

SOUTH WORCESTERSHIRE JOINT CORE STRATEGY EVIDENCE BASE

GREEN INFRASTRUCTURE STUDY FOR THE GROWTH AREAS

– A DESKTOP SITE ANALYSIS

1. INTRODUCTION

THE PURPOSE OF THIS REPORT

Worcestershire Wildlife Trust was commissioned by the SWJCS Project Team to complete an analysis and interpretation of ecological information pertaining to the Growth Areas identified in the South Worcestershire Joint Core Strategy Preferred Options document. This report provides the results of a desktop analysis of those sites proposed for housing and employment and provides some ecological context for the chosen locations together with details of specific ecological constraints and opportunities known to exist within and around the sites.

Additional sections of the report detail the limitations placed on the current analysis and make recommendations for further work needed to inform the final iterations of the SWJCS and a Green Infrastructure Strategy for South Worcestershire. The report is not concerned with the technical feasibility of developing any of the sites and does not consider the implications of additional infrastructure required by the proposed levels of growth. Nor does it provide a Worcestershire Wildlife Trust opinion on whether the sites should subsequently be allocated, other than in the context of any overriding constraints imposed by legislation or Planning Guidance.

2. DATA SOURCE AND COVERAGE

Data for the report was supplied by the Worcestershire Biological Records Centre under instruction from the SWJCS team and covers those areas of particular interest at the Preferred Options stage of the SWJCS process as identified to the BRC. The data has been collated for within the areas of particular interest and out to an area up to 500m from the border of each site. The information provided is taken from the current data holdings of the Worcestershire Biological Records Centre and should not be taken as a finite list of what might be found on any given site.

3. LIMITATIONS TO THE CONTEXT OF THE REPORT

The analysis presented in this report has been generated solely on a desk-based interpretation of the information supplied. The nature of the ecological data, including its age, incompleteness and coverage severely limits the analysis that follows and further work will be required at a later stage. Neither Worcestershire Wildlife Trust nor the WBRC can be held responsible for information that may subsequently come to light regarding the sites in question. However it is important to recognise that new information regarding habitat quality or protected species could materially affect the possibility of developing those areas subsequently allocated for development.

Details provided on the Preferred Option areas of search are limited to generic ‘sites’ and do not include information on the form of development (beyond ‘housing’ or ‘employment’) or any requirement for additional grey infrastructure such as roads and services. Variations in design and density of development and associated infrastructure could significantly alter any subsequent impact on local biodiversity and invalidate the comments made in this report. In

In addition the report can make no analysis of the wider Green Infrastructure requirements associated with the proposed growth beyond the area covered by the data provided. It does not therefore seek to integrate the sites into a broader Green Infrastructure context, though this work will be required at a later stage. Consideration of ecological impacts and constraints is based on the expectation that all allocated sites will be developed in line with current legislation and planning guidance, and will at least comply with relevant good practice guides where these are available.

It is important to recognise that the absence of ecological constraints to development on any given site does not necessarily mean that there is no biodiversity of interest present. Rather it means that in the context of this report the local biodiversity can be accommodated and enhanced in line with current guidance and should not preclude development of some sort.

4. SITE INTERPRETATION

The following commentary provides the results of a desk-based analysis of information supplied for the 'growth area' locations put forward in the SWJCS Preferred Options consultation paper. The interpretation is limited by the constraints given above and must be augmented by further work before detailed site allocations are made. The base information used in the analysis is given at Appendix 1, together with relevant maps and plans supplied by the SWJCS project team.

4.1 WORCESTER – SITE 1

SITE DESCRIPTION

- More than 300ha of greenfield land put forward in the Preferred options document as a potential location for 3,500 new dwellings and 20ha of employment land. The main part of the area is in one unit extending westward from the edge of Worcester City out into open countryside towards the villages of Upper and Lower Broadheath. There are a number of subsidiary plots adjacent to the villages that are allocated for development but it seems likely that these will be for more ‘local’ needs. The central grid reference of the main block is approximately SO 824 559.
- As would be expected from a site complex of this size there are a number of different habitats. However the majority of the site is dominated by arable land and grassland, some of which is of uncertain status and described as ‘possibly unimproved’ in the county habitat inventory. In addition there are areas of traditional orchard, some woodland, a significant number of mature trees, a number of ponds, several watercourses and a variety of existing buildings.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. The main part of the site is close to the Laughern Brook LNR and close control of runoff and water quality will be required. However it is unlikely that this would be an overriding constraint to development here although buffering of the watercourse will almost certainly alter the developable area to some extent. The site is also close to the Northwick Marsh Site of Special Scientific Interest but this is upstream of the proposed growth area and on the other side of the River Severn so it is unlikely to pose an overriding constraint to development here. However further information in this regard will be required prior to final site allocations.
- Protected species. There are nearby records for bats, badger, barn owl, polecat and great crested newt but it is also likely that the proposed growth area will be used by slowworms and a wide variety of nesting birds. It is impossible to determine the level of likely use based on existing information and further work will be required in order to determine what constraint these species will pose to development, or what impact their presence may have on final area allocations or the resulting developable area of land.
- Non-statutory sites and habitats. The Laughern Brook is a Special Wildlife Site and some stretches are contiguous to or within the proposed growth area. Significant buffering of the watercourse will be required here and it is likely that this will alter the developable area in places. Close control of runoff and water quality through a biodiversity-led SUDS will be important and must be a requirement of future site development plans.
- There are several other Special Wildlife Sites nearby but they are unlikely to be adversely affected by direct development impacts provided the usual pollution controls are in place. As a result they should not be an overriding constraint to development here.
- The status of the grasslands described by the county habitat inventory as ‘grassland possibly unimproved’ (particularly where these are noted on the Worcestershire Grasslands Inventory), together with the traditional orchards, watercourses and ponds must be assessed through further work. These habitats have the potential to be of BAP priority quality and could form a considerable constraint to development in some parts of the growth area.
- The mature trees and hedgerows should be considered as important ecological features and whilst they do not represent an overriding constraint to development they must be taken into account in final area allocations and site layout. Significant buffering of these features will be required to protect them from the adverse effects of development and further work will be required in order to determine how much of an impact this will have on the developable area here.

- Non-statutory species. There are no records of other species that would pose an overriding constraint to development here. However given the scale of the area further work will be required in order to determine whether there are any pockets of high biodiversity value that should be retained and enhanced within any development proposals. In particular impacts on species such as the locally notable Club-tailed Dragonfly will need to be assessed prior to the final area allocation.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time but again it is likely that further work will be required in order to confirm that this is actually the case.

POSSIBLE ENHANCEMENTS

- Given the scale of the Preferred Options growth area here it has the potential to be the single biggest link in the emerging Green Infrastructure strategy for south Worcestershire. This must be reflected in site allocations and sufficient land made available to fulfil a role as a major ‘green’ extension to Worcester. Habitat creation should be guided by the local environment and BAP priorities and might take the form of links and corridors through the site into the wider countryside to the west. However, further work will be required before final priorities can be determined.
- Enhancement of the existing unimproved grassland, watercourse, orchard, pond, hedgerow and mature / veteran tree resource should be a guiding principle of development here and should form a significant part of any landscaping proposals for subsequent site development plans. Links between these features, together with significant buffers to the existing resource should be a requirement and the aim should be to connect these habitats to the wider countryside, making the growth area a strong ‘node’ on a wider Green Infrastructure Network (see above).
- A biodiversity-led SUDS would offer significant benefit to wildlife and should be designed to augment the existing pond and watercourse network.

4.2 WORCESTER - SITE 2

SITE DESCRIPTION

- Over 33ha of greenfield land in three blocks proposed for some of the 3,000 dwellings and 30ha of employment land as part of the major southern expansion of Worcester City. The centre grid references for the three areas are SO 852 512, SO 856 513 and SO 858 518. The sections vary in size from approximately 2ha to over 25ha.
- The dominant habitat here is grassland, much of which is considered to be ‘possibly unimproved’ though small areas are described as improved in the county habitat inventory. Other notable features include arable land, a watercourse / ditch feature and a variety of hedgerows and mature trees. The largest (central) block of the site includes some farm buildings that may be of value for wildlife.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. The site is close to the River Teme Site of Special Scientific Interest but is downstream of its confluence with the River Severn and the SSSI is unlikely to pose a constraint to development here provided the usual controls on pollution are in place.
- Protected species. There are nearby records for bats, great crested newt and badger and further work will be required in order to determine if these species are present on site and if so what impact they will have on development potential here.

- Though there are no existing records for nesting birds on site they are highly likely to be present and further work will be required in order to determine how much of an impact they will have on the developable area of the three blocks.
- The River Severn is almost contiguous with the westernmost of the three blocks. Otters are known to use the river and further work will be required to determine what, if any, impact they will have on development here. Certainly any runoff and water quality will need to be controlled prior to discharge into the river and a biodiversity-led SUDS should be used.
- Non-statutory sites and habitats. All three blocks are close to the River Severn Special Wildlife Site and control of drainage will be important (see above). However the river should not pose an overriding constraint to development here provided that the usual pollution controls are in place.
- The status of the grassland described as ‘grassland, possibly unimproved’ in the county habitat inventory must be assessed through further work. These fields have the potential to be of BAP priority standard and could form a considerable constraint to development on some parts of the Preferred Options site.
- The hedgerows and mature trees are likely to be important ecological features in a local context and further work will be required in order to determine necessary buffers for these features and what, if any impact they will have on the developable area of the various blocks.
- The status of the stream and ditch feature associated with two of the blocks must be determined through further work. It is highly likely that it will require some form of buffering from the adverse impacts of development and it remains to be seen how much of an effect that will have on the developable area of the Preferred Options site.
- Non-statutory species. There are nearby records for the BAP priority species Club-tailed Dragonfly but this species should be accommodated by any protection accorded to the River Severn corridor and ought not to be an overriding constraint to development here.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- Given the scale of the Preferred Options growth in this part of the City there is potential to provide major links in the emerging Green Infrastructure strategy for south Worcestershire. This must be reflected in site allocations and sufficient land made available to fulfil a role as a major ‘green’ extension to Worcester within the Preferred Options growth area. Habitat creation should be guided by the local environment and BAP and might take the form of links and corridors through the three blocks into the wider countryside to the south. However, further work will be required before final priorities can be determined.
- Enhancement of the existing grassland, watercourse, hedgerow and mature / veteran tree resource should be a guiding principle of development here and should form a significant part of any landscaping proposals for subsequent site development plans. Links between these features, together with significant buffers to the existing resource should be a requirement and the aim should be to connect these habitats to the wider countryside, making the growth area a strong ‘node’ on a wider Green Infrastructure Network (see above).
- A biodiversity-led SUDS would offer significant benefit to wildlife and should be designed to augment the existing watercourse and ditch network, particularly where this already forms a green corridor through the proposed site.

4.3 WORCESTER – SITE 3

SITE DESCRIPTION

- 35ha of greenfield land put forward as a potential area for 500 new dwellings. The growth area is split into 4 blocks scattered around the northern edge of Fernhill Heath. The three smaller areas represent minor extensions to the existing village whilst the largest (at 27ha) would link Fernhill Heath to the subsidiary hamlet known as Lower Town. The centre grid references for the various sections are as follow. SO 860 594, SO 862 593, SO 866 595 and SO 872 598.
- For the most part all four blocks comprise agricultural grassland that is described by the county habitat inventory as ‘probably improved’. There are also 2 arable fields and two small enclosures of grassland described as ‘possibly unimproved’. There are a variety of hedges associated with the fields together with a number of apparently mature trees, especially within the largest block of land. The map evidence shows one pond and the north eastern section is bordered on its southern edge by a small tree-lined watercourse.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There are nearby records for slowworm and hedgehog and further work will be required in order to determine whether either of these are using the site. It is possible that slowworms could become a constraint to development if they occur in large numbers. This is particularly pertinent to the easternmost growth area block, which is contiguous with the railway line and therefore has the most chance of receiving slowworms from the wider area. In general though the habitats across the growth area make it unlikely that slowworms would be a constraint over more than small parts of the site.
- Whilst there are no records available it is highly possible that bats, great crested newts, badgers and nesting birds will be using the site. Further work will be required in order to determine what, if any impact these will have on the final developable area.
- Non-statutory sites and habitats. The Droitwich Canal and River Salwarpe Special Wildlife Sites are close by and good practice will require a biodiversity-led SUDS to control runoff and water quality. This will be a particular issue for the easternmost Preferred Options area, which is bordered by a small watercourse that ultimately enters the Special Wildlife Site downstream.
- There are a small number of nearby grasslands listed on the Worcestershire Grassland Inventory but it appears that all of them are sufficiently removed from the growth areas to avoid the adverse effects of development provided that the usual controls on pollution are in place. As a result it is unlikely that they will be a constraint to development.
- Whilst the majority of the grassland on site is described in the county habitat inventory as ‘probably improved’ the status of the grasslands described as ‘grassland, possibly unimproved’ must be assessed through further work. These fields have the potential to be of BAP priority quality and could form a considerable constraint to development on some small parts of the site.
- The hedgerows and mature trees are likely to be important ecological features in a local context and further work will be required in order to determine necessary buffers for these features and what, if any impact they will have on the developable area of the various blocks.
- Non-statutory species. There are no records of other species that might be a constraint to development here.

- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- Enhancement of any existing unimproved grassland, the watercourse, pond, hedgerows and mature tree resource should be a guiding principle of development here and should form a significant part of any landscaping proposals for subsequent site development plans. Links between these features, together with significant buffers to the existing resource should be a requirement and the aim should be to link these habitats to the wider countryside.
- Habitat creation should be guided by the local environment and BAP and might take the form of links and corridors through the three blocks into the wider countryside to the south. However, further work will be required before final priorities can be determined.
- A biodiversity-led SUDS would offer significant benefit to wildlife and should be used to provide both on- and off -site benefits.

4.4 WORCESTER – SITE 4

SITE DESCRIPTION

- Over 60ha of greenfield land as a potential location for 300 new dwellings around the village of Whittington on the eastern side of Worcester. The proposed growth area is split into 6 main sections varying in size from 0.4ha to 24ha. Centre grid references for the 6 blocks are as follows. SO 878 527, SO 876 531, SO 873 533, SO 881 533, SO 881 536 and SO 876 537.
- As would be expected from a site complex of this size there are a number of different habitats and habitat features. However the majority of the site is dominated by grassland, much of which is of uncertain status and described as ‘possibly unimproved’ in the county habitat inventory. In addition there are small areas of traditional orchard and arable land together with a number of ponds, a small watercourse and a variety of existing buildings.
- Substantial further work will be required before final area allocations can be made in this Preferred Options growth area. The current records do not allow adequate analysis of existing resources, constraints, or opportunities for enhancement, to allow robust conclusions to be drawn.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There are nearby records for bats and great crested newt but it is also likely that the proposed growth area will be used by slowworms, badgers and nesting birds. It is impossible to determine the level of likely use based on existing information and further work will be required in order to determine what constraint these species will pose to development, or what impact their presence may have on final area allocations or the resulting developable area of land.
- Non-statutory sites and habitats. There are 2 nearby Special Wildlife Sites and LNRs but they should not be adversely affected by direct impacts of development here. However indirect impacts arising from the increased population could be significant and sufficient open space must be retained in development allocations for this area so that the LNRs do

not suffer from damaging additional use. Further work will be required in order to determine how much of an issue this will be, and any mitigation that might be required.

- The status of the grasslands described by the county habitat inventory as ‘grassland possibly unimproved’, together with the traditional orchards, watercourse and ponds must be assessed through further work. These habitats have the potential to be of BAP priority quality and could form a considerable constraint to development in some parts of the growth area.
- The mature trees and hedgerows should be considered as important ecological features and whilst they do not represent an overriding constraint to development they must be taken into account in final area allocations and site layout. Significant buffering of these features will be required to protect them from the adverse effects of development.
- Non-statutory species. There are no records of other species that would pose an overriding constraint to development here. However given the scale of the area further work will be required in order to determine whether there are any pockets of high biodiversity value that should be retained and enhanced within any development proposals.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time but again it is likely that further work will be required in order to confirm that this is actually the case.

POSSIBLE ENHANCEMENTS

- Given the scale of the Preferred Options growth area here it has the potential to be a major link in the emerging Green Infrastructure strategy for south Worcestershire. This must be reflected in site allocations and sufficient land made available to fulfil a role as a major ‘green’ extension to Worcester. Habitat creation should be guided by the local environment and BAP and might take the form of links and corridors through the site into the wider countryside to the east. However, further work will be required before final priorities can be determined.
- Enhancement of the existing unimproved grassland, watercourse, orchard, pond, hedgerow and mature / veteran tree resource should be a guiding principle of development here and should form a significant part of any landscaping proposals for subsequent site development plans. Links between these features, together with significant buffers to the existing resource should be a requirement and the aim should be to connect these habitats to the wider countryside, making the growth area a strong ‘node’ on a wider Green Infrastructure Network (see above).
- A biodiversity-led SUDS would offer significant benefit to wildlife and should be designed to augment the existing pond and watercourse network.

4.5 DROITWICH SPA – SITE 1

SITE DESCRIPTION

- Approximately 40ha of greenfield land proposed for 1200 new dwellings and 10ha of employment land just to the south of Droitwich Spa. The site is centred on grid reference SO 884 616 and lies between the A38 and the Worcester railway line.
- The northern edge of the site is rather well wooded but the main area comprises eight agricultural fields. Though these are predominantly grassland there is one parcel described in the county habitat inventory as ‘fallow’. The fields have an associated mature hedgerow network and there is some woodland and one open water body.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There are nearby records for bats, badgers and slowworm and it is highly likely that these species are using the Preferred Options site. Further work will be required to determine if any of these species will be a constraint to development here. In addition there are likely to be nesting birds on site and it is possible that great crested newts are using the water body near the southern boundary. Further work will be required to determine how much of a constraint either of these would be to development.
- Non-statutory sites and habitats. There are three nearby Special Wildlife Sites including the Droitwich Canal and River Salwarpe. They are some distance from the growth area but the Salwarpe is connected to it via a drainage ditch on the northern boundary. Whilst this should not be an overriding constraint to development careful control of runoff and water quality will be important and a biodiversity-led SUDS should be a prerequisite of any site allocation.
- Most of the fields are described in the county habitat inventory as ‘improved’ or ‘possibly improved’ and they are therefore unlikely to be of BAP quality and should not be a significant constraint to development. The large hedges between them are likely to be of high ecological value and link to existing woodland to the north of the proposed growth area. As a result these will require significant buffering from new buildings. Whilst this does not pose an overriding constraint to development it is likely that it would alter the area of developable land and further work should be carried out to determine how significant the impact on the site area would be.
- Further work will be required in order to determine the value of the water body near the southern edge of the proposed growth area. It is likely that it will require buffering from new development but the detail of what would be necessary is not yet clear.
- The woodland along the northern edge of the site forms part of a valuable green corridor round the southern side of Droitwich Spa. It is imperative that this is protected with buffering and a significant stand-off if this site is developed. Further work will be required in order to determine exactly what such buffering would entail but it is likely that it would take a significant area of land and will have an impact on the area of developable land in this part of the site.
- Non-statutory species. There are records for the locally notable spreading bellflower from the site and further work will be required to determine what, if any, impact this would have on development here.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- The woodland on the northern edge of the Preferred Options site links into a green corridor that runs around the southern side of Droitwich Spa and into the wider countryside. It would be appropriate to augment this corridor with significant additional planting and open space on this site. Indeed given the scale of the Preferred Options site here it has the potential to be a major link in the emerging Green Infrastructure Strategy for south Worcestershire. This must be reflected in site allocations here and sufficient land made available to fulfil a role as a major ‘green’ extension to Droitwich Spa. Habitat creation and enhancement should be guided by the local environment and BAP but further work will be required before firm priorities can be determined.
- Enhancements to the existing pond and hedgerow network should form a significant part of any landscaping proposals for subsequent site development plans and links between

these features, together with appropriate buffers to the existing resource should be a requirement.

- A biodiversity-led SUDS should be a requirement of any future development plan here and must be designed to provide both direct onsite benefit for biodiversity and improvements to water quality entering the downstream Special Wildlife Site.

4.6 DROITWICH SPA – SITE 2

SITE DESCRIPTION

- 25ha of greenfield land put forward in the SWJCS as a potential site for 300 new dwellings. The site sits between the southern edge of Droitwich and the village of Salwarpe just to the east of the Worcester railway line and therefore almost adjacent to the eastern boundary of Droitwich Spa – Site 2 Preferred Options site. The centre grid reference is SO 879 619.
- The site comprises three large agricultural fields, bounded by hedgerows, and a small area of woodland associated with an adjacent stream corridor.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There is a record for bats on site and nearby records for badger, slowworm and otter. It is unlikely that any of these species would pose an overriding constraint to development but further work will be required in order to determine how much impact they will have on site layouts and the overall developable area. It is highly likely that the adjacent stream and canal corridors, mature hedgerows and mature trees will require some form of buffering, particularly where they are used by protected species.
- Non-statutory sites and habitats. There are two nearby Special Wildlife Sites including the Droitwich Canal, which is immediately adjacent to the western boundary of the site, and the River Salwarpe. The Salwarpe is connected to the site via a drainage ditch on the northern boundary. Whilst this should not be a constraint to development careful control of runoff and water quality will be important and a biodiversity-led SUDS should be a prerequisite of any site allocation.
- One nearby grassland is listed on the grassland inventory. This should not be a constraint to development here provided that the usual controls on pollution are in place.
- The hedgerows on site are likely to be of at least local importance and they should be protected and enhanced through the development process.
- The wooded stream corridor to the north of the Preferred Options site is part of a valuable green corridor around Droitwich. It is imperative that any development here augments this feature and further work should be carried out prior to assessing the level of landscape buffering required.
- Non-statutory species. There are no records for other species of interest on site but whilst the arable habitats on site are likely to be of low ecological value there is some potential for scarce arable plants. Further work will be required in order to determine their status here, together with any constraint they might pose to development of this site.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- The woodland on the northern edge of the Preferred Options site links into the green corridor that runs round the southern side of Droitwich Spa and into the wider countryside. It would be appropriate to augment this corridor with significant planting and open space on this site. Indeed given the scale of the Preferred Options site here (particularly when linked to the adjacent proposed housing / employment site) it has the potential to be a major link in the emerging Green Infrastructure strategy for south Worcestershire. This must be reflected in site allocations and sufficient land made available to fulfil a role as a major ‘green’ extension to Droitwich Spa. Habitat creation and enhancement should be guided by the local environment and BAP but further work will be required before firm priorities can be determined.
- Enhancements to the existing hedgerows should form a significant part of any landscaping proposals for subsequent site development plans and links between these features, together with significant buffers to the existing resource should be a requirement.
- A biodiversity-led SUDS should be a requirement of any future development plan here and must be designed to provide both direct onsite benefit for biodiversity and improvements to water quality entering the downstream Special Wildlife Site.

4.7 DROITWICH SPA – SITE 3

SITE DESCRIPTION

- 48ha of greenfield land on the southern edge of Droitwich Spa put forward as a possible location for 250 new dwellings. The site is bordered by existing development on three sides but opens out into the wider countryside on its southern edge. It is split into two units, the smaller of which totals 13.5ha and is situated to the north of Pulley Lane and west of Newland Road. The larger block is to the east of Newland Road and extends further north into Droitwich.
- The dominant habitat is grassland, most of which is considered to be improved in the county habitat inventory. In addition there are two small ponds and some small areas of grassland that might be unimproved. The whole site is washed over with an area Tree Preservation Order.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. Oakley Pool Site of Special Scientific Interest is within 500m of the western site boundary and further work will be required in order to determine whether this wetland will form a constraint to development. In particular an understanding of site hydrology and subsequent control of runoff and water quality will be required. It is possible that this could be achieved through a biodiversity-led SUDS but precise requirements will need to be informed by additional information. .
- Protected species. There are nearby records for bats, badger, slowworm, hedgehog and grass snake. It is likely that all of these species, together with nesting birds and possibly great crested newts, will be using the site. Further work will be required to determine how much of a constraint to the proposed growth area these would be. Given the nature of the dominant habitats on site it is unlikely that any of these species would form an overriding constraint to some form of development but it is possible that they would require some alteration to the overall developable area.

- Non-statutory sites and habitats. The site is very close to Oakley Wood Special Wildlife Site but it is unlikely that this would form a constraint to development given that it is separated from the Preferred Options site by a road and is up-slope of the nearest developable areas.
- Whilst the majority of the grassland on site is described in the county habitat inventory as ‘probably improved’ or ‘improved’ the status of the grasslands described as ‘possibly unimproved’ must be assessed through further work. These fields have the potential to be of BAP priority standard and could form a considerable constraint to development on some parts of the site.
- The hedgerows and area of scrub woodland are likely to be important ecological features in the context of this site and should be buffered from the adverse effects of development. Whilst this is unlikely to cause an overriding constraint to development here it could alter the area of developable land and the precise implications of this should be ascertained through further work before site allocations are finalised.
- Non-statutory species. The evidence provided does not offer any records of other species that are likely to be an overriding constraint to development.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- Enhancement of any existing unimproved grassland, the ponds, hedgerows and mature tree resource should be a guiding principle of development here and should form a significant part of any landscaping proposals for subsequent site development plans. Links between these features, together with significant buffers to the existing resource should be a requirement and the aim should be to link these habitats to the wider countryside.
- A biodiversity-led SUDS would offer significant benefit to wildlife and should be used to provide both on- and off -site benefits.

4.8 MALVERN – SITE 1

SITE DESCRIPTION

- A 43ha greenfield site just to the east of the Worcester railway line on the northern edge of Malvern Link, centred on grid reference SO 781 488.
- Aerial photographs and the county habitat inventory suggest that the majority of the site is currently used for agriculture with most of the fields being improved grassland. There are also areas of arable/horticultural land together with smaller patches of orchard, woodland and grassland that is described as ‘possibly unimproved’ in the county habitat inventory. There are a number of ponds and the Whippets Brook flows through the centre of the site. There are also a number of mature hedgerows and at least six veteran trees.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There are records for bats, freshwater crayfish, slowworm, and polecat from the nearby area. These species have the potential to be a significant constraint to development and further work will be required to determine their status on site. In addition it is likely that otters are making use of the Whippets Brook corridor and although there are no current records for this stretch of the brook further work must be

carried out to ascertain their status here. Similarly the pond network should be assessed for the presence of great crested newts as these could be a significant constraint to development if they are present in any numbers. Particular issues based on current information are as follows.

- Freshwater crayfish are known to use the Whippets Brook and are highly likely to be present within the Preferred Options area boundary. A significant buffer to the brook corridor will therefore be required, as will careful control of runoff and water quality issues.
- It is highly likely that bats are making use of the hedgerows and veteran trees on site. These features together with any identified roosts must be protected from the adverse effects of development (including extraneous light etc) and may form a constraint to development in terms of required buffering / stand-offs.
- It is also highly likely that the site is used by nesting birds and further work will be required to determine the species and populations found on site.
- Non-statutory sites and habitats. The site is close to the Lower Howsell Sidings Special Wildlife Site but it is unlikely that that this would form a constraint to development here.
- The Whippets Brook is an important feature and steps must be taken to protect it from the adverse effects of development. See above.
- The status of the grasslands, described by the county habitat inventory as ‘possibly unimproved’, and the traditional orchards must be assessed through further work. These habitats have the potential to be of BAP priority standard and could form a considerable constraint to development on some parts of the site.
- The veteran trees and mature hedgerows should be considered as important features and whilst they do not represent an overriding constraint to development they must be taken into account in final area allocations and site layout. Significant buffering of these features will be required to protect them from the adverse effects of development.
- Non-statutory species. There are no records of other species that would provide a constraint to development at this site. However the presence of traditional orchard and veteran tree habitats make it likely that BAP priority saproxylic invertebrates are present on site. Whilst they are unlikely to be an overriding constraint to development further work must be carried out to ascertain their status so that they can be taken into account in subsequent area allocations and site development.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- The Whippets Brook corridor is a strong feature of this site and enhancement of the corridor and the brook itself should be a priority. Habitat enhancement to benefit otters and freshwater crayfish should form part of any development on this site and a biodiversity-led SUDS ought to be a prerequisite of any site plan or area allocation.
- Enhancement of the existing orchard and unimproved grassland resource should also be a guiding principle of development here and the aim should be to link these habitats to the wider countryside, preferably as a ‘node’ on a wider Green Infrastructure Network.
- Enhancements to the existing pond and hedgerow networks should form a significant part of any landscaping proposals for subsequent site development plans and links between these features, together with significant buffers to the existing resource should be a requirement.
- Given the scale of this Preferred Options site it has the potential to be a major link in the emerging Green Infrastructure strategy for south Worcestershire. This must be reflected in site allocations here and sufficient land made available to fulfil a role as a major ‘green’ extension to Malvern. Habitat creation and enhancement should be guided by the local environment and BAP but further work will be required before firm priorities can be determined.

4.9 MALVERN – SITE 2

SITE DESCRIPTION

- Approximately 55ha of greenfield land proposed for 1,100 new dwellings and 10ha of employment land in the SWJCS Preferred Options document. The site is on the northern edge of Malvern Link sandwiched between the A449 and the Worcester railway line. It has a centre grid reference of approximately SO 791 489.
- Comments in the county habitat inventory and analysis of aerial photographs suggest that the site is dominated by agricultural land, mostly described as arable/horticulture. However there are a few areas described as ‘grassland, possibly unimproved’ which add habitat interest. There are a number of mature trees and ponds within the site together with a network of sizeable hedgerows.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There are records for freshwater crayfish, polecat, bats, and slowworm from the nearby area. The last two species have the potential to be a significant constraint to development here and further work will be required to determine their status on site. Similarly the pond network must be assessed for the presence of great crested newts as these could be a significant constraint to development if they are present in any numbers.
- The presence of any of these species on site is likely to lead to a requirement for buffering and enhancement of existing landscape features. Whilst this would not render development impossible it might well alter the area of developable land.
- It is highly likely that the site is being used by nesting birds and further work will be required to determine the species and populations present, together with any constraints that these might pose to development.
- It is also likely that otters are making use of the Whippets Brook Corridor and although there are no current records for the nearby stretch further work must be carried out to ascertain their status here.
- Non-statutory sites and habitats. There are three nearby Special Wildlife Sites. The Lower Howsell Sidings and Newland Green are immediately adjacent whilst the Madresfield Brook is just to the south of the site boundary. In addition there are two sites listed on the Worcestershire Grassland Inventory. It does not appear likely that any of these sites will be a constraint to development here provided that the usual controls on pollution etc. are applied to any future proposals.
- The Whippets Brook flows just to the north west of the site boundary but is separated from the Preferred Options Area by the Worcester railway line. It is therefore unlikely that the brook (and its resident crayfish and potential for otters) will be an overriding constraint to some form of development here but further work to determine site hydrology and connectivity with the brook must be carried out to inform final site allocations. The proximity of this watercourse and the nearby Madresfield Brook Special Wildlife Site mean that appropriate control over runoff and water quality must be exercised and a biodiversity-led SUDS should be a prerequisite of development plans on this site.
- Grassland described as ‘possibly unimproved’ in the county habitat inventory should be subject to further study. This habitat has the potential to be of BAP priority standard and could form a considerable constraint to development on some parts of the site.
- The mature trees and hedgerows on site are likely to be valuable ecological features and further investigation into their status will be required. Whilst they are unlikely to form an overriding constraint to development they will need to be buffered from any adverse

impacts. Additional space must be retained to link these features together through new 'green' corridors.

- Non-statutory species. There are nearby records for small-flowered buttercup and it is likely that this species and other arable plants are present on site. These have the potential to be of BAP priority status and further work will be required to determine the size and location of any such plant community on site. While the presence of arable plants is unlikely to be an overriding constraint to development here it may lead to alterations in site layout and the area of developable land.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- Enhancement of the existing unimproved grassland, pond, hedgerow and mature tree resource should be a guiding principle of development here and should form a significant part of any landscaping proposals for subsequent site development plans. Links between these features, together with significant buffers to the existing resource should be a requirement and the aim should be to link these habitats to the wider countryside, preferably as a 'node' on a wider Green Infrastructure Network.
- A biodiversity-led SUDS would offer significant benefit to wildlife and should be designed to augment the existing pond network.
- Given the scale of the Preferred Options site here it has the potential to be a major link in the emerging Green Infrastructure Strategy for south Worcestershire. This must be reflected in site allocations here and sufficient land made available to fulfil a role as a major 'green' extension to Malvern. Habitat creation undertaken in fulfilling this role should be guided by the local environment and BAP but further work will be required before final priorities can be determined.

4.10 MALVERN – SITE 3

SITE DESCRIPTION

- A greenfield site of approximately 45ha identified in the SWJCS Preferred Options document as a possible location for 500 new dwellings and 7ha of employment land. The site lies in open countryside adjacent to the eastern edge of Malvern town.
- Most of the site is described by the county habitat inventory as being arable/horticultural land but there is some improved grassland, an allotment and small areas considered to be 'grassland, possibly unimproved'. Aerial photographs show that the field units tend to be large but that there is a network of sizeable hedgerows, a pond and a number of mature trees, some of which are recorded as veterans in the ancient tree record for the county.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There are two records of otter to the south of the site and it is possible that this species is using the ponds and watercourses within and adjacent to the proposed growth area. Further work will be required in order to determine if this will be a constraint to development here.
- There are no records for bats in the nearby area but it is highly likely that they are using the surrounding landscape and further work will be required to determine their status on site. Given the habitats available on site it is unlikely that they would be an overriding

constraint to development but some amendments to the developable area might be required.

- There are ponds both within and adjacent to the Preferred Options growth area which may contain great crested newts. Further work will be required in order to determine whether they are present and if so how much of a constraint to development they might be.
- There are nearby records for NERC S41 and red-listed birds (i.e. birds of conservation concern) and further work will be required to determine their status on site. Other species are also likely to nest here and whilst they should not be an overriding constraint to development further work will be required to determine what, if any impact they will have on the developable area.
- Non-statutory sites and habitats. Madresfield Court Special Wildlife Site is close by but it should not be adversely affected by development on the Preferred Options site and as a result it should not be a constraint to development here provided that the usual controls on pollution etc are in place. There are three grasslands listed on the Worcestershire Grassland Inventory close by, one of which is almost contiguous with the site. This should not be a constraint to development here but further work will be required in order to ascertain whether mitigation will be required to reduce any impacts.
- The veteran trees and hedgerows on site are likely to be valuable ecological features and further investigation into their status will be required. Whilst they are unlikely to form an overriding constraint to development they will need to be buffered from the adverse impacts of the proposed growth. Additional space must be retained to allow linkage of these features through new 'green' corridors.
- Non-statutory species. There are nearby records for corn marigold and corn buttercup and it is likely that these species and other arable plants are present on site. These have the potential to be of BAP priority status and further work will be required in order to determine the size and location of any important arable plant community on site. While the presence of arable plants is unlikely to be an overriding constraint to development here it may lead to alterations in site layout and the area of developable land.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- Enhancement of the existing unimproved grassland, pond, hedgerow and mature / veteran tree resource should be a guiding principle of development here and should form a significant part of any landscaping proposals for subsequent site development plans. Links between these features, together with significant buffers to the existing resource should be a requirement and the aim should be to link these habitats to the wider countryside, preferably as a 'node' on a wider Green Infrastructure Network (see below).
- A biodiversity-led SUDS would offer significant benefit to wildlife and should be designed to augment the existing pond and ditch network.
- Given the scale of this Preferred Options site it has the potential to be a major link in the emerging Green Infrastructure Strategy for south Worcestershire. This must be reflected in site allocations here and sufficient land made available to fulfil a role as a major 'green' extension to Malvern. Habitat creation undertaken in fulfilling this role should be guided by the local environment and BAP and might include links to the nearby woodland to the north east of the site. However, further work will be required before final priorities can be determined.

4.11 MALVERN – SITE 4

SITE DESCRIPTION

- Approximately 16.5ha of greenfield land proposed for housing in the SWJCS Preferred Options document. It is situated on the eastern edge of the Pound Bank area of Malvern and split into 2 main blocks. The northern one is the smaller of the two at just 2.6ha and comprises one field unit centred on grid reference SO 796 462. The larger block to the south comprises two large field units centred on grid reference SO 799 459.
- The dominant habitat in the northern unit is grassland, described in the county habitat inventory as being ‘possibly unimproved’. The southern block is roughly two-thirds arable land and a third grassland, this being described as being ‘probably improved’ by the county habitat inventory. Both sections of the site have associated ponds and ditch networks and there are a number of veteran trees and mature hedges associated with the site boundaries.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There are nearby records for otter and great crested newt and further work will be required in order to determine whether they are present on site and if so what impact that will have on the developable area.
- Bats and nesting birds are also highly likely to be present on site and again further work will be required to ascertain what impact this will have on the growth area proposals.
- It is possible that the grassland sections of the site are suitable for slowworms and the presence or otherwise of this species will need to be clarified.
- Non-statutory sites and habitats. The site is close to the Guarlford Green Special Wildlife Site but it is unlikely that the growth area proposals would have an adverse impact on this site and it is therefore unlikely to act as constraint to development here.
- The northernmost field in the Preferred Option site is listed on the county grassland inventory and it is highly likely that the field is of BAP priority quality. Further work will be required in order to clarify this but should the grassland be of BAP quality it will be a significant, and possibly overriding, constraint to development on this part of the site.
- Two nearby sites are also listed on the grasslands inventory but they are sufficiently removed from the proposed growth area as to not represent a constraint to development here.
- The veteran trees and hedgerows on site are likely to be valuable ecological features and further investigation into their status will be required. Whilst they are unlikely to form an overriding constraint to development they will need to be buffered from adverse impacts arising from the proposed growth. Additional space must be retained for linking these features together with new ‘green’ corridors.
- The ditches and ‘issues’ found on site could be significant features of ecological interest. Further work to determine their value and impact on the developable area of the site will be required prior to finalising area allocations. It is likely that stand-offs and buffers will be required if they are of high biodiversity value and this could be a significant constraint to development on some parts of the site. Further work should be carried out to determine how these features could form part of a wider biodiversity-led SUDS and suitable controls on runoff and water quality will be required.
- Non-statutory species. There are nearby records for small-flowered buttercup and it is likely that this species and other arable plants are present on site. These have the potential to be of BAP priority status and further work will be required to determine the size and location of any arable plant community on site. While the presence of arable plants is

unlikely to be an overriding constraint to development here it may lead to alterations in site layout and the area of developable land.

- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- Enhancement of the existing unimproved grassland, ditch, hedgerow and mature / veteran tree resource should be a guiding principle of development here and should form a significant part of any landscaping proposals for subsequent site development plans. Links between these features, together with significant buffers to the existing resource should be a requirement and the aim should be to link these habitats to the wider countryside, preferably as a 'node' on a wider Green Infrastructure Network (see below).
- A biodiversity-led SUDS would offer significant benefit to wildlife and should be designed to augment the existing pond and ditch network.
- Management for the benefit of arable plants would be an appropriate form of enhancement if they turn out to be present on site, though further work will be required to determine if this is a priority.
- Given the scale of the Preferred Options site here it has the potential to be a major link in the emerging Green Infrastructure strategy for south Worcestershire. This must be reflected in site allocations and sufficient land made available to fulfil a role as a major 'green' extension to Malvern. In this context it is important to recognise that it links closely to Malvern – Site 3 and could offer significant ecological benefit in combination with enhancements at that site. Habitat creation should be guided by the local environment and BAP priorities and might take the form of links and corridors through the site into the wider countryside to the east. However, further work will be required before final priorities can be determined.

4.12 MALVERN – SITE 5

SITE DESCRIPTION

- 9ha of brownfield land proposed for a mix of employment and housing in the SWJCS Preferred Options document and located in the Poolbrook area of Malvern around a central grid reference of SO786 447. The growth area covers a reverse 'L' shape within an existing employment complex.
- Aerial photographs show that the bulk of this site is developed and covered in large buildings with associated infrastructure. The northern end of the site is however listed in the county habitat inventory as 'grassland, probably improved'.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the Preferred Options area and Sites of Special Scientific Interest are therefore unlikely to be a constraint to development here.
- Protected species. There are nearby reports for grass snake and further work will be required to determine the presence or otherwise of this species on the site.
- In spite of the rather built up nature of the proposed growth area there is still potential for a range of protected species including bats, great crested newts, slowworms, and nesting birds. Further work will be required in order to determine whether any of these will be a constraint to development here.

- Non-statutory sites and habitats. The site is close to the Malvern and Lower Wyche Commons and Guarlford Green Special Wildlife Sites but it is separated from both by existing development and they are unlikely to form an overriding constraint to development here. However at least one watercourse drains from the site into a Special Wildlife Site and careful control of runoff and water quality will be required. A biodiversity-led SUDS should be used and sufficient land must be safeguarded in the development footprint to allow for this.
- The grassland on site is considered to be ‘probably improved’ but its status must be confirmed. If it transpires that the grassland is of BAP priority quality it could be a significant constraint to development on some areas of the site.
- Non-statutory species. The locally notable and declining plant Large-flowered Hemp-nettle has been recorded on the site and whilst it should not be an overriding constraint to development appropriate protection and management of the population should be a consideration in any subsequent development proposals.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- Malvern is an important area for bats in Worcestershire and enhancement of the built environment to provide additional roosting space should be a priority here. In addition landscaping should aim to improve flight corridors to the nearby Special Wildlife Sites and wider countryside.
- A biodiversity-led SUDS could offer significant potential for ecological gain from this site, particularly where innovative use can be made of new buildings as well as the surrounding landscaping. The aim should be to provide on-site benefit for biodiversity and improvements in runoff rates and water quality for the downstream Special Wildlife Sites.
- Other enhancements must be informed by the additional work recommended above.

4.13 EVESHAM – SITE 1

SITE DESCRIPTION

- A large multi habitat complex on the western outskirts of Evesham. Covering approximately 26ha the site is centred on grid reference SP 020 432 and has been put forward in the SWJCS Preferred Option document as a location for around 800 new dwellings.
- The site comprises a mosaic of land uses including orchards, improved and possibly unimproved grassland, horticulture and arable land. There are also small areas of broadleaved woodland and several watercourses.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the site boundaries and it is therefore unlikely that development here would be constrained by the proximity of Sites of Special Scientific Interest.
- Protected species. There are records for great crested newt, bats, slowworm, polecat and nesting birds from close to the site and otters are known to use the nearby River Avon. Further work will be required in order to determine whether any of these species will act as a constraint on development here. It does not seem likely that any of them have any more than a very limited distribution on the site and the existing land uses probably preclude their presence over significant parts of the Preferred Options area. Nonetheless it

is possible that newts could be using the ditches and adjacent ponds and the grassland and marginal vegetation on site could be suitable for slowworms. Bats and birds may be expected in any mature trees, especially where they are associated with other semi-natural features such as the adjacent watercourse. It is therefore probable that protected species will require some accommodation in any future development on this site although they are unlikely to be an overriding constraint.

- Non-statutory sites and habitats. There are 4 nearby Special Wildlife Sites including the River Avon and the River Isbourne. These, together with the unimproved grassland of the Clark's Hill Special Wildlife Site and 3 known grassland inventory sites are a significant distance from the Preferred Options site and are therefore unlikely to offer a constraint to development. The Haselor road verge Special Wildlife Site is however immediately adjacent to the site and is likely to be a constraint to access from the main A44 on the northern site boundary. Several of the grasslands within the site are described by the county habitat inventory as 'possibly unimproved' and the status of these and the woodland and traditional orchards must be ascertained through further survey work. Each of these habitats has the potential to be of BAP priority quality and could therefore offer a significant constraint to development across large sections of the site. The Merry Brook, which forms the western boundary of the site will require a suitable stand-off and leads to a requirement for SUDS to deal with both runoff quality and flow rates. This should not preclude development but an understanding of site hydrology and likely drainage issues should be a prerequisite of any subsequent allocation and planning application.
- Non-statutory species. There are no records for other species on or near to the site that would suggest a constraint to development. However it is possible that the traditional orchards highlighted by the county habitat inventory are suitable for the noble chafer (a BAP priority and NERC S41 species). Further work should be carried out to determine whether this species is present and any subsequent site layouts should aim to take this into account as a possible constraint.
- Other issues. There are no other significant ecological issues known on this site at the time of writing.

POSSIBLE ENHANCEMENTS

- The stream corridor on the western site boundary could form a significant part of a wider biodiversity-led SUDS and should be a key feature in site enhancement.
- The presence of traditional orchards is a locally distinctive feature and landscaping and public open space should aim to increase the area and diversity of the site's orchard resource.
- Existing field boundary corridors through the site appear to be weak in places. Augmenting them with additional planting would help to strengthen the ecological corridors through the site and should be focussed on the roadside boundaries, orchards and watercourse.
- Management of existing features of interest (notably the grasslands and orchards) to improve their quality could provide significant benefit to the site and should offer both biodiversity and public benefit.

4.14 EVESHAM - SITE 2

SITE DESCRIPTION

- A very large greenfield site covering approximately 43ha on the north eastern edge of Evesham centred on grid reference SP 051 442. It has been put forward in the Preferred Options document as a site for 1500 new dwellings.
- The site is split into 2 almost triangular sections separated by the Offenham Road. It is bordered by the Evesham bypass to the east, the Oxford railway line to the north and existing built development to the south. The site is dominated by arable agriculture, horticulture and intensive commercial orchard but there are pockets of improved and possibly unimproved grassland and 3 traditional orchards.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the site boundaries and proximity to a Site of Special Scientific Interest is therefore unlikely to be a constraint to development at this site.
- Protected species. There are records for badgers and slowworms close to the site and further work will be required to determine the status of these species on the site. If either occur in large numbers they may act as a constraint to development, at least in parts of the site. However given the existing land uses it is not likely that this would be an issue for the bulk of the site area. Otters are known to use the adjacent river Avon and further work will be required to determine their status on site. Bats and nesting birds may be expected in the existing buildings and in several of the habitats found around the site and further work to determine their status on site should be carried out.
- Non-statutory sites and habitats. The River Avon Special Wildlife Site is almost contiguous with the western edge of the site and whilst it should not form a constraint to development an element of habitat buffering will be required. In addition runoff rates and water quality exiting the site to the river must be tightly controlled. A biodiversity led SUDS should be developed for the site and further work to determine local hydrology and topography across the site will be required.
- Several of the grasslands within the Preferred Options area are described by the county habitat inventory as ‘possibly unimproved’ and the status of these and the orchards described as ‘traditional’ must be ascertained through further survey work. Each of these habitats has the potential to be of BAP priority quality and could therefore offer a significant constraint to development across parts of the site
- Non-statutory species. There are no records for non-statutory species on or near to the site that would suggest a constraint to development. However it is possible that the traditional orchards highlighted by the county habitat inventory are suitable for the noble chafer (a BAP priority and NERC S41 species). Further work should be carried out to determine whether this species is present and subsequent site layouts should aim to take this into account as a possible constraint.
- Other issues. The evidence provided does not suggest that there are any other ecological issues pertaining to this site at this time.

POSSIBLE ENHANCEMENTS

- The proposed growth area is somewhat isolated by the major infrastructure already in place around it but there are opportunities to improve the ecological corridors within the site as part of the development process. Improved links between a biodiversity-led SUDS and the River Avon could offer a significant wetland enhancement and opportunities should also be sought to link the existing traditional orchard blocks through new planting. This would also offer increased potential for noble chafer should they be present.

- Broadening the existing roadside planting could offer biodiversity enhancement and perhaps public amenity benefit. New corridors within the site should be designed to augment the existing field boundaries where possible and should provide ‘green’ links between existing features of interest.
- Landscaping and planting must be guided by the local landscape and BAP.

4.15 PERSHORE – SITE 1

SITE DESCRIPTION

- A 26ha site put forward in the SWJCS Preferred Options document as a potential location for 150 new dwellings. It lies on the western edge of Pershore around a central grid reference of SO 937 457.
- Habitats on site include small areas of orchard, unimproved grassland, woodland and arable/horticulture but it is dominated for the most part by agriculturally improved grassland. There is a reasonable hedgerow network with a small number of wider scrubby corridors through parts of the site.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. The site is very close to the Tiddesley Wood Site of Special Scientific Interest and any development here will need to reflect this sensitive setting. It is likely that there will be a requirement to buffer the SSSI from the effects of runoff, light and noise pollution and further work must be carried out to determine exactly how much of a constraint it will be to the proposed new housing.
- Protected species. There are nearby records for bats, badger, grass snake and common toad and it is likely that the site provides suitable habitat for these together with great crested newt, slowworm and nesting birds. Although it seems unlikely that any of them will be a major constraint to development across large parts of the site further work will be required in order to be certain of any impact they might have on layout and scale of development. Otters are known to use the River Avon and whilst it is unlikely that they would be a constraint to development here further work to determine likely impacts of any development on site will be required
- Non-statutory sites and habitats. The site is very close to the River Avon Special Wildlife Site and a Special Wildlife Site section of Tiddesley Wood. The presence of the river nearby suggests that a biodiversity-led SUDS and close control on runoff rates and water quality will be a prerequisite on this site but it should be possible to design the development so that this need not be an overriding constraint.
- Several fields on site are listed as ‘grassland, possibly unimproved’ and the status of these, together with the small area of traditional orchard, must be clarified through additional work. Both these habitats have the potential to be of BAP priority standard and could therefore be a constraint to development in some parts of the site.
- Non-statutory species. There are no records for non-statutory species on or near to the site that would suggest a constraint to development. However it is possible that the traditional orchard highlighted by the county habitat inventory is suitable for the noble chafer (a BAP priority and NERC S41 species). Further work should be carried out to determine whether this species is present and any subsequent site amendments should aim to take this into account as a possible constraint.
- Other issues. The hedgerow network and occasional rough habitat patches found here may be of significant value, particularly in terms of the corridors they provide through an otherwise heavily managed landscape. Further work will be required in order to determine the importance of these features and may have a bearing on later site amendments.

POSSIBLE ENHANCEMENTS

- The presence of a nearby woodland Site of Special Scientific Interest makes woodland planting a sensible enhancement to aim for here, especially where it can be designed to link to and buffer the existing interest. This might also be used to augment existing hedgerow features and add to the existing corridors through the site. Obviously any new planting must respect the value of existing habitats and must be guided by further work the local area and the BAP.
- Increasing the size of the traditional orchard should be a priority and overall site development should aim to link this feature into the wider countryside. This could contribute not only to Orchard BAP targets but might also provide benefit for the noble chafer.

4.16 PERSHORE – SITE 2

SITE DESCRIPTION

- A very large greenfield site split into 4 sections that cover approximately 46ha in total. They are linear in nature and form a significant extension along the north western edge of Pershore town between the B4084 and the A4014. The centre grid reference between these points falls around SO 944 466. The site is proposed for 400 new dwellings.
- In spite of its considerable size the Preferred Options location is not especially diverse in terms of habitats. It comprises a mix of arable/horticultural land with significant areas of grassland described by the county habitat inventory as ‘probably improved’, though there are a few fields described as ‘possibly unimproved’. Aerial photographs show the habitats to the north west of the site to be similar whilst the south eastern boundaries abut existing development, predominantly housing.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. Tiddesley Wood Site of Special Scientific Interest is within 500m of the southern edge of the site but it is unlikely to be a constraint to development given that it is isolated from the proposed growth area by a road and grassland that is likely to be improved. However further work will be required to confirm that any development proposals will not have an adverse effect on the SSSI.
- Protected species. There are records for bats, badger, grass snake and common toad in the vicinity and it is possible that these species, together with great crested newts and nesting birds are using the Preferred Options area. Further work to confirm the status of protected species on site will be required and the likelihood of their being a constraint to development cannot be ascertained at the moment.
- Non-statutory sites and habitats. The River Avon and Bow Brook Special Wildlife Sites are both relatively close to this site but are sufficiently separated from it that they should not be a constraint to development here.
- The status of those fields described as ‘grassland, possibly unimproved’ by the county habitat inventory must be clarified through further survey work. Should any of the fields be of BAP priority standard they may become a constraint to development in some parts of the site. In addition it is likely that the small area of woodland on the south eastern boundary, together with the ditches and more mature hedgerows, will require a significant stand-off, which may affect the developable area.
- Non-statutory species. White-letter hairstreak (A NERC S41 species) has been recorded at the southern end of the site and development proposals should be informed by its presence. However it is unlikely to be a constraint to development of the wider site.

- Other issues. The records available at the time of writing do not suggest any other ecological issues on this site.

POSSIBLE ENHANCEMENTS

- Given the significant size of this site it is likely that considerable ecological enhancement would be a prerequisite of any planning permission, in line with guidance in PPS9 its attendant circular. Large areas should be set aside for biodiversity enhancement as well as public open space and efforts should be made to integrate existing features (including the adjacent woodland and any unimproved grassland) into a final site allocation. The size of the site means that it would be a suitable ‘node’ on a wider Green Infrastructure network for the SWJCS area. This should be linked to the proposed growth areas in Pershore – Site 3 and Pershore – Site 4, which run to the east of the northern edge of this site.
- The linear nature of the site lends itself to the creation of long ‘green corridors’ particularly where these can link to the wider hedgerow network. However, final priorities for enhancement cannot be determined until further work has been completed though they should, where appropriate, be driven by the local environment and the BAP.
- Planting and habitat management to favour the white-letter hairstreak would be appropriate and should form part of a wider management plan for the site.

4.17 PERSHORE – SITE 3

SITE DESCRIPTION

- A 2.6ha greenfield site on the northern edge of Pershore town. It is sandwiched between the B4083 and B4082 with existing development to the north and south. East and west of the site (across the roads) are sections of the SWJCS Preferred Options sites Pershore – Site 2 and Pershore – Site 4. The centre grid reference is SO 950 472. The site has been put forward in the SWJCS Preferred Options document for 50 new dwellings.
- The site comprises a single grass field bounded by hedgerows. There is one pool just to the north east of the site boundary.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the site boundary so it is unlikely that they would be a constraint on development here.
- Protected species. There are nearby records for badgers, hedgehog and bats and it is likely that these species could make use of the proposed site. It is also possible that great crested newts, nesting birds and slowworms occur and further work will be required to determine the status of protected species here before final site allocations are made. Should protected species be present in high numbers they could be a significant constraint to development. Otters are known to use the nearby River Avon and although they are unlikely to be a constraint to development here it is possible that they use the ditches on site. Further work will be required in order to determine their status, particularly with respect to holts or other resting places.
- Non-statutory sites and habitats. The River Avon Special Wildlife Site is within 500m of the site but it is separated from it by existing housing and is not likely to be a direct constraint to development here. However the ditch which forms part of the eastern site boundary flows into the Avon and careful control of water quality and runoff rates will be required. A biodiversity-led SUDS should be a prerequisite of future developments.
- The field in question is described by the county habitat inventory as ‘grassland, possibly unimproved’ and the actual quality of the grassland must be ascertained through further

survey prior to any site allocation. If it proves to be of BAP priority standard it would act as a considerable, and possibly overriding, constraint to development.

- The adjacent pond and hedgerows would require a suitable stand-off which might have a bearing on the developable area here, but it is unlikely that this would form an overriding constraint to development.
- Non-statutory species. There are no records for other species that would imply a constraint to development of this site.
- Other issues. The records do not suggest any other ecological issues that would act as a constraint to development on this site.

POSSIBLE ENHANCEMENTS

- Ecological enhancement on this site would be best seen in the context of the adjacent sites as well. It would make an excellent link in a wider green corridor between Pershore – Site 2 and Pershore – Site 4. Habitat creation to reflect the wider mosaic which runs north east from the site alongside the B4083 and then into the wider countryside might be appropriate but further work will be required before definitive priorities can be decided.

4.18 PERSHORE – SITE 4

SITE DESCRIPTION

- A 10ha greenfield site proposed as a location for 400 new dwellings in the SWJCS Preferred option document. It forms a north eastward extension to Pershore town and runs alongside the B4083 though otherwise largely open countryside.
- The site is split into four distinct field units, one of which is described in the county habitat inventory as ‘arable/horticulture’ with the other three being grassland. Two small ditch features run along the site boundaries while a third issues from one of the fields before running across adjacent fields and into the Piddle Brook Special Wildlife Site.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutorily protected sites within 500m of the site boundary so it is unlikely that they would be a constraint on development here.
- Protected species. There are records for badgers and bats on the site. The nature of the habitats here make it unlikely that either of these would be a significant constraint to development of some sort but further work will be required to confirm the status of these species together with slowworm, nesting birds and great crested newts. If bat roosts are found it will be imperative to protect existing flight paths from extraneous light and to augment them where possible. The nearby Piddle Brook and River Avon are known to hold otters and whilst they are unlikely to be a specific constraint to development here further work will be required to ascertain the presence or otherwise of holts or other resting places on site. Careful control of runoff and water quality to the nearby watercourses will also be important.
- Non-statutory sites and habitats. The Piddle Brook and River Avon Special Wildlife Sites are both close to the site. Close control of runoff and water quality will be important and a biodiversity-led SUDS should be a requirement of future development here. Space for this would need to be secured in any site allocation and may be a constraint to subsequent development layouts.
- At least one of the grassland units on site is listed on the Worcestershire Grassland Inventory and the status of both it and the areas described as ‘grassland, possibly unimproved’ by the county habitat inventory must be confirmed through further survey

work. Should any of the grassland turn out to be of BAP priority quality it would form a significant constraint to development.

- The ditches and ‘issues’ found on site could be significant features of ecological interest. Further work to determine their value and impact on the developable area of the site will be required prior to finalising area allocations.
- Non-statutory species. There are no records for other species that would act as a constraint on development at this site. However there are a number of dragonflies along the Piddle Brook and Avon that are of interest. Control of runoff and water quality from the site must ensure that they are not adversely affected by the proposed housing allocation.
- Other issues. The records do not suggest any other ecological issues that would be a major constraint to development at this site.

POSSIBLE ENHANCEMENTS

- The ditches and ‘issues’ on the site link directly to the Piddle Brook and River Avon Special Wildlife Sites. They should be a priority for wetland restoration and ought to be linked to a wider green corridor between the River Avon and the open countryside to the north. A guiding principle should be to link this to green infrastructure associated with the nearby growth area sites and to provide a mosaic of habitats guided by local BAP priorities.
- Habitat and roost enhancement for bats on site should be a priority and should follow on from the protection of flight corridors mentioned above.
- Grassland restoration and management, particularly on the grassland inventory site would be appropriate and might form part of a wider open space management plan.

4.19 UPTON-UPON-SEVERN – SITE 1

SITE DESCRIPTION

- A 3.7ha greenfield site situated just to the north east of Ryall and centred on grid reference SO 868 409.
- Aerial photographs and the county habitat inventory show that the site is primarily used for horticulture and arable agriculture but there is also one grassland field. There are several hedgerows and a number of mature trees on the boundaries and the adjacent land includes a small orchard and 2 ponds.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutory sites within 500m of the site boundaries and it is unlikely that development here would be constrained by potential impacts on nationally protected sites.
- Protected species. There are records for both bats and badgers close to this site and further work will be required to determine their status here, together with any requirement for mitigation in the future. However, it is unlikely that either will be a major constraint to development of the site given the existing landuse and conditions. It is however possible that the adjacent water bodies are suitable for great crested newts and further work will be required to determine their status. Should they be present in large numbers they may become a constraint to future development.
- Non-statutory sites and habitats. The site is close to Smithmoor Common Special Wildlife Site. This is a very valuable wet grassland site and further work will be needed to ascertain how the proposed development would affect the water quality and flow rates associated with the ditch network that links it to the growth area. It is not clear whether

there would be any impact at all and with appropriate controls there is no reason why this should be a constraint to development here but it will be imperative that the matter is fully understood in advance of future planning applications.

- A substantial section of the site is described in the county habitat inventory as being ‘grassland, possibly unimproved’. Further work will be required to determine the status of this field and it could prove to be a constraint to development if it is of BAP quality.
- Adjacent orchards and watercourses will also require buffering but there is no reason for these to be an overriding constraint to some form of development, though the overall developable area may be reduced.
- Non-statutory species. Smithmoor Common contains a number of important and locally notable plants. In addition the site falls within the core area for stag beetles in Worcestershire. There are records for this species from the adjacent village and it is possible that the hedgerow network and mature trees on site are suitable for this BAP priority and NERC S41 species. It is therefore likely that this could be a constraint on development in terms of direct tree protection and required stand-offs from existing habitat features.
- Other issues. Control of drainage and runoff will be particularly important at this site.

POSSIBLE ENHANCEMENTS

- Development here may offer opportunities to improve the quality of water entering Smithmoor Common Special Wildlife Site if the water from the Preferred Options site flows in that direction (which is not clear from the existing information). These should be taken if possible and a comprehensive biodiversity-led SUDS incorporating above-ground features for the benefit of wildlife should be a priority.
- Opportunities to benefit stag beetles and other saproxylic (dead-wood loving) invertebrates should be taken along the existing hedgerow features, particularly if stag beetles are found on site in subsequent surveys.

4.20 UPTON-UPON-SEVERN – SITE 2

SITE DESCRIPTION

- A small Preferred Options proposal for 50 houses on a mix of greenfield and previously developed land centred on grid reference SO 840 402. The site totals approximately 0.5ha and is situated on the northern edge of the village of Tunnel Hill.
- Aerial photographs and the county habitat inventory show the site to be a mix of farmyard, buildings and broadleaved woodland, with a small water body in the south west corner. The primary adjacent habitat is grassland that has probably been agriculturally improved.

SITE CONSTRAINTS AND FURTHER WORK REQUIRED

- Statutory sites. There are no statutory sites within 500m of the site boundaries and it is unlikely that development here would be constrained by potential impacts on nationally protected sites.
- Protected species. There are no records for protected species within the area of search for this site. However the presence of old farm buildings and large trees means that bats and nesting birds (including barn owl) are likely and further work to determine whether these would be a constraint to development is required. The adjacent pond may be suitable for newts and the presence or absence of these must also be confirmed.
- Non-statutory sites and habitats. The site is close to the Brotheridge Green Disused Railway Line and Pool and Mere Brooks Special Wildlife Sites but it is separated from

them by improved agricultural land and they should not be a constraint on development provided that the usual controls on runoff and pollution are in place. The ‘woodland’ patches are likely to be of ecological value and it appears that at least some of the trees are fairly large giving them added importance. Further work to determine their status will be required before it is possible to determine how much of a constraint they will be to development. Currently it appears that they will significantly limit the area available for housing if they are retained, which should be the preferred option.

- Non-statutory species. There are no records for other species of interest that would be a constraint to development on this site. However it is in an area known to hold stag beetles (a BAP priority and S41 NERC species) and further work to determine the presence or absence of these beetles together with any other saproxylic species will be required.
- Other issues. This site is relatively small in the context of the growth areas and it will be significantly constrained by retained trees and the small pool, which effectively halve its developable area. Careful design and clever use of space will be vital if the ecological value of the site is to be retained in line with PPS9 and other guidance, especially as space for ecological mitigation is limited.

POSSIBLE ENHANCEMENTS

- The size of this site significantly limits its potential to deliver landscape-scale Green Infrastructure benefits. It therefore seems likely that any enhancements will be related to small benefits such as increased bat roost provision and perhaps benefits for saproxylic invertebrates if these are found to be present.

4.21 TENBURY WELLS – SITE 1

SITE DESCRIPTION

- This is a small Preferred Option proposal for 100 houses on greenfield land adjacent to and immediately south west of Tenbury Wells. It covers approximately 4.5ha and is centred on grid reference SO 591 677.
- The site comprises 2 large grass fields bisected by a strong tree-lined stream corridor, which runs north to south through the centre of the site. The majority of the boundaries are hedged and there are one or two areas with patches of scrub and isolated trees.

SITE CONSTRAINTS AND FURTHER WORK

- Statutory sites. The site is close to the River Teme Site of Special Scientific Interest but it does not fall immediately adjacent to it. The stream crossing the site ultimately flows into the river but it is unlikely that this would be a constraint to development provided that runoff quality and flow rates are tightly controlled.
- Protected species. There are records for both great crested newts and badgers close to the site and any development proposal must be informed by further work regarding these species. The apparent absence of standing water bodies within the site suggests that newts do not breed here but that requires confirmation, particularly as the stream corridor and adjacent grassland may offer suitable terrestrial habitat for these animals. Otters are known to use the nearby Teme and their status on this site must also be confirmed. In addition it is possible that the site is suitable for nesting birds, grass snakes and slowworms and the presence of any of these species could offer a constraint to development. Further work is required in order to ascertain how much of an impact this will have on the developable area here.
- Non statutory sites and habitats. The site is close to the Kyre Brook Special Wildlife Site but is separated from it by existing development in Tenbury Wells itself. As a result the

brook should not be a particular constraint to development here. The fields themselves are listed as being 'grassland, possibly unimproved' on the county habitat inventory and further work will be required to confirm their status. Should the grassland be of BAP quality it would represent a significant constraint to development.

- The central stream corridor is an important feature of the site and will be a constraint to development insofar as a significant stand-off will be required to buffer it from the impacts of development.
- Non statutory species. The records provided do not detail any other species that might form a constraint to development of this site but the presence of an adjacent orchard does mean that Noble Chafer (a NERC S41 and BAP priority species) could occur in the hedgerows or any remaining isolated fruit trees. The status of this species should be determined through further fieldwork.
- Other issues. The presence of a stream on site means that control of drainage will be extremely important at this site. The stream corridor trees must also be protected during and after construction.

POSSIBLE ENHANCEMENTS

- The stream, with its significant tree cover provides a strong ecological corridor through the centre of this site. It offers potential for a green link through the proposed housing out to the wider countryside. This should be augmented through appropriate planting and protection and ought to be a strong element of future site designs.
- The stream corridor lends itself to a biodiversity-led SUDS for the whole site and this should be a prerequisite of future development.
- Open space planting should reflect local BAP priorities and the use of orchard trees would be in keeping with the Tenbury area and provide potential for noble chafers in the future.

5 REQUIREMENTS FOR FURTHER WORK

Site analysis in this report is based on available data without recourse to field survey or wider contextual information, particularly in respect of the design and density of development proposed. As a result there is a significant need for further work regarding all of the sites prior to finalising their allocation. In particular we would suggest detailed field surveys covering existing habitats and the presence or absence of protected species. Site enhancements should be driven by the local Biodiversity Action Plan priorities and nearby habitats and further work will be required to inform final landscaping.

We would also suggest that additional survey work be carried out in the wider landscape, especially where the proposed growth areas bring with them a need for additional infrastructure. Such work should take an holistic landscape-scale view of the development proposals and detail how they will fit into their surroundings and add to existing biodiversity in line with PPS9 and best practice guidance. This will be essential if the proposed growth is to be accommodated sustainably.

6 GREEN INFRASTRUCTURE FOR SOUTH WORCESTERSHIRE

The analysis in this report can only be used to inform decisions at a site-based level. However all of the proposed growth areas have the potential to form biodiverse nodes in a wider ecological network and future studies should aim to link these together in a full Green Infrastructure document. The larger growth areas have a particularly important role to play in delivering multi functional elements of a wider Green Infrastructure Strategy for south Worcestershire. Careful design and implementation of this part of their development will be critical in delivering ‘sustainable’ growth that delivers benefit for local communities, biodiversity and the local economy.

A full Green Infrastructure Strategy must aim to link existing ecological interest through new green corridors, taking into account the widest range of ecological and environmental benefits. Landscape-scale thinking and an understanding of the impacts of new development on the wider countryside must inform decisions about how and where to locate growth and should include commentary from the broadest ‘open countryside’ down to on-site corridors and allocated public open space at the site level. Whilst the analysis presented in this report can help to inform the latter it is incomplete and is not intended to deal with the wider ecological context. It is important that this is recognised and a more robust approach developed through further work to refine a Green Infrastructure Strategy for south Worcestershire.