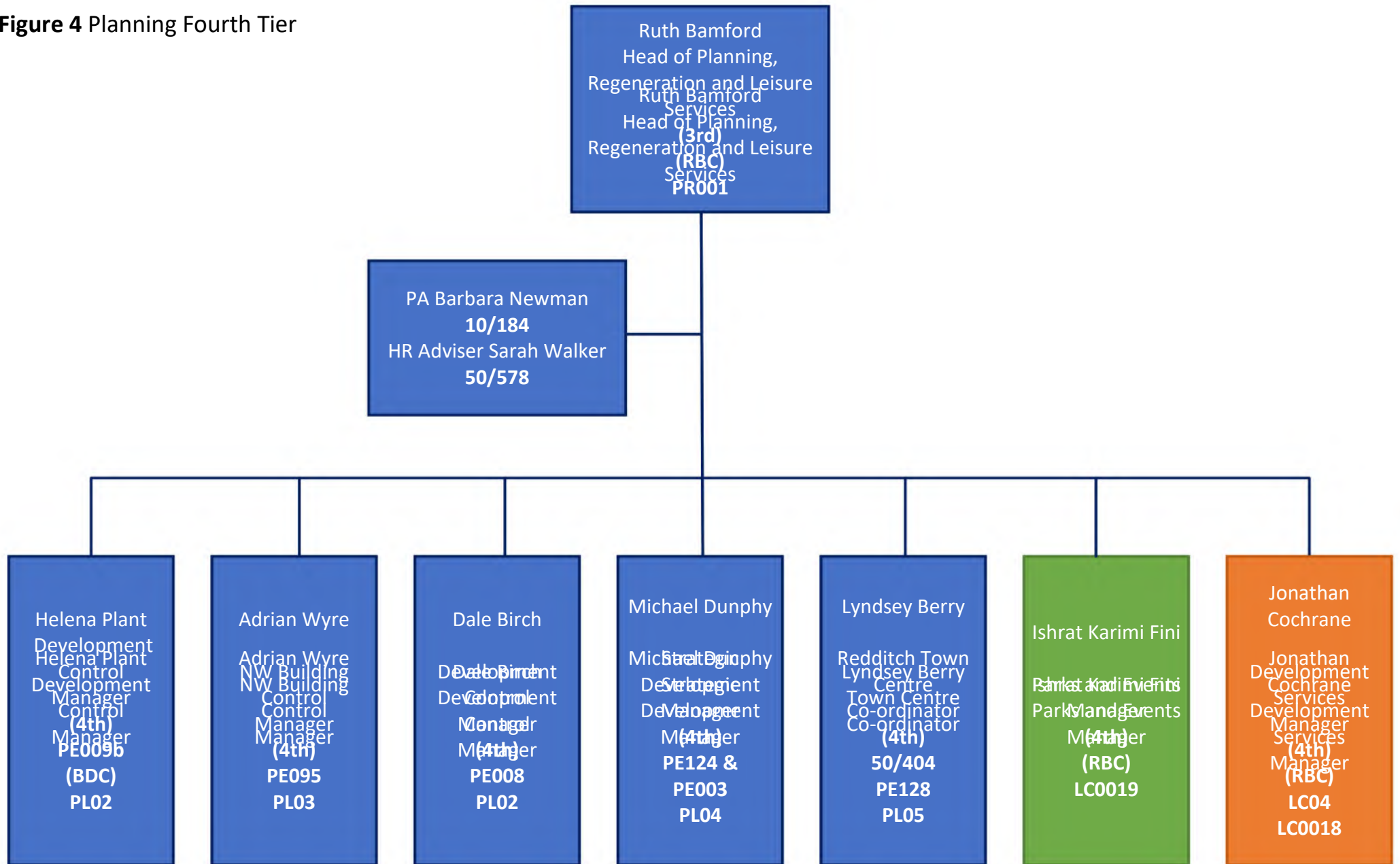


Figure 4 Planning Fourth Tier



Parks and Events Services

Figure 5 shows the organisational structure of Parks and Events Services, headed by the Parks and Events Manager. The service includes the Parks Operational Team, the Projects and Events Team and the Parks Development Team who oversee the following:

- Management and Delivery of Council, Community and Business Events within Parks and Civic Spaces (Including management of the Christmas Light Contract)
- Project management and monitoring of s106 monies
- Advising on the leisure and cultural implications of planning applications
- Parks development
- Play management
- Contract management (lease) facilities within parks
- Manage the Service Level Agreement in place with Rubicon Leisure Limited Company (sports, physical activity leisure centres and building management), a council-owned leisure company
- Stewardship programme
- Water risk management
- Allotment provision
- Management of heritage assets
- Woodland conservation and management
- Football pitch bookings
- Land management / Grounds Maintenance
- Woodland conservation and management
- Management of heritage assets

The Operations Team, under Operational Team Leader, manage and maintain strategic sites: Arrow Valley Park, Morton Stanley Park, Sanders Park and Lickey End Recreation Ground. The Team are responsible for golf course management (fine turf and sports pitch management) and maintenance at Pitcheroak Golf Course. They also manage and carry out equipment maintenance on all play areas in Redditch and Bromsgrove, as well as managing and doing some maintenance work on football pitches at the following sites:

- Greenlands
- Green Lane Pitches (Morton Stanley)
- Old Forge and Pathways (in Arrow Valley)
- Terrys Field
- Lickey End Recreation Ground
- Charford
- Braces Lane
- St Chad's Park

- King George Vth Playing Field

The Operations Team have a management role in many of the smaller green spaces across Redditch and Bromsgrove but do not do regular maintenance, this is done by the Place Teams. Place Teams (described below) carry out tasks such as litter picking, routine play area inspections and grass cutting. The Operations Team get involved when things such as bridges, fencing needs replacement as they hold budgets for this kind of work.

Maintenance, such as tractor mowing, hedge flailing, is carried out with assistance from the Environmental Services Team. Although the Operations Team manage the football pitches, it is the responsibility of the Environmental Services Team to carry out day to day maintenance.

Development Services

As shown in **Figure 7**, Development Services is headed by the Development Services Manager. Development Services deliver a range of practical projects that encourage residents to participate in arts, sports and heritage activities. The team also offers organisational development support to the leisure and culture sector. They act as a specialist advisory service internally and externally concerning all matters relating to sports, arts and heritage. They currently oversee the following:

- Health intervention projects to reduce symptoms and pain e.g. due to MS, COPD, Dementia, and Cancer, postural stability, obesity, low mood and anxiety (Public Health)
- Targeted activity and creativity programmes in ward areas of low engagement
- Activity and creativity programmes with target groups, such as those with low engagement levels due to disability or youth at risk, vulnerable residents, BAME communities
- Economic impact projects such as community arts in shop windows, pop up museums, public art installation encouraging footfall and secondary spend
- Community safety projects through deterrent positive activities
- Public realm enhancement through public art commissioning, temporary activities to improve place
- Activity and Creativity Consortium management to deliver externally funded projects
- Providing organisational development support to clubs, societies, venues (circa 300 per annum)
- Developing civic pride through awards and recognition schemes

Figure 5 Parks and Events Service

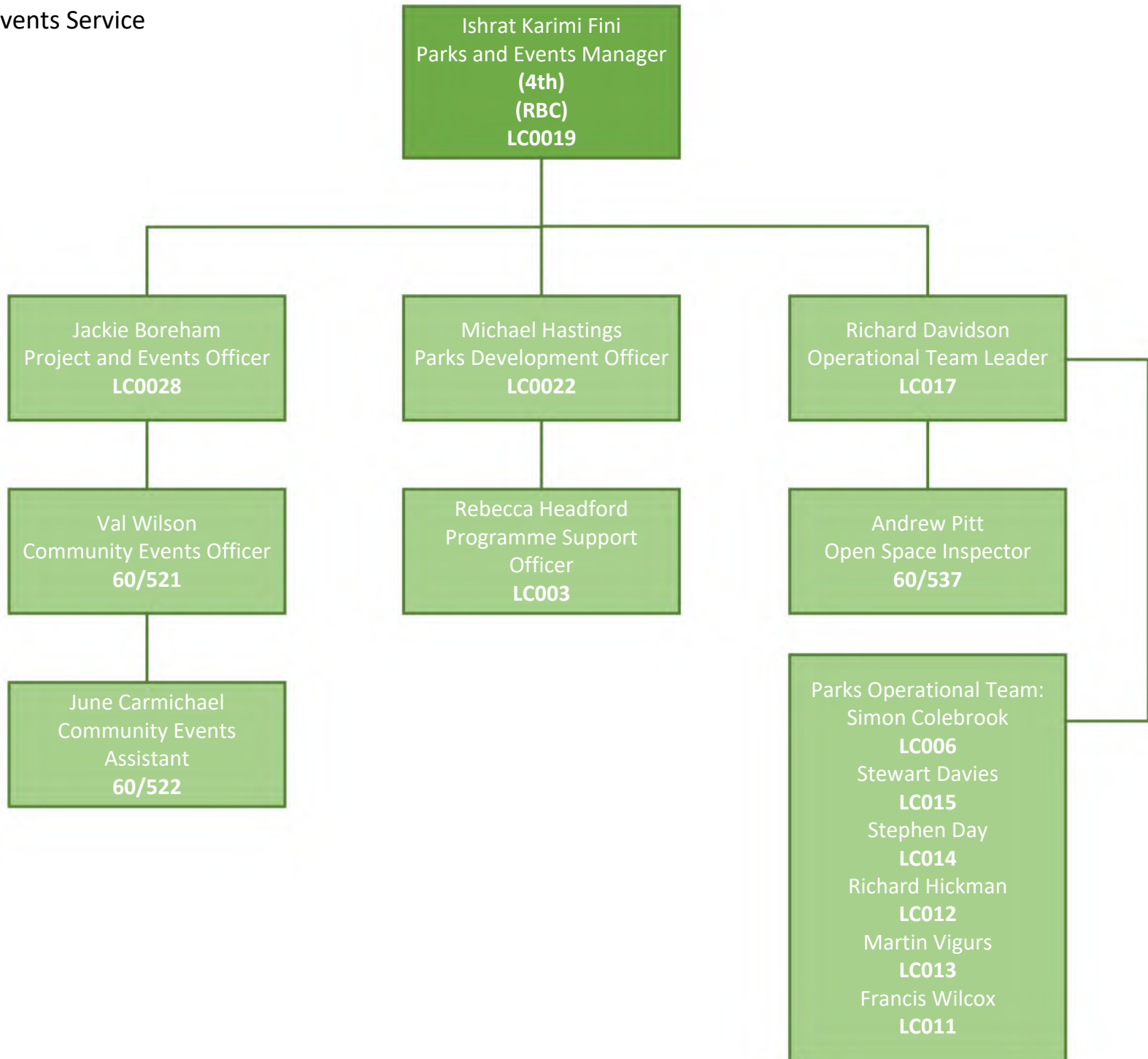
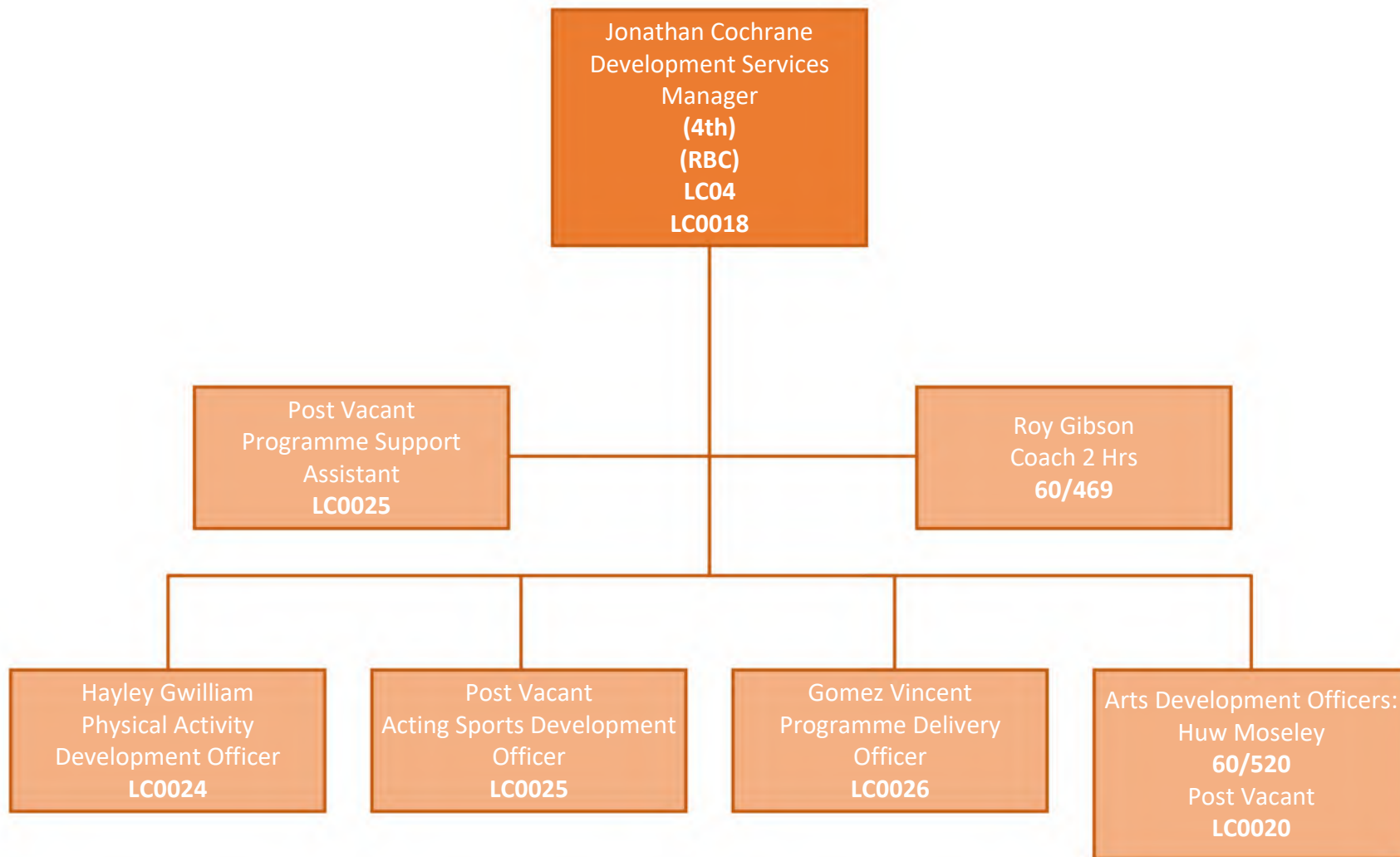


Figure 6 Development Services



Core Team and Place Teams

The Core Team and Place Teams sit within Environment and Housing Property Services, shown in **Figure 7**. The Teams carry out all of the ground maintenance work across Redditch Borough and Bromsgrove District excluding some works on the four strategic sites. They work closely with the operations Team detailed above.

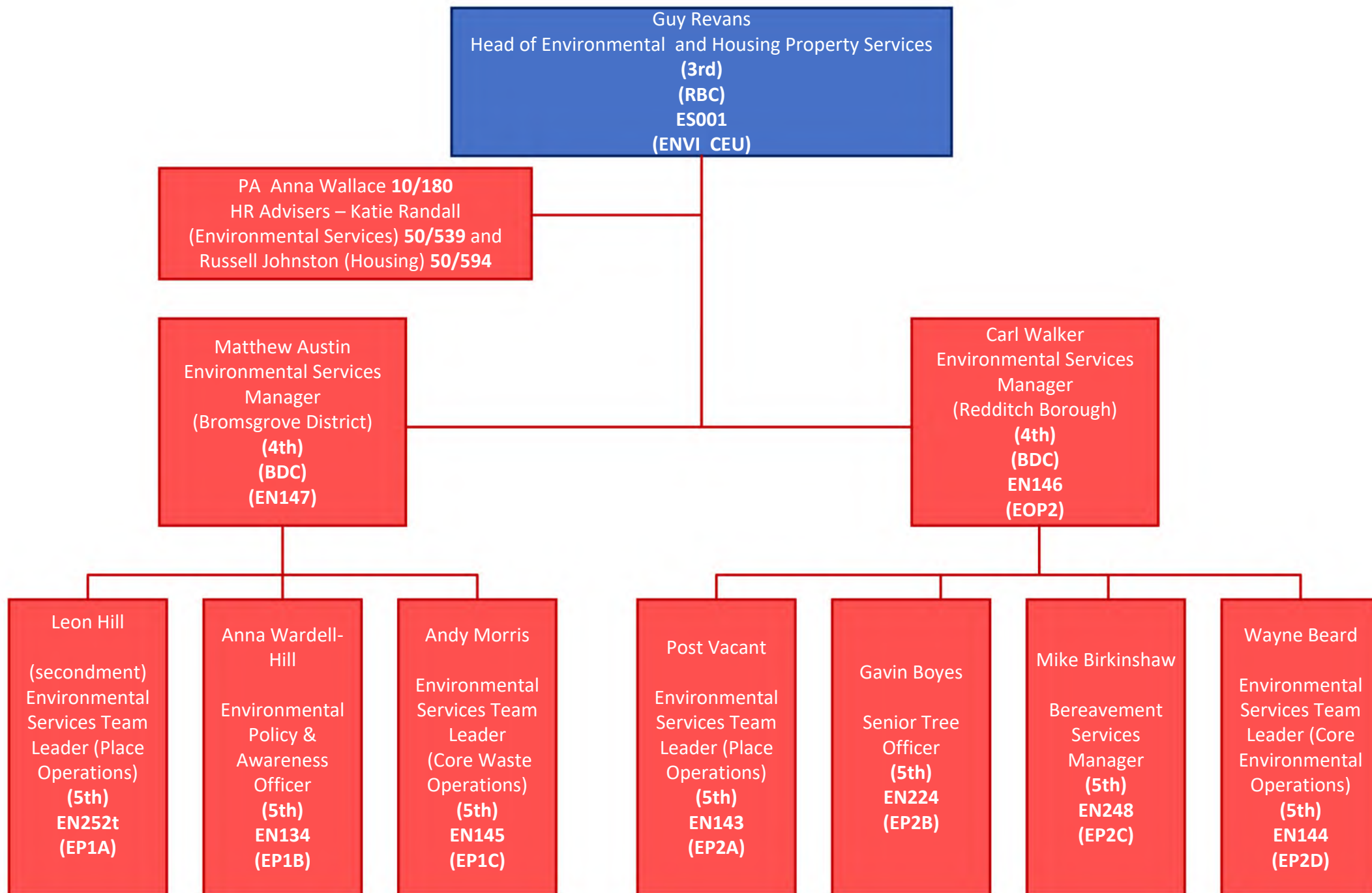
The service area is led by the Head of Environment and Housing Property Services. The Team is divided between two Environmental Services Managers (**Figure 7**).

The Environmental Services Manager (Bromsgrove District) manages work on Lickey End Recreation Ground, St Chad's Park and George Vth Park. The team also support litter picking and some of the ground maintenance within Bromsgrove sites.

The Environmental Services Manager (Redditch Borough) oversees the Tractor Team who are responsible for large scale mowing and seasonal hedge flailing and scrub encroachment clearance at all sites, as well as ad-hoc graffiti removal. The team are also responsible for the following work:

- Arrow Valley Country Park - Land Drainage – culvert checks, ditch works/improvements
- Morton Stanley Park - Land Drainage – culvert checks, ditch works/improvements
- Batchley Pool and Brockhill Park – cleansing/emptying of litter bins, Land Drainage – culvert checks, ditch works/improvements
- Overdale Park - cleansing/emptying of litter bins, Land Drainage – culvert checks, ditch works/improvements

Figure 7 Environmental and Housing Property Services



1.2.3 Current management and maintenance arrangements

Operations Team

The Operations Team manages and maintain strategic sites, including Lickey End Recreation Ground.

Place Teams

The Place Teams carry out regular mowing, seasonal hedge flailing and scrub encroachment clearance, plus any ad-hoc graffiti removal. They are also responsible for checking the culverts and any ditch works and improvements.

The full Grounds maintenance schedule for Lickey End Recreation Ground is included in **Appendix C Grounds maintenance schedule** on page 50.

1.3 Community

1.3.1 Demographics of Catchment

Lickey End Recreation Ground is located in Norton Ward.

- Total ward population = 3,876
- 48.4% male & 51.6% female

	Norton Ward	Bromsgrove
18 & under	23.8%	21.7%
18 - 24	4.5%	5.0%
25 – 44	26.3%	22.8%
45 - 64	27.7%	27.8%
65 over	17.7%	22.7%

Table 2 Age Profile

Within the surrounding ward of Norton, there appears to be a greater number of young people when compared to the wider borough. Those aged 18 & under make up 23.8% within Norton, compared to 21.7% in Bromsgrove and those aged between 25-44 make up 26.3% within the wards and 22.8% in Bromsgrove. This would suggest that Norton ward is a popular area for families to locate.

An average of 84.8% of 16–64-year-olds are economically active, above average for Bromsgrove overall.

Ethnic profile:

- White 94.8%
- White other 1.4%
- Mixed 0.8%
- Asian 2.1%
- Black 0.4%
- Other 0.4%

Almost 4% residents are of BAME ethnicity, reflective of BAME population in Bromsgrove. However, it is important to note that data at ward level is only available from 2011, and data for the borough is taken from 2016 estimates. Therefore, it is likely that there will be some variation.

Average life expectancy:

- Male 80.2
- Female 83.1

This is reflective of life expectancy in Bromsgrove Borough.

12.9% of resident’s day to day activities are limited a lot or a little, almost 5% lower than those in Bromsgrove Borough.

The surrounding ward of Norton has low levels of deprivation. It contains Lower Super Output Areas considered to be in the top 30% most affluent areas in England according to the 2019 Indices of Multiple Deprivation.

1.3.2 Current use

Lickey End Recreation Ground provides a range of facilities currently used by the local community. Children and families visit to use the play area which include toddler and junior play. The site also includes facilities for exercise and recreation for older children and adults: a Multi-Use Games Area and Outdoor Gym. The site contains space for one junior or two mini football pitches and changing rooms. The pitches are used by the Catshill FC Girls.

At present Bromsgrove District Council do not monitor visitor numbers at any of their sites. However, an online district-wide consultation in 2020 asked respondents about their frequency of visits to Lickey End Recreation Ground. **Chart 1** below shows that the reported frequency of visits to Lickey End Recreation Ground increased during lockdown. Before lockdown, almost two-fifths of respondents (37.1%) said they visited the site at least monthly, and only 1.4% daily. The proportion visiting at least monthly increased to nearly half during lockdown (48.5%), and one in 16 (6.1%) visited daily.

However, by September-October 2020, the frequency of use began to decrease, with only 41.9% of respondents visiting at least monthly and 4.7% daily.

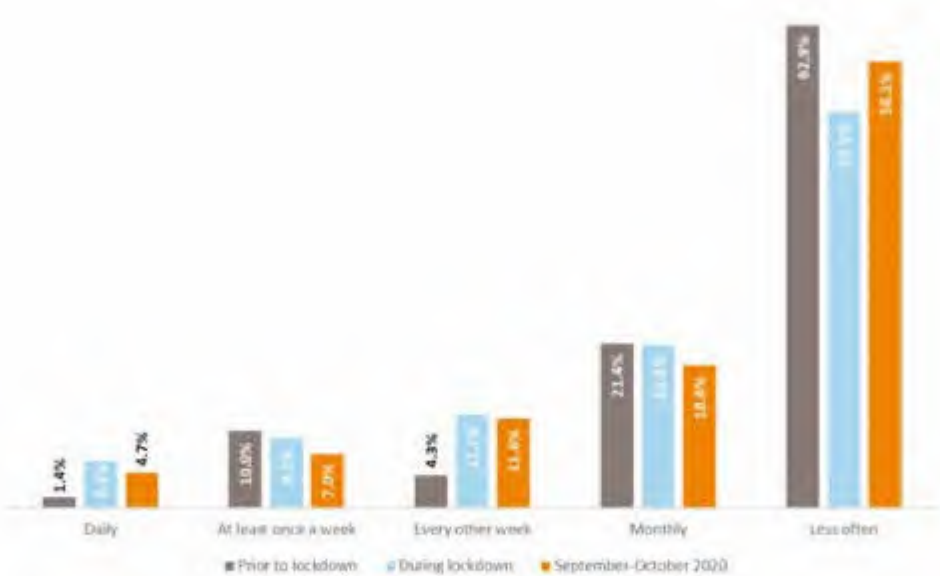


Chart 1 How often do you use Lickey End Recreation Ground? (Never used omitted)

1.3.3 Current Events and Activities

At present, the Development Services Team run a walking group and three Couch to 5K events per year at Lickey End Recreation Ground.

1.3.4 Current Volunteer Participation

There is no formal volunteer group at Lickey End Recreation Ground but a one-off volunteer event, organised by the local councillor, takes place approximately once a year. A group of 20 volunteers participate in a litter pick and clearing Himalayan Balsam.

1.3.5 Recent Consultation

Bromsgrove District Council has run five community surveys over the previous four years. As part of the 2020 borough-wide community survey, respondents were asked what improvements would improve their experience of Lickey End Recreation Ground, the largest proportion (30.6%) said more furniture, such as bins and benches (**Chart 2**). This was followed by improved play equipment (27.8%) and walking routes (27.8%).

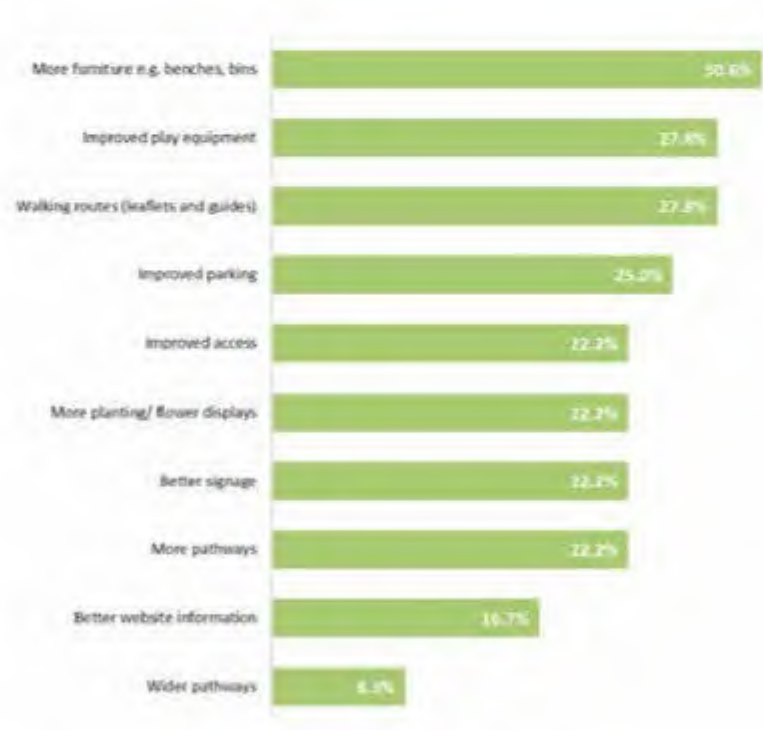


Chart 2 What improvements would improve your experience in our parks and open spaces?

2 Where do we want to be?

This section sets out an analysis of the current performance of the site using the Green Flag Award criteria and then draws on information from site assessments, community consultation and discussions with key council staff to develop a series of recommendations for the future management, maintenance and development of Lickey End Recreation Ground. The following section sets out all of the actions arising from this assessment, also later captured on a Masterplan.

For more information on the Green Flag Award scoring criteria please visit:

<https://www.greenflagaward.org/how-it-works/judging-criteria/>

2.1 A Welcoming Place

2.1.1 Welcome

The height restricted entrance from the B4096v Alcester Rd can be accessed easily by car and pedestrians. It has open views into the site revealing the car park, grassed playing fields, brick built changing rooms, trees and wetland vegetation. There are two “Welcome” signs at this entrance. One states “Welcome to Lickey End Recreation Ground” and the other “Welcome to Lickey End Nature Park”. There is a mixture of different path surfaces, signage styles, bollards, fencing and signage materials. See plate 1 images 1,2,3

2.1.2 Good and Safe Access

Access into the carpark and over the pedestrian bridge from the Alcester Rd is good. Pedestrian access from Littleheath Lane is narrow and the condition of the tarmac footpath is poor. Access from Littleheath Lane is privately owned with a public right of access. Access into the woodland area from the Alcester Rd is adequate and fitting for more rural countryside setting. See plate 1 image 4

2.1.3 Signage

There are many different signs within the site which have been added over the years. There are some that are out of date/illegible/ damaged. The signage appears uncoordinated and detracts from the overall appeal of the place and the effectiveness of the messages is diminished. Plate 2 image 1,2,3,4

Welcome sign	Welcome sign
	
Paths and bollards	Paths and access
	

Out of date sign



Illegible sign



Damaged sign



Various styles of sign



2.1.4 Equal Access for All

The variety of path surfacing, irregularities of levels of paths and continuity of the overall path network results in a reduced accessibility for wheelchairs, pushchairs and users with mobility issues. Poor drainage near the gate entrance to the enclosed play equipment and lack of easy transition between path types may limit access to some users. See plate 3 image 1,2,3,4

Recommendations
1. Consider path network with particular regard to access from the carpark and into the site, access around the site, into the enclosed play area, water vole viewing platform and changing room facility and relationship of various paths, surface types and how they connect to each other.
2. Consider carrying out a signage audit to provide a more coordinated style of signage with concise, meaningful and relevant information.

2.2 Healthy, Safe and Secure

2.2.1 Appropriate Provision of Quality Facilities and Activities

The site provides good quality facilities for a wide range of visitors. The notice board has a sign with contact details that promotes “New Walking for Health”; a drop-in guided activity on Tuesdays at 10am. Various other sports activities are advertised on the banners that are attached to the fencing around the changing rooms.

2.2.2 Safe Equipment and Facilities

The wooden ramp up to the water vole viewing platform becomes very slippery when wet. The rubber safety surface around the play tunnel has been damaged. See plate 4 image 1

2.2.3 Personal Security





A very open landscape gives a feeling of safety. The site is well used by regular dog walkers.

2.2.4 Control of Dogs/Dog Fouling

There was no evidence of dog fouling. There are plenty of dog waste bins and appropriate signage around the site.

Recommendations
3. Repair or remove damaged wet pour around play tunnel.
4. Consider anti-slip surface to viewing platform ramp.

Various path surfaces	Poor drainage/access
	
Entrance to play area	Access to wooden ramp
	

Damaged surfacing	Chemical use
	
Chemical use	Redundant tree stake
	

2.3 Well Maintained and Clean

2.3.1 Litter and Waste Management

There was no evidence of litter or fly tipping on site. The dog waste bins and general waste bins were in good working order and the emptying frequency appeared to be appropriate for the site.

2.3.2 Horticultural Maintenance

Grass cutting and pitch maintenance was very good. There was evidence of chemical use to control growth of vegetation around enclosed play area fence line and around wooden ramp to water vole viewing platform. See plate 4 image 2, 3

2.3.3 Arboricultural Maintenance

There is evidence of tree tags on some of the mature trees on site. A number of trees around the site (approx. 5-10 years) still have tree stakes and ties that are no longer needed. See plate 4 image 4

2.3.4 Building and infrastructure maintenance

Notice board attached to fence around changing rooms is damaged. Some footpaths require maintenance work.

2.3.5 Equipment Maintenance

There was evidence of outdoor gym equipment that was in need of repair but this had been adequately immobilised to prevent use.

Recommendations

5. Consider alternatives to chemical use to control vegetation.
6. Mowing strip beneath the fence around play area.
7. Strimming or hand weeding around ramp access to the water vole viewing platform.
8. Repair/replace notice board.
9. Clear and maintain paths where required.
10. Replace rusted and damaged bin near water vole viewing platform. Consider re-siting this bin or alternative design if the rusting is due to flooding issues in this area.
11. Update tree survey and carry out relevant tree works.
12. Remove all tree stakes and associated tree ties.

2.4 Environmental Management

Currently the council does not have a policy within either Environmental Services or the Parks and Events Service that addresses how the authority will address the Worcestershire Climate Change Strategy nor how it will assess its own impacts and what it can do to mitigate these.

It is critical that both service areas work together to look at areas such as

- Waste minimisation
- Chemical use
- Peat use
- Energy use
- Climate change adaptation

The following positive actions have been taken however:

- Green waste arisings are taken off site and recycled into compost by Severn Waste
- Pesticide use has been reduced but this has not been quantified in any way

Recommendations

13. The council needs urgently to develop an overarching environmental management strategy linked into individual service plans and operational procedures.

2.5 Biodiversity, Landscape and Heritage

2.5.1 Management of Natural Features, Wild Fauna and Flora

Vegetation alongside the Spadesbourne Brook is varied. The banks in some areas have been completely denuded of vegetation and other areas have a mixture of native flora. The vegetation around the water vole viewing platform has been planted and managed to provide water vole habitat. There has been more recent planting of goat willow around the playing fields presumably to encourage wildlife to the area. See plate 5 image 1,2.

A Habitat Management Plan was written in 2011, however, Bromsgrove District Council no longer follow the recommendations it set out.

Recommendations

14. The council needs to better understand the habitats at Lickey End Recreation Ground and ensure they manage it appropriately in future, given its significance to nature conservation.

15. Work with North Worcestershire Water Management to sustain water management and biodiversity.

Spadesbourne Brook vegetation	Spadesbourne Brook vegetation
	
Outdoor gym educational sign	Water Vole educational sign
	

2.5.2 Conservation of Landscape Features

The Spadesbourne Brook provides a unique opportunity for wildlife, nature appreciation and enhances the visitor experience. There is some evidence that this may be prone to flooding. It appears that conservation and enhancement of this feature is minimal. Tree management and conservation also appears to be minimal.

- Recommendations**
- 16. Planting of reed beds/supplementing vegetation along stream edges to provide habitat for water voles (see **Appendix B**).
 - 17. Consider replanting or gap filling the hedge along the watercourse to re-establish planting.
 - 18. Consider suitable treatment of banks to support the resident water vole population and provide wildlife habitat (see **Appendix B**).
 - 19. Consider willow spilling and planting to stabilise banks and provide wildlife habitat.
 - 20. Consider measures to limit access by dogs to wetland.
 - 21. Plant a wider variety of trees around the site to provide food source for birds e.g. alder, hawthorn.
 - 22. Assess all trees and carry out relevant management.
 - 23. Consult wildlife trust to draw up management plan to increase habitat diversity to benefit wildlife.

2.6 Community Involvement

2.6.1 Community Involvement in Management and Development

The current community involvement is limited to one off volunteer events with about 20 volunteers and this is organised by a local councillor. The group do litter picking and Balsam control.

The site has county wide significance for nature conservation throughs its water vole population and this is a key area that the council could encourage local volunteers to help with. This could be through annual water vole surveys, habitat management works and habitat surveys in the local area.

2.6.2 Appropriate Provision for Community

The site would lend itself to small scale community led activity. Currently, there is a walking group every Tuesday at 10am (overseen by Development Services) and there is a Couch 2 5K programme 3 x per annum for 6 or 8 weeks in Jan/ April and Sept (managed by staff within Development Services).

- Recommendations**
- 24. The council needs to consider how the local community could become involved in the management and development of the site.
 - 25. The council needs to look at how local volunteers could help with the nature conservation value of the site.
 - 26. The council needs to consider how it could begin to animate the space through the introduction of small-scale community led events and activities.

2.7 Marketing and Communication

2.7.1 Marketing and promotion

There is basic information on the council web site at <https://www.bromsgrove.gov.uk/things-to-do/parks-and-outdoors/parks-and-play-areas/lickey-end-recreation-ground.aspx>

also, at <https://www.bromsgrove.gov.uk/things-to-do/parks-and-outdoors/parks-and-play-areas/lickey-end-recreation-ground/wildlife-and-habitats.aspx>

The habitat management information is about 10 years old.

2.7.2 Appropriate educational and interpretational information

The Outdoor gym has appropriate information on how to use the equipment and the QR code allows users to access videos to learn how to use each item correctly. The educational sign at the Water vole viewing platform provides information on many aspects of water voles including habitat creation, status and how to identify and help protect water voles.

Recommendations
27. Consider a district-wide parks web site.
28. Update the habitat management section of the web site.
29. Consider the key educational messages and interpretation that need to be conveyed to park users and provide coordinated and current information.
30. The council should consider whether it can better promote its venues and spaces for community hire and incorporate this into improvements to the service’s marketing.

2.8 Management

There are three main sources of improvements to overall management. Firstly, the green flag site assessment for items not picked up above, secondly the playing pitch strategy audits and thirdly community consultation.

2.8.1 Green Flag Audit issues

The pedestrian egress from the park across the foot bridge onto the Alcester Rd does not have a safety barrier installed.

Recommendations
31. Install pedestrian safety barrier on the road side by the pedestrian access from the Alcester Rd.

2.8.2 Playing Pitch Audit

The Playing Pitch Strategy audit carried out in 2021 examined the two football pitches on site which were a youth 7x7 and a youth 9x9. The audit looked at both the pitch quality and also the built facilities on site to support sports use.

Item	Youth 7x7	Youth 9x9
Pitch	47.1% / poor	47.1% / poor
Built facilities	30.8% / poor	30.8% / poor

Both pitches were described as “Poor surface - Mole hills present across pitch. Muddy, poorly drained and uneven. Average pitch markings and no goal posts”.

Recommendations
 32. Carry out improvements to sports pitches as set out in the PPS audit.

2.8.3 Tree Survey

There have been no recent tree surveys carried out at Lickey End Recreation Ground.

Recommendations
 33. Carry out a new tree survey to ensure recommendations are more up to date.

2.8.4 Water Safety Inspections

The last inspection of the water course and nature area backwashes took place in October 2015. They were assessed to be lower risk and no recommendations were provided.

Recommendations
 34. Carry out a new water safety inspection.

2.8.5 Invasive Non-Native Species

Himalayan Balsam (*Impatiens glandulifera*) is present at Lickey End Recreation Ground. There is a plan being drawn up to deal with invasive non-native species at sites across Bromsgrove. A plan was put together by North Worcestershire Water Management who have involved contractors to implement it from spring 2022.

See **Appendix D Environment Agency Managing Invasive Non-Native Plants** for more information.

Recommendations

35. Implement plan to eradicate Himalayan Balsam.

2.8.6 Community consultation

As set out in 1.4.5, when asked what improvements would improve their experience of Lickey End Recreation Ground, the largest proportion (30.6%) said more furniture, such as bins and benches (**Chart 2**). This was followed by improved play equipment (27.8%) and walking routes (27.8%).

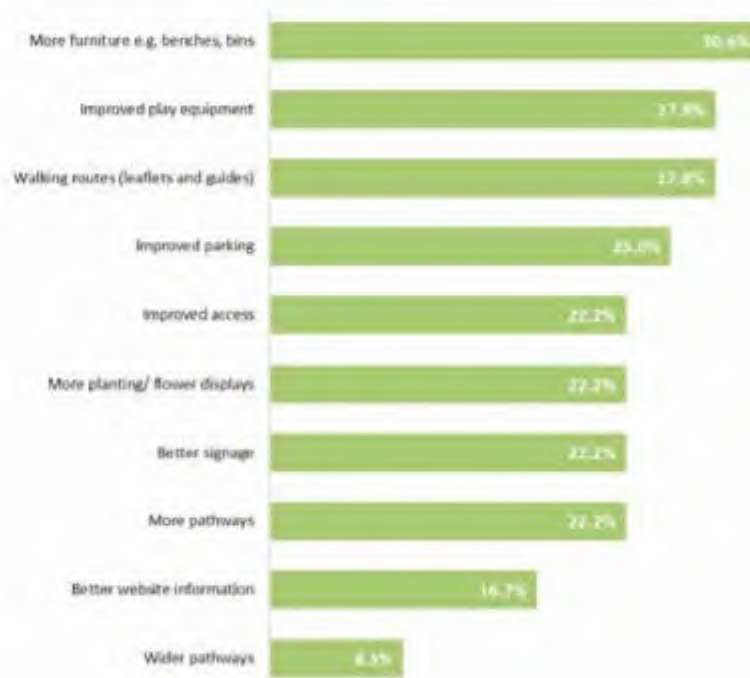


Chart 2 What improvements would improve your experience in our parks and open spaces?

Recommendations

36. Consider additional furniture as shown on the improvement plan.

37. Consider improving and upgrading play equipment.

38. Develop a walking route linked to surrounding rights of way.

3 How will we get there?

The action plan below brings together all of the recommendations in section 2 above and considers a reasonable timescale for their implementation along with an indicative lead officer and also any resource or financial implications

It should be noted that generic actions across all 8 priority parks are picked up in the overall Priority Parks Strategy.

Figure 8 on page 42 visually shows the site-based improvements that are set out above.

	Recommendation	Financial Year	Lead Officer(s)	Partners	Resource implication
A Welcoming Place					
1	Consider path network with particular regard to access from the carpark and into the site, access around the site, into the enclosed play area, water vole viewing platform and changing room facility and the relationship of various paths, surface types and how they connect to each other.	2022/23 - 2023/24	Michael Hastings and Jackie Boreham	NA	Potential S106 or capital bid
2	Consider carrying out a signage audit to provide a more coordinated style of signage with concise, meaningful and relevant information.	2022/23 - 2023/24	Michael Hastings	NA	Officer time and Parks and Open Spaces budget
Healthy, Safe and Secure					
3	Repair or remove damaged wet pour around play tunnel.	2022	Richard Davidson	NA	Complete
4	Consider anti-slip surface to viewing platform ramp.	2023	Richard Davidson	NA	Parks and Open Space Budget
Well Maintained and Clean					
5	Consider alternatives to chemical use to control vegetation.	2023	Richard Davidson	NA	Will continue to monitor new products on market
6	Mowing strip beneath the fence around play area.	2024/25	Richard Davidson	NA	Consider during play area redevelopment S106
7	Strimming or hand weeding around ramp access to the water vole viewing platform.	2022/23	Richard Davidson	NA	Works undertaken as part of current maintenance schedule
8	Repair/replace notice board.	2023/24	Michael Hastings	NA	Parks and Open Space Budget
9	Clear and maintain paths where required.	2022/23 onwards	Richard Davidson	NA	Works undertaken as part of current maintenance schedule
10	Replace rusted and damaged bin near water vole viewing platform. Consider re-siting this bin or alternative design if the rusting is due to flooding issues in this area.	2023/24	Richard Davidson	NA	Parks and Open Spaces budget

11	Update tree survey and carry out relevant tree works.	2023/24	Michael Hastings	Gavin Boyes – Arboricultural Team	Parks and Open Spaces budget
12	Remove all tree stakes and associated tree ties.	2023/24	Richard Davidson		In house operations team
Environmental Management					
13	The council needs urgently to develop an overarching environmental management strategy linked into individual service plans and operational procedures.	2022/23	Ishrat Karimi-Fini and Michael Hastings		Officer time and Parks and Open Spaces Budget / specialist ecological contractors
Biodiversity, Landscape and Heritage					
14	The council needs to better understand the habitats at Lickey End Recreation Ground and ensure they manage it appropriately in future, given its significance to nature conservation.	2022/23	Michael Hastings	Volunteers Worcestershire County Council Private Sector Ecologists	Parks and Open Spaces / NN Bids / s106 funding / Stewardships
15	Work with North Worcestershire Water Management to sustain water management and biodiversity.	2023/24	Michael Hastings	NWWM and WWT	Parks and Open Spaces / NN Bids
16	Planting of reed beds/supplementing vegetation along stream edges to provide habitat for water voles (see Appendix B).	2022/23	Michael Hastings	NWWM and WWT	Parks and Open Spaces / NN Bids
17	Consider replanting or gap filling the hedge along the watercourse to re-establish planting.	2023/24	Michael Hastings	NWWM and WWT	Parks and Open Spaces / NN Bids
18	Consider suitable treatment of banks to support the resident water vole population and provide wildlife habitat (see Appendix B).	2022/23	Michael Hastings	NWWM and WWT	Outcome of investigations will determine cost implications
19	Consider willow spilling and planting to stabilise banks and provide wildlife habitat.	2022/23	Michael Hastings	NWWM and WWT	Officer time
20	Consider measures to limit access by dogs to wetland.	2022/23	Michael Hastings	NWWM and WWT	Officer Time and Parks and Open Space Budget
21	Plant a wider variety of trees around the site to provide food source for birds e.g. alder, hawthorn.	2023/24	Michael Hastings	NWWM and WWT	Parks and Open Spaces / NN Bids
22	Assess all trees and carry out relevant management.	2023/24	Michael Hastings	Gavin Boyes –	Parks and Open Spaces /

				Environmental Services	NN Bids
23	Consult wildlife trust to draw up management plan to increase habitat diversity to benefit wildlife.	2023/24	Michael Hastings	NWWM and WWT	Parks and Open Spaces / NN Bids
Community Involvement					
24	The council needs to consider how the local community could become involved in the management and development of the site.	2023/24	Michael Hastings	Supported by the Events team to provide arrangement for event to instigate opportunity. This could be as a green flag day?	Officer Time
25	The council needs to look at how local volunteers could help with the nature conservation value of the site.	2023/24	Michael Hastings		Officer Time
26	The council needs to consider how it could begin to animate the space through the introduction of small-scale community led events and activities.	2022/23 - 2023/24	Jackie Boreham		Potential events budget
Marketing and Communication					
27	Consider a district-wide parks web site.	2023/24	Ishrat Karimi-Fini	Web Team, Communications Team & Parks and Events Officers	Officer Time
28	Update the habitat management section of the web site.	2023/24	Michael Hastings	Web Team, Communications Team & Parks and Events Officers	Officer Time
29	Consider the key educational messages and interpretation that need to be conveyed to park users and provide coordinated and current information.	2023/24	Michael Hastings	Volunteers, Ecologists, NWWM, Communications Team, WWT	Parks and Open Spaces Budget and/or external funding opportunities
30	The council should consider whether it can better promote its venues and spaces for community hire and incorporate this into improvements to the service's marketing	2023/24	Parks Development Officer	Web Team, Communications Team & Parks and Events Officers	Officer Time
Management					
31	Install pedestrian safety barrier on the road side by the pedestrian access from the Alcester Rd.	2023/24	Michael Hastings	WCC - Highways	Officer Time
32	Carry out improvements to sports pitches as set out in the PPS audit.	2024/25	Richard Davidson	As per PPS	As per PPS

33	Carry out a new tree survey to ensure recommendations are more up to date.	2023/24	Michael Hastings	Gavin Boyes – Arboricultural Team	Parks and Open Spaces budget
34	Carry out a new water safety inspection.	2023/24	Richard Davidson	Environment Services	Parks and Open Spaces budget/Officer time
35	Implement plan to eradicate Himalayan Balsam.	2022/23	Michael Hastings	Parks and Events Environmental Services Volunteers	Officer Time/ Parks and Open Space Budget
36	Consider additional furniture as shown on the improvement plan.	2024/25	Michael Hastings	Local Community Consultation	Parks and Open Space Budget / External Funding
37	Consider improving and upgrading play equipment	2026	Jackie Boreham and Richard Davidson	Local Community Consultation (School)	£106 or capital bid
38	Develop a walking route linked to surrounding rights of way.	2023/24	Michael Hastings	WCC	Parks / Open Space or External Funding

Figure 8 overleaf visually shows the site-based improvements that are set out above.

Lickey End Management and Maintenance Plan

Figure 8
Lickey End Masterplan

LEGEND

-  Site boundary
-  Pedestrian access
-  Vehicular access
-  Public Right of Way
-  Main entrance



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4 How will we know when we have arrived?

The management plan will be reviewed annually by the council team along with any key stakeholders to track its implementation.

The Action Plan will be formally reviewed annually, with progress recorded and future actions reviewed and prioritised.

Appendix A Compartment Plan

The Figure overleaf shows the compartment plan as set out in the 2010- 2015 Habitat Management Plan. Details of the compartments are outlined below:

- **Compartment A and B** overmature field hedge forming the north-east boundary of the site with adjacent residential garden and open farmland.
- **Compartment C and D** section of Alder dominated woodland planted 2000 with a small number of older Hawthorns at the north end. Heavily thinned March 2011.
- **Compartment E** section of mixed-species woodland planted 2000. Overshadowing from woodland now causing tree loss and no significant shrub or ground layers.
- **Compartment F** Former boundary hedge overgrown to form woodland block. Heavily dominated by holly. Provides screening from the adjacent busy road, but its height and density heavily shade adjacent ride & woodland edge.
- **Compartment G** New wetland water vole area created Winter 2008-9 and planted Spring 2009 to make an additional 100m of water vole habitat and improved flood alleviation. Pre and post water vole surveys show a 400% increase in population due to improved and increased habitat.
- **Compartment H** Section of existing natural watercourse. Plug planted with aquatic plants in spring 2011. The section north of the vehicle bridge is overshadowed by two mature Willow and Alder trees.
- **Compartment J** Section of channelled watercourse with hedge adjacent (laid 2010-2011). Inner bankside seeded and plug planted with aquatic plants in Spring 2011. Water vole burrows in the rivetted outer bank with a foraging area on the inner bank. Mature multi-stem Alder at the northern end of the section.
- **Compartment K** Section of existing channelled watercourse with an adjacent site of proposed new wetland area. The far side of the brook is under private ownership. Water vole burrows in the inner bank with a foraging area on the opposite side.
- **Compartment L** Area of hedge planting along the northern boundary of site backing onto residential gardens.

Aerial & Compartment Plan



Appendix B Water Vole Information

Water voles (*Arvicola amphibious*) have been identified at Lickey End Recreation Ground. Since 1900, there has been a long-term decline in water vole distribution and numbers both nationally and in Worcestershire.

A countywide study in 2000 identified Bromsgrove District as the site of the only remaining water vole populations in the county. In 2002, Worcestershire Wildlife Trust conducted a water vole survey across 32 sites in Bromsgrove District, including 20 along the Spadesbourne Brook. The survey team found evidence of water voles at 11 of the sites, including Lickey End.

The report concluded that the Lickey End area was a critical location for water voles within Bromsgrove. The Lickey End area (along with Sanders Park) “are probably the most important sites in Worcestershire . . . these populations are fragmented and isolated and therefore vulnerable to extinction unless the correct sympathetic management suggested is carried out”.

Recommendations made by the report included the removal of scrub and trees, which increase shading on the bankside and inhibit the growth of grasses, wetland and water plants used by the water vole. Removal of litter also discourages brown rats (*Rattus norvegicus*), which compete with the water vole.

In 2005, the Worcestershire Wildlife Trust developed a Water Vole Conservation Strategy for Bromsgrove District Council, and between 2005 and 2015, around 70% of the recommended actions and activities had been carried out.

As part of the 2018-2027 Worcestershire BAP, a Species Action Plan (SAP) for water voles was developed. Its main conservation aim was to avoid the loss of water vole habitat and re-connect fragmented habitats where possible. Conservation objectives set out by the plan which are relevant to Lickey End Recreation Ground included survey work to confirm the current population distribution and improved accuracy of public recording and awareness raising.

Work that has taken place at Lickey End Recreation Ground has included a reduction in grass mowing, laying a Midland style hedgerow and tree planting. As part of the Council’s commitment to the 2009 West Midlands Biodiversity Pledge, a small wetland area was created, improving the quality of the habitat and increasing the total amount of habitat by approximately 50%. Monitoring at the site which took place 12-months after the wetland area was created, concluded there had been a 400% increase in the water vole population. In 2019, a viewing platform and interpretation boards were installed to raise awareness and contribute to the objectives of the water vole species action plan.

By 2018, it was believed that only three sites, including Lickey End Recreation Ground, were still inhabited by water voles. This further highlights the importance of continued maintenance and conservation work at the site. Below is key information on water voles, including their preferred habitat and management recommendations.

Water Vole Habitat

Water voles tend to live on the banks of densely vegetated rivers, streams, canals or ditches. They will burrow into the banks, so prefer soft, undisturbed earth banks. Water voles can also be found in ponds, lakes, marches, wet moorland and reedbeds, where they will wave rugby ball-sized nests made of reeds.

Vegetation is vital to water voles, both as cover from predators and for food. Notably, a water vole needs to consume the equivalent of 80% of its body weight in food each day and a breeding female double that amount.

Threats

There are several reasons for declines in water vole populations:

- Predation by American mink (*Neogale vison*)
- Habitat loss
- Population fragmentation
- Water pollution
- Drought
- Flooding

Protection and Designations

Water voles are listed as endangered on Great Britain and the England Red Lists for Mammals. They are included as a priority UK Biodiversity Action Plan species.

Water voles were given full legal protection under schedule 5 of the Wildlife and Countryside Act 1981 (and amends). Schedule 5 of this Act makes it an offence to intentionally or recklessly damage, destroy or obstruct access to any structure or place that a water vole uses for shelter or protection. It is also an offence to disturb, kill or injure a water vole or handle a water vole without a licence. Disturbing or harming a water vole, damaging its habitat or destroying or blocking water vole burrows could lead to prosecution. Offences carry a maximum penalty of £5,000.

They are also listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Lawful and essential operations affecting water vole habitat must take full account of this protected status and avoidance of damage/adequate mitigation must be undertaken.

Under the Water Act 1989 (and amends), it is an offence to cause or knowingly permit a discharge of poisonous, noxious or polluting matter to enter any controlled waters without proper authority.

Locally, water voles have been identified as a priority species by the Worcestershire BAP since 1997. Within Bromsgrove, the Spadesbourne Brook and the Battlefield Brook are both listed as Local Wildlife Sites (LWS), which gives some measure of protection in planning policy.

Management

Minimal management is required to ensure a habitat are suitable for water voles; they are reliant on the maintenance of vegetation. As ecosystem engineers, their burrowing, feeding and movement also facilitate the creation of ideal conditions for themselves other river species.

Recommendations for management include:

- Ensure works are carried out between late September and early February, so there are no disturbances during the breeding season.
- Ensure there are at least two metres of uncut bank-side vegetation or grass.
- Cut alternate banks each year, so there is always vegetation available.
- Do not cut bank-side vegetation too short.
- Coppicing bank-side trees will open up sections of the bank, ensuring grasses and vegetation are not overshadowed.
- When de-silting, avoid disturbing the bank-sides, keep machinery to one side to ensure to other side remains intact, and only remove silt from the centre of the channel. When completed, deposit silt away from the water.

Existing Conservation Work

The Wildlife Trust's National Water Vole Database & Mapping Project collects and analyses national data on water vole and mink distributions and water vole reintroductions (see below for link).

Alongside their monitoring work, the Wildlife Trust works alongside other organisations to maintain and restore water vole habitats and populations.

An example of a successful project includes the Berks, Bucks and Oxon Wildlife Trust (BBOWT) Water Vole Recovery Programme. The longest running water vole recovery project, the BBOWT Water Vole Recovery Programme has been working to increase populations of water voles across the three counties since 1998. Works have included mink population control and habitat enhancement, clearing scrub and trees along the

River Misbourne. Between 2008 and 2018, the total area of water vole activity increased by 80%. Information on the project is available via the following links:

www.bbowt.org.uk/news/water-voles-thriving-oxfordshire-and-berkshire-and-given-helping-hand-buckinghamshire

www.bbowt.org.uk/wildlifewildlife-conservation/water-vole-recovery-project

Additional Information

Further information on water voles is available via the following links:

Wildlife Trust information on water voles: www.wildlifetrusts.org/wildlife-explorer/mammals/water-vole

Water vole: watervole.org.uk/

Current work being carried out by the Wildlife Trust: www.wildlifetrusts.org/saving-species/water-voles

The National Water Vole Database & Mapping Project: www.wildlifetrusts.org/national-water-vole-database-mapping-project

Bromsgrove Mink and Water Vole Strategy: www.bromsgrove.gov.uk/media/1075430/Mink-and-Water-Vole-Strategy-Bromsgrove-District-Council.pdf

Species Action Plan: www.worcestershire.gov.uk/downloads/file/10852/s4_water_vole_species_action_plan

People's Trust for Endangered Species monitoring programme: ptes.org/get-involved/surveys/countryside-2/national-water-vole-monitoring-programme/

Worcestershire Biological Records Centre: wbrc.org.uk/WBRC/searches.html

Appendix C Grounds maintenance schedule

Appendix D Environment Agency Managing Invasive Non-Native Plants

Would you like to find out more about us,
or about your environment?

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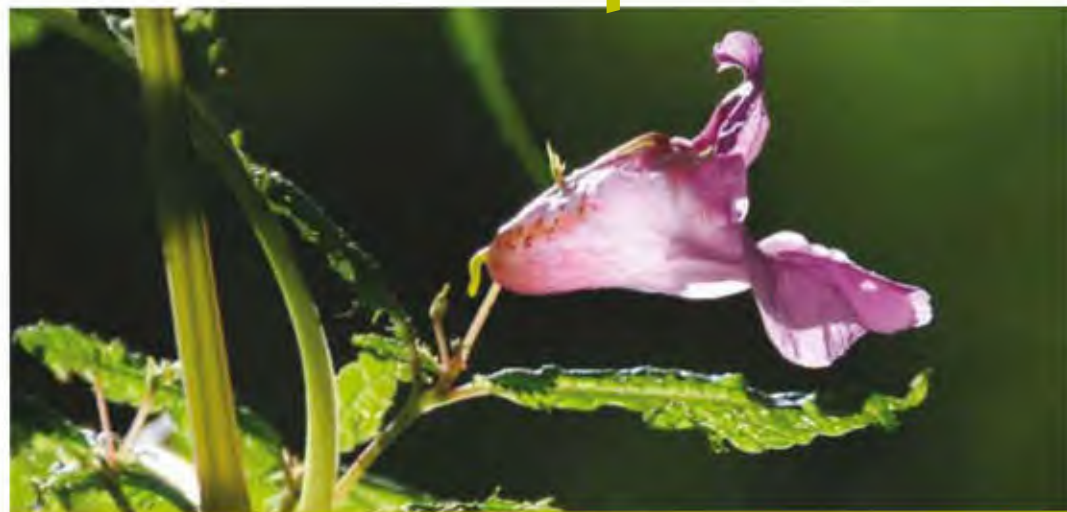
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managing invasive non-native plants



Managing invasive non-native plants in or near fresh water

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April 2010

Foreword



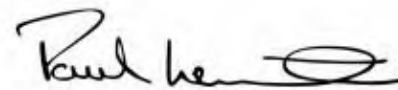
People living in and visiting England and Wales are able to enjoy and benefit from a wide range of native plant-life. But sometimes the natural diversity is threatened by the introduction and spread of invasive non-native species.

While only a small percentage of non-native plants introduced in England and Wales represent a problem, when they do become established in the wild, certain types can have a dramatic effect. Careless disposal of garden waste, by dumping it over fences, hedges and into lay-bys, ditches, streams and ponds, increases the chances of these plants spreading into the countryside. This can lead to long-term consequences for native biodiversity.

Invasive non-native species can harm the environment in different ways. Whilst Himalayan balsam and water primrose are colourful and attractive, they often become so prolific that they displace native plants. Dense mats of floating pennywort or parrot's feather can choke watercourses leading to increased flood risk, reduced angling opportunities and problems for navigation.

Several non-native species are already well-established and are likely to spread further as a result of climate change. Others that are currently not a problem could become invasive as temperature rises create better growing conditions for them. The Invasive Non-Native Species Framework Strategy for Great Britain launched in May 2008, by Defra and the devolved administrations, has spurred public and private sector organisations, charities, local groups and individuals into action and much good work has been done to tackle local problems. The purpose of this guidance is to increase awareness of some of the invasive non-native plants that are a priority for us and to provide advice on how the problems they cause can be reduced.

We are publishing this revised guidance, in the International Year of Biodiversity, as part of our contribution to the conservation of wildlife along the waterways and fresh waters in England and Wales.



Paul Leinster
Chief Executive, Environment Agency

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What are invasive weeds?

Several types of plant can become invasive weeds. They are either native species that grow well in disturbed or nutrient-enriched conditions, to the detriment of other plant and animal species, or non-native plants that have been introduced to this country by accident or as a consequence of trade or deliberate collection. The latter tend to grow in situations where native plants of similar form do not. Not all non-native species become weeds, but if they do, they become very difficult to control. Native weed species, although troublesome, do not cause as much ecological or physical damage as the non-native variety. This booklet deals with those non-native invasive species that have caused serious problems in the aquatic and riparian environments of Britain.

Invasive non-native species tend to share characteristics that make them successful. These are related to the method of reproduction, growth rate, growth form and persistence, but in particular the absence of pests and diseases and their consequent resistance to control. Species in aquatic plant families are more likely to be both weedy and invaders of natural environments than those of any other plant families. In addition, the frequently disturbed nature

of man-made aquatic habitats and artificial nutrient enrichment of aquatic systems makes them more prone to invasion. Successful management of alien invasive species requires an understanding of how they grow and also the ecology of the aquatic systems in which they occur.

The introduction of plant species into new environments carries risks. The danger of species becoming serious weeds in agricultural areas is well controlled, but other potential weeds are not currently recognised and subject to risk assessment and management. The effects of climate change will alter the distribution of weed species in future; already, several aquatic weeds found in Europe originated in sub-tropical areas of the world. The predicted consequences of global warming, including increased temperatures, increased carbon dioxide and stormier weather, make it more likely that additional invasive species will cause problems in future. The huge increase in the distribution of Himalayan balsam since 1962 indicates that conditions are ideally suited for this species. Other species may respond similarly in future if climate change favours their colonisation and rapid growth. Plants that grow in water and on riverbanks can cause flooding if not managed correctly. All the species described in this booklet create serious flood risks.

The consequences and costs of invasive non-native species are huge. The annual cost of invasive non-native species in Europe is estimated as at least 19.1 billion Euros a year. This booklet tells you how to identify seven problem species and how to reduce their threat to aquatic ecosystems.

Existing legislation

When non-native species become invasive they can transform ecosystems, causing a variety of problems including seriously threatening native and endangered species. These problems are acknowledged in several international treaties, European Union Directives and also in domestic legislation. The problems caused by some invasive non-native species occur worldwide, and international obligations to address them are placed on the United Kingdom through regional and global agreements. These include the Convention on Biological Diversity (CBD), International Plant Protection Convention (IPPC), the Bern Convention on the Conservation of European Wildlife and Natural Habitats, and the EC Habitats and Species Directive. The sixth CBD conference adopted a series of Guiding Principles for States to follow as part of their invasive non-native species policies.

The Wildlife and Countryside Act 1981 provides the primary controls on the release of non-native species into the wild in Great Britain. It is an offence under section 14(2) of the Act to 'plant or otherwise cause to grow in the wild' any plant listed in Schedule 9, Part II. The seven plants described within this booklet will all be included in Schedule 9 from April 2010.

Stricter enforcement provisions for wildlife offences were introduced under the Countryside and Rights of Way Act 2000. These include increased penalties available to the courts for offences committed under the Wildlife and Countryside Act 1981.

The Weeds Act 1959 provides for the control of five specified weeds. These are non aquatic species, though ragwort, (*Senecio jacobaea*), can grow in riparian areas. This legislation is directed at clearing weeds that threaten agricultural production.

The Government has acknowledged the problems that can be caused by non-native invasive species. In 2008 the Government launched 'The Invasive Non-Native Species Framework Strategy for Great Britain'. The strategy provides a framework for a more co-ordinated approach to invasive species management. It seeks to create a stronger sense of shared responsibility across government, key organisations, land managers and the public.

Other legislation relevant to non-native species control includes:

- Environmental Protection Act 1990
- Environmental Protection (Duty of Care) Regulations 1991
- Town and Country Planning Act 1990
- Highways Act 1980
- Water Resources Act 1991
- The Environmental Permitting (England and Wales) Regulations 2007
- The Landfill (England and Wales) Regulations 2002

The Non-Native Species Secretariat has been established to oversee the implementation of the strategy. Details of the secretariat are available at www.nonnativespecies.org. This site also provides valuable reference material, such as identification sheets, species risk assessments and action plans, and details of local action groups that may be active in your area.

Responsibility for invasive weed control

Responsibility for dealing with invasive weeds rests with individual landowners. Strategic, widespread control is currently not the sole

responsibility of any statutory organisation. The Environment Agency may seek to control specific invasive weeds on land that it owns or flood defence structures that it maintains.

Control efforts by individuals can help reduce the spread of invasive non-native species and are most successful if carried out as a catchment wide co-ordinated strategy with collaboration of all relevant parties. Control often needs to be repeated year after year.

General methods of control

There are four basic methods of controlling weeds: mechanical, chemical, natural and environmental. Mechanical control includes cultivation, hoeing, pulling, cutting, raking, dredging or other methods to uproot or cut weeds. Chemical control uses specific herbicides. Natural control uses pests and diseases of the target weed to weaken it and prevent it from becoming a nuisance. Environmental control works by altering the environment to make it less suitable for weed growth, for example by increasing or decreasing water velocity.

In England and Wales the use of herbicides in or near rivers, canals, lakes and drainage channels requires prior agreement from the Environment Agency. Users must follow the instructions on the label.

Health and safety

Take care when using machinery or herbicides. Environment Agency staff, contractors and others should undertake Control of Substances Hazardous to Health (COSHH) assessments for the activity, and others should be aware of the risks of working near water. There is often a high risk of slipping on banks and other muddy surfaces when carrying equipment or chemicals.

All mixing and application of herbicides must be carried out in accordance with the manufacturer's instructions, which will be found on the product label. All precautions recommended by the manufacturer must be followed.

Although most species in this booklet are not toxic to humans, great care should be taken to avoid contact with the sap of giant hogweed, as this can cause serious skin blistering.

Disposal of non-native weeds

Plant material is considered a 'controlled waste' and must be disposed of in accordance with, and environmental permit issued under, the Environmental Permitting (England and Wales) Regulations 2007, unless one of the exemptions set out in Schedule 3 of these regulations applies, although exemptions also require registration with the Environment Agency.

The correct disposal of plant material as part of mechanical control is vital. It is best to contact the Environment Agency for advice on disposal because there are Regulations which cover the composting, burning and burial of plant materials on-site and transfer and disposal of material to permitted landfill sites. Any burning must not produce excess smoke or create a nuisance and must take place on a hot fire consisting of wood or clean timber. Plastic and other rubbish must not be burnt. Tyres and petrol must NEVER be used to start a fire. The Environment Agency can give advice on suitable disposal sites and disposal methods.

Japanese knotweed will survive composting and therefore this method of disposal is NOT advisable. Japanese knotweed must only be buried or burnt in accordance with Environment Agency advice. Failure to ensure safe legal disposal or obtain an appropriate licence or exemption could result in prosecution. Burial on-site may require a licence under the Landfill Regulations 2002, whilst removal of plant material will need to be carried out by a licensed waste carrier and buried at a licensed landfill site. Further advice is available from 'The knotweed code of practice – managing Japanese knotweed on development sites', published by the Environment Agency.

Monitoring

New records of the plants described in this booklet will be helpful in assessing how fast they are spreading and determining local control options. If you see any of these species, please tell Dr Jonathan Newman, Centre for Ecology and Hydrology – jone@ceh.ac.uk, or telephone **01491 692556**. Information required is the exact location, with a map grid reference if possible, the extent of the infestation and the kind of water body it is affecting.

What to do and what not to do

Do:

- **take immediate action;**
- contact the Centre for Ecology and Hydrology to confirm identification and the location of the plant;
- seek advice on correct management for your specific location;
- obtain approval from the Environment Agency if planning to use herbicides;
- remove all plant debris from the water after cutting operations;
- seek advice from the Environment Agency on the disposal of plant material;
- alert your neighbours to the problem.

Don't:

- **delay in doing something;**
- allow the plant to spread to nearby water bodies;
- dispose of cut material in the nearest water body;
- use invasive non-native species in habitat restoration projects.

Fact file

Japanese knotweed



Source: NBN Gateway. Check website for current distribution



Japanese knotweed was first brought to Britain in the mid-nineteenth century as an ornamental garden plant. Since then it has caused serious problems in a range of habitats – particularly roadsides, riverbanks and derelict land – by displacing native flora and even causing structural damage. There are three species of invasive knotweed in the UK: Japanese knotweed (*Fallopia japonica*); giant knotweed (*Fallopia sachalinensis*); and hybrid knotweed (*Fallopia x bohemica*), which is a cross between Japanese and giant knotweed. Japanese knotweed is the

most widespread and troublesome bankside species, followed closely by hybrid knotweed, which has a similarly high regeneration capacity.

Only female plants are present in the UK. Japanese knotweed forms dense clumps with fleshy, red/green shoots, 2-3m tall, which have hollow green stems with red/purple flecks. Leaves are green, heart or shield-shaped with a flat base, up to 120mm long. Creamy clusters of flowers are borne on the tips of most stems in late summer. The root system consists of rhizomes which are orange/yellow when cut.

The underground rhizome system can extend at least 7m from the parent plant, and reach a depth of 3m or more. A piece of rhizome the size of a little finger nail can grow into a new plant. The crown, located at the base of the stem, will produce new plants. The stems die back in winter and take up to three years to decompose. Japanese knotweed should not be removed from site without a waste licence.

Control

Knotweed should be cut with a single clean cut near the base of the stem. Cutting methods that produce fragments, such as flailing, should be avoided. Stems can regenerate from nodes, or fragments of nodes. If cut stem is dried until it is crisp and brown it can be burnt or disposed of as an inert waste. **If stems have been pulled up, they will have fragments of knotweed crown still attached at their base. This is highly regenerative and will regrow, even after the stem has dried. Avoid pulling stems. Refer to the code of practice for their disposal.**

Chemical control using a biactive formulation of glyphosate approved for use in or near water is the most effective treatment near water. *Spraying both top and underside of leaves improves control.* Chemical treatment is most effective when it is applied in Aug-Sept, particularly when applied to mature uncut growth. This provides the greatest surface area for herbicide to be translocated down to the rhizome. A stem injection method can be used to avoid damage to surrounding sensitive areas.

The knotweed code of practice is available on the Environment Agency website. Copies can also be requested by calling the Environment Agency National Customer Call Centre on 08708 506 506. The code was written to provide advice on the management of Japanese knotweed on development sites, but much of the advice regarding control and disposal may be useful for riparian control.

Contact the Environment Agency for disposal advice on 08708 506 506

Non-chemical control

Cutting

Use a simple scythe method of cutting to prevent stem fragmentation. Flail mowing, or similar methods, should not be undertaken.

Cutting will have to be performed every 2-4 weeks during the growing season if it is the sole method of management. Alternatively, treat regrowth with herbicide.

Burn cut stems on site or remove to landfill (licence required).

Digging

This is rarely an option that is appropriate to riparian situations. If digging is undertaken, refer to the code of practice and ensure that no knotweed material is allowed to enter the watercourse.

Biological

Grazing of shoots by horses, donkeys, sheep and goats may keep the plant in check, provided previous dead growth is removed.

The psyllid bug *Aphalara itadori* will be released in 2010 and should reduce the vigour of Japanese knotweed in the UK.

Chemical control

Glyphosate

Glyphosate is more effective when applied to mature canes in Aug-Sept. If access or the risk of drift is a problem, either cut or spray the stems earlier in the season to restrict regrowth. For formulations approved for stump treatment, a 1 in 10 dilution can be used for stem injection.

2,4-D amine

2,4-D Amine is also effective against knotweed and is best applied in May.

In general

Herbicides can be applied using tractor-mounted, knapsack long-lance or CDA applicators. Control is easier if dead winter stems are removed before growth commences. Be careful to avoid spreading knotweed crowns when clearing dead canes. Application in sensitive areas is best achieved by stem injection or weed wiper.

Fact file

Giant hogweed



Source: NBN Gateway. Check website for current distribution



Giant hogweed (*Heracleum mantegazzianum*), is a native of the Caucasus mountains and was introduced to Britain in 1893 as an ornamental plant. It escaped from gardens and now colonises many areas of wasteland and riverbanks. Each flowerhead produces several thousand seeds that are easily dispersed by water, so the plant spreads rapidly along watercourses.

It is a perennial plant, taking up to four years to mature and flower, after which it dies. It forms dense colonies that suppress the growth of native plants

and grasses, leaving the banks bare of vegetation in winter and increasing the risk of erosion and recolonisation from seeds washed downstream.

Growth starts in March and the plants reach 5m in height. The leaves are dark green, and form a rosette. The lobes are deeply cut and spiked at the ends. The stems are green with dark red or purple spots or blotches. Stems are ribbed, with sparse spiky hairs on the ridges. The stems are hollow and up to 100mm across. The flowers are white, forming a large umbel. Each plant produces up to 50,000 seeds,

approximately 10mm long by 7mm wide. Seeds may remain viable for up to 15 years.

Control

The aim should be to kill the plant or prevent flowering. Repeated treatment may be necessary during the growing season to prevent flowering.

Chemical control using glyphosate at 6 litres/ha is the most effective method. Spraying can start as soon as the plant is about 1m high, usually in March and continue throughout the summer. More than one application is often necessary and follow-up spraying will be required to kill seedlings in subsequent years.

Cutting down the stems with a sharp scythe or sickle before flowering will help to control this plant. Flail mowing may be carried out, but extreme caution is required to avoid the risk of being sprayed with sap. Strimming is not recommended, unless full protective clothing is worn.

Digging out the crown just below ground prevents regrowth and will provide good control. Alternatively, make a spade cut at 45 degrees to sever the tap root at approximately 15cm below soil level.

Health hazard

Children have been known to use the hollow stems as 'pea shooters' and 'telescopes'. However, the stems, edges and undersides of the leaves bear small hairs containing poisonous sap, and the slightest touch causes painful blistering and severe skin irritation. Unshaded habitats with high soil nitrate levels (for example, riverbanks, roadsides and waste ground) tend to produce greater quantities of toxins in the plant. Contact with the cut material in sunlight produces a skin reaction in almost all cases. Blistering symptoms occur 24-48 hours after exposure, and dense pigmentation is visible after three to five days. This may persist for six years or more. Cut material remains active for several hours after cutting. Protective clothing must be worn when treating this plant because the hairs can penetrate light fabrics.

Non-chemical control

Cutting

Cut root approximately 15cm below ground using a spade. Wear full protective clothing, especially if strimming. Cut regularly early in the season to prevent flowering. Cutting should be repeated regularly for between 5 and 10 years to eradicate the plant.

Digging

Shallow excavation to about 20cm will remove the growing crown. Spoil should be disposed of at landfill or by piling on site and composting. Any regrowth should be treated chemically.

Biological

Grazing by cattle, sheep, pigs or goats throughout the growing season will suppress growth, but does not eradicate it. There is further research into potential biological controls.

Chemical control

Glyphosate

In mixed stands, use a weed wipe when plants are about 1m tall between March and May. When plants are more than 1.5m tall, proceed with extreme caution. Repeat chemical treatment may be required for up to 10 years.

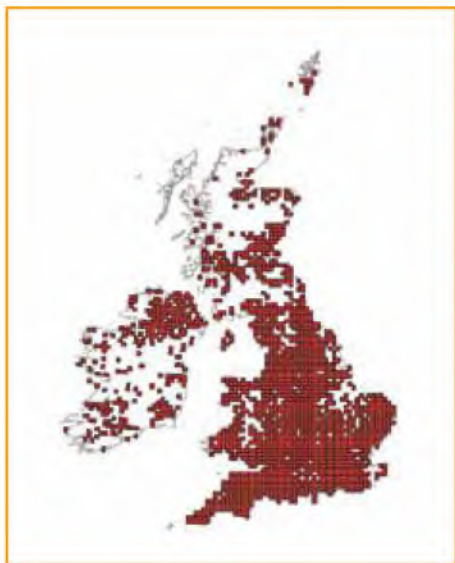
Cutting the stem above ground, followed by injection of 1 in 10 dilution of glyphosate in water below the first node, will give good control. This technique can be used for established plants later in the season.

In general

It is essential to establish vegetation quickly after control measures have been applied. Dense grass sward tends to discourage seed germination. Control should be undertaken on a catchment basis, working from the upstream end to prevent seed recolonisation.

Fact file

Himalayan balsam



Source: NBN Gateway. Check website for current distribution



Himalayan or Indian balsam (*Impatiens glandulifera*) is a native of the western Himalayas. Introduced to Britain in 1839, it escaped from gardens and rapidly colonised river banks and areas of damp ground. It is the tallest annual plant in Britain, growing up to 3m high. The characteristic purplish-pink slipper-shaped flowers appear in June. When the seed pods mature, they explode when touched, scattering the seed up to 7m away. Seeds are also spread by water and they may remain viable for up to two years.

Himalayan balsam plants grow in dense stands that suppress the growth of native grasses and other flora. In autumn the plants die back, leaving the banks bare of vegetation, and therefore liable to erosion.

The stems are pinkish-red, hollow and jointed, often with some branching. Leaves and side branches originate from stem joints. The stem is sappy and brittle. The shiny dark green leaves are lance-shaped, have serrated edges, a dark red midrib

and can be up to 150mm long. They grow on the stem in whorls of three. Purplish-pink flowers, held on long stalks, appear from June to October.

The white, brown or black seeds are produced from July to October and are 4-7mm in diameter. There are between 4 and 16 seeds per pod.

Control

Control measures should aim to prevent flowering, and are best carried out before June for maximum effectiveness.

Chemical control near water can be carried out with herbicides containing glyphosate or 2,4-D amine. Glyphosate will also kill grasses, but 2,4-D amine will kill only broad-leaved weeds; for best effect, use when the plant is small and actively growing, particularly in springtime.

Cutting, strimming or pulling on a regular basis for about three years will be effective and may even eradicate the plant from isolated sites. Plants must be cut below the lowest node to avoid reflowering.

Contact the Environment Agency for disposal advice on 08708 506 506

Non-chemical control

Cutting

Cut at ground level using a scythe, machete, flail or strimmer before the flowering stage in June. Cutting earlier than this will promote greater seed production from plants that regrow. Cutting should be repeated annually until no more growth occurs.

Pulling

Shallow-rooted plants can be pulled up very easily and disposed of by burning, or composting unless seeds are present.

Biological

Grazing by cattle and sheep is effective from April throughout the growing season. It should be continued until no new growth occurs. There is encouraging evidence for the potential for biological control.

Chemical control

Glyphosate

Treatment with a weed wipe in mixed stands, or by foliar spray in dense stands, before flowering. If all plants are controlled, then spraying programmes should only be required for two to three years.

2,4-D amine

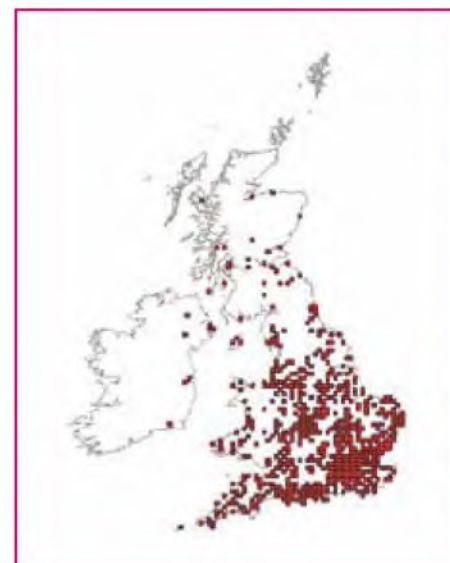
Treat during early spring at the rosette stage for effective control.

In general

It is essential to establish vegetation quickly after control measures have been applied. Dense grass sward tends to discourage seed germination. Control should be undertaken on a catchment basis, working from the upstream end to prevent seed recolonisation.

Fact file

Australian swamp stonecrop



Source: NBN Gateway. Check website for current distribution



Australian swamp stonecrop (*Crassula helmsii*) was introduced from Tasmania to Britain in 1911. It was first sold as an 'oxygenating plant' in 1927.

The first occurrence in the wild was reported in Essex in 1956. In recent years, it has spread much more rapidly due to the increased availability of the plant at garden centres and aquatic nurseries. It is now widespread across the UK. It is sometimes referred to as *Tillaea recurva*, *Tillaea helmsii*, or New Zealand pigmy weed.

The plant is easily dispersed and, although not always sold by suppliers, it is often found as a 'contaminant' with other water plants. Introductions to new sites are associated with a wide range of human, water-based activities, and awareness and education programmes can dramatically reduce transport of the plant between sites. Local dispersal is aided by the high viability of small fragments, which can be carried on mud to new sites.

The success of *Crassula* lies mainly in its ability to colonise virtually any

suitable static to very-slow-flowing freshwater habitat across a wide range of water chemistry. It has vigorous, year-round growth, and can grow equally well either on damp ground or in water up to 3m deep.

Where *Crassula* invades, it quickly out-competes native vegetation, and maintains its dominance by very rapid growth and uptake of almost all the available nutrients.

There are three typical growth forms:

(i) a terrestrial form with creeping stems and aerial, succulent leaves; (ii) an emergent form with densely packed stems, found in water less than 0.6m deep; (iii) and a submerged form that grows from a basal rosette with long, sparsely-leaved stems reaching the surface. The three forms change according to prevailing conditions. The rigid stems have pairs of fleshy leaves that vary in shape from long and narrow in deeper water to slightly elliptical, with sharp or bluntish tips in air. The leaf tip is never notched, which distinguishes it from the native water starwort (*Callitriche* spp.). The leaf bases are joined, forming a distinctive 1mm collar around the stem. In summer, white flowers grow in the axils of the leaves on emergent and terrestrial forms.

Control

This plant is best treated at the early stages of infestation. Delay will make the problem several orders of magnitude worse in each successive year.

Emergent growth can be controlled using a highly dilute, high volume solution of glyphosate (5ml/l), applied at a walking rate of 6 seconds per metre. This provides a treatment of 6l/ha.

Cutting is not recommended, but dredging out marginal and emergent material can be effective, as the plant is shallow-rooted. The area around any infestation should be fenced to prevent movement of fragments by livestock. Dredged material should be piled in heaps and covered with thick black polythene sheeting or at least 20cm of soil.

Shading of terrestrial or emergent forms with opaque material such as black polythene for about three months may be effective, but is difficult to install and manage, and vandalism can be a problem.

Non-chemical control

Cutting

Not recommended.

Dredging

Dredging of marginal and emergent material throughout the year can be effective, although it is necessary to ensure that plant fragments cannot be transported elsewhere.

Shading

Covering with black polythene or similar for up to 3 months during the growing season.

Chemical control

Glyphosate

Application of glyphosate at 6 litres/ha to emergent stands from March to October. Regular treatment is required, and at least two applications may be necessary each year.

Submerged

There is no effective herbicide treatment for submerged *Crassula*. Draw down or drain the waterbody, if possible, and treat as emergent growth.

In general

Regular treatment is necessary. Weed wiping may be appropriate in mixed marginal vegetation. Spot treatment of small patches will prevent complete dominance. Treat early and regularly.

Fact file

Parrot's feather



Source: NBN Gateway. Check website for current distribution



Parrot's feather (*Myriophyllum aquaticum*) is a native of lowland central South America. It was first found in Britain in 1960 and has now spread extensively, particularly in southern England. It grows in ponds, reservoirs, gravel pits, streams, canals and ditches, particularly where eutrophic water occurs. It can grow as a terrestrial plant when a pond dries out, and has even been found growing on the dry bank of a rubbish tip in Cornwall. It produces emergent shoots in addition to submerged ones, which give it the characteristic feathery appearance, hence its name.

Only female plants are established in the UK and it therefore spreads by vegetative means only. The stems are brittle and the plant propagates by growth from small stem fragments. The species is attractive to look at and is widely grown in garden ponds. Introductions to the wild are usually not deliberate, but fragments can be concealed in the soil of other pot plants sold at aquatic garden centres and nurseries.

Contact the Environment Agency for disposal advice on 08708 506 506

Control

Chemical control can be achieved by applying glyphosate with the adjuvant Topfilm to emergent growth. Hand-pulling can be a very effective method of control.

Volunteer groups can tackle large infestations with the use of rakes and forks. Care is needed to ensure fragments do not drift and establish growth elsewhere.

Non-chemical control

Pulling

Material must be removed from the water as soon as possible. Fragmentation must be avoided. Material should be removed as often as necessary and at least every six to nine weeks from March to October to weaken the plant.

Dredging

Dredging shallow areas will remove this plant very effectively. Carefully pulling out stems by hand after mechanical removal will help to eradicate it.

Biological

The plant is not palatable to herbivores; cattle and horses will avoid it. There is virtually no insect damage to plants in the UK, but research into biological control agents is under way.

Chemical control

Emergent

Apply glyphosate at 6 litres/ha to emergent stands from March to October. Regular annual treatment is required, and at least two applications will be necessary each year. The adjuvant Topfilm improves efficacy.

In general

Regular treatment is necessary. Weed wiping with glyphosate may be appropriate in mixed marginal vegetation. Spot treatment of small patches will prevent complete dominance. Treat early and regularly.

Fact file

Floating pennywort



Source: NBN Gateway. Check website for current distribution



Floating pennywort (*Hydrocotyle ranunculoides*) is a native of North and South America. It was first brought to Britain in the 1980s as a plant for tropical aquaria and garden ponds, and was first noted in the wild in Essex in 1991.

Floating pennywort grows in the shallow margins of slow-flowing eutrophic water bodies (particularly ditches, slow flowing dykes and lakes), and forms dense interwoven mats of vegetation. These quickly cover the water surface interfering

with both the ecology and amenity uses of the water body. These mats grow up to 15m from the bank in a single season, with stem growth rates of up to 20cm per day.

Floating pennywort roots freely from nodes at approximately 40-150mm intervals. The roots are profuse and hair-like. The leaves are emergent, rising on stalks from horizontally growing stems. Both the stem and the petioles are fleshy. The leaf form ranges from circular to kidney-shaped; they are deeply lobed, and

up to 180mm across. Leaves are held above the water surface whilst the interwoven mat of roots and stems sink up to 1.2m into the water.

Reproduction in Britain is thought to be principally vegetative, and the plant is capable of forming extensive mats from the smallest shoot fragment. Introduction by seed from growth in indoor aquaria, however, may also have occurred. Floating pennywort can double its wet weight in as little as three days. The plant exhibits seasonally variable growth in Britain. Maximum growth occurs in the late summer when it typically forms the extensive floating mats of vegetation, whilst it over-winters in the margins and on banks as a much flatter and smaller plant.

The plant is relatively restricted in its distribution, largely in southern England and south Wales. Its appearance is likely to have been as a result of escapes from aquaria and garden ponds. Floating pennywort has already proved to be difficult to control because of its rapid growth rates, its ability to re-grow from a single node, and its resistance to chemical control.

Control

Chemical control can be achieved with herbicides containing glyphosate. Use of the adjuvants Top Film and Codacide Oil improve the efficacy of glyphosate.

Cutting and removal is a very good method of management, but it will not control or reduce the vigour of the plant. The cut or dredged material should be left on site at the top of the bank, well away from water. Manual removal by volunteer groups has proved a successful method of management, particularly for smaller sites.

Non-chemical control

Cutting

Regular cutting from May to October will prevent complete dominance of this species. Cut material should be removed from the water immediately. Cutting should be followed by hand pulling or by spot treatment with chemicals to reduce the risk of regrowth.

Pulling or dredging

Hand pulling works very well in small infestations and as a follow-up after major mechanical removal. Eradication is possible using this technique.

Biological

Cattle grazing has been seen to damage the emergent stems, but it has no long-term effect on the dominance of the plant. There are no known biological control agents in the UK, but research is underway.

Chemical control

Glyphosate

Applying glyphosate at 6 litres product/ha in 400 litres of water is the most effective treatment with this chemical particularly when used with Codacide Oil. Repeat treatments will be necessary throughout the growing season as soon as regrowth occurs.

In general

The plant does not rot down very quickly after chemical treatment, and treated vegetation in flood-risk areas should be removed after two to three weeks if possible. Follow-up spot treatment after mechanical removal is recommended. Regular treatment is necessary.

Fact file

Creeping water primrose



Source: NBN Gateway. Check website for current distribution



Image: Alain Dutarte

Creeping water primrose has recently been sold in the UK as a pond and aquarium plant. It is traded under a variety of names, including primrose willow and *Jussiaea*. Its correct taxonomic attribution is equally confused and *Ludwigia grandiflora*, *L. hexapetala* and *L. peploides* are among the names that have been applied to it.

Creeping water primrose produces a distinctive yellow flower, approximately 3cm across, in July – September. The stems extend across the water surface, producing

round or oval leaves that can be mistaken for native brooklime. The stems also extend across mud, intermittently rooting at nodes. As they mature, the fleshy stems grow upright and the leaves lengthen and become lanceolate, approximately 9cm long. The flowering stems can become quite tall and resemble willow-herb.

Creeping water primrose thrives in ponds, lakes, watercourses, wetlands and wet meadows. It has currently been recorded from thirteen sites in the wild. All of

these infestations are either being managed, or are believed to have been eradicated. Whilst it has only caused minimal damage to our habitats so far, we know from the situation in France, Holland and Belgium that this plant has the potential to cause serious damage to our aquatic environment. An economic study estimated that *Ludwigia* could cost the UK over £150 million per annum if it were allowed to establish.

Whilst it is unlikely that you will find creeping water primrose in the wild, it is very important that any sites at which it is found are reported promptly so that control can be undertaken. This plant is known to be widespread in ornamental gardens, and therefore likely to occasionally appear in the wild if it escapes from ponds or is disposed of inappropriately.

Control

Chemical control can be achieved with formulations of glyphosate approved for use in or near water. Efficacy is greatly increased if it is mixed with an appropriate adjuvant, such as Topfilm at 1 L/ha.

Careful manual removal can be a highly effective method of management. This is the preferred method of management in France where herbicide treatment is not allowed. If *Ludwigia* is well established, mechanical removal may be initially used to reduce the biomass. Dredged or pulled material should be composted at sites away from waterbodies or wetland areas.

Manual, mechanical or herbicide treatment is likely to require at least two years of control. The site will need to be surveyed for any residual growth for at least a year after the last growth has been treated. Care should be taken not to spread the plant by fragmentation using these methods.

Non-chemical control

Pulling

Hand-pulling works well, particularly with small infestations and as a follow-up to chemical or mechanical control. Material must be composted away from waterbodies.

Dredging

Mechanical removal is effective. Fragments must be contained and removed to avoid further spread. Material must be composted away from waterbodies.

Chemical control

Glyphosate

Apply glyphosate at 6 litres product/ha. Addition of the adjuvant Topfilm at 1 l/ha greatly increases the sticking and uptake of glyphosate through the waxy leaves. Repeat treatments are necessary, and regular monitoring of the site is required for between two and three years.

Glossary

2,4-D amine – a selective translocated herbicide.

Adjuvant – a herbicide additive used to increase absorption of the herbicide through the waxy leaves of aquatic plants.

Axil – the angle where the leaf joins the stem.

Biomass – the amount of plant material produced during growth.

Contact – a herbicide that kills the parts of plants to which it is applied, for example leaves.

COSHH – Control of Substances Hazardous to Health.

Eutrophic – water that has an excess of plant nutrients.

Glyphosate – a non-selective, translocated herbicide.

Hybrid – offspring of closely related species that are often more vigorous than either of the parents.

Node – region of attachment of leaves to the stem and of swelling on rhizomes from which roots and shoots arise.

Petiole – the stalk of a leaf.

Riparian – the area at the edge of watercourses.

Selective – term used for a herbicide that kills only one type of plant, for example only grasses or only broad-leaved weeds.

Succulent – fleshy or swollen.

Translocated – absorbed and distributed throughout the plant to the roots and shoots.

Whorl – a circular set of leaves arising at the same level on a stem.

Further information

There are many sources of information about invasive plants and methods of controlling them. The Centre for Ecology and Hydrology (CEH) provides advice on the control of aquatic and riparian invasive species.

This publication gives invaluable information on managing Japanese knotweed:

Environment Agency (2006) The knotweed code of practice – Managing Japanese knotweed on development sites.

The following websites are very useful sources of information for non-native invasive species in general:

GB non-native species secretariat: www.nonnativespecies.org

Centre for Ecology and Hydrology: www.ceh.ac.uk/sci_programmes/AquaticPlantManagement.html

CABI: www.cabi.org

The Global Invasive Species Programme: www.gisp.org

National Biodiversity Network (NBN): www.nbn.org.uk

The World Conservation Union: www.iucn.org

Plantlife: www.plantlife.org.uk

Chemicals Regulation Directorate: www.pesticides.gov.uk

The 'Be Plant Wise' campaign provides advice to gardeners on invasive pond plant recognition, guidance on how to dispose of pond plants and information on the impacts they may have in the environment. Posters and a leaflet are available from <http://beplantwise.direct.gov.uk/index.html>

