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Leckhampton with Warden Hill Parish Council Neighbourhood Planning NPPF Concept Plan & Local Green Space Application



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Leckhampton with Warden Hill Parish Council -

July 2013

Foreword

The Parish Councils of Shurdington and Leckhampton with Warden Hill have formed a Joint Neighbourhood Forum (JNF) for the primary purpose of Neighbourhood Planning as directed by and compliant with the National Planning Policy Framework^[1] (NPPF). This submission, which has been led by Leckhampton with Warden Hill Parish Council (LWWH PC) with support from Shurdington Parish Council, is the first output from the work of the JNF and is in direct response to the Localism Act^[2] which received Royal Assent on the 15th November 2011 and whose major measures came into effect in April 2012. The Act empowers local communities in local planning and to protect areas of special value:

- New freedoms and flexibilities for local government, *'local authorities can do their job best when they have genuine freedom to respond to what local people want'*
- New rights and powers for communities and individuals, *'this Act passes significant new rights direct to communities and individuals, making it easier for them to get things done and achieve their ambitions for the place where they live'*
- Reform to make the planning system more democratic and more effective with a duty to cooperate by neighbouring councils, *'planning did not give members of the public enough influence over decisions that make a big difference to their lives, the Localism Act contains provisions to make the planning system clearer, more democratic, and more effective'*
- Reform to ensure that decisions about housing are taken locally

This new localism was part of a larger plan for Britain by the Coalition Government - *"The time has come to disperse power more widely in Britain today"* - Coalition Agreement, May 2010.

The Localism Act^[2] sets out a series of measures with the potential to achieve a substantial and lasting shift in power away from central government and towards local people. They include: new freedoms and flexibilities for local government; new rights and powers for communities and individuals; reform to make the planning system more democratic and more effective, and reform to ensure that decisions about housing are taken locally.

The Joint Neighbourhood Forum at its third meeting on 4 February 2013 resolved under the Act to draft a NPPF Neighbourhood Concept Plan and to make a formal Local Green Space (LGS) application for the Leckhampton Green Field Land. This land is detailed in the maps of Appendix 1 and lies in both parishes. The Concept Plan builds on a previous proposal for a Cheltenham Country Park, which was supported by a petition signed by some two thousand local residents and was well received by Cheltenham Borough Council, the response from the Leader of the Council, Cllr Steve Jordan at full council, 10th November, 2011) - *'Cheltenham Borough Council takes the issues raised in the petition very seriously and the resolution I am proposing to Council this afternoon restates the intention to protect Green Belt and open countryside around Cheltenham'*.

The Leckhampton Green Field Land has been safeguarded in the current CBC Local Plan; large scale development has been rejected by planning officers and the Planning Inspectorate on sustainability grounds. Both parish councils have been greatly concerned, therefore, by the proposals, initially in the SW Regional Spatial Strategy and subsequently retained as an option by the Gloucester-Cheltenham-Tewkesbury Joint Core Strategy (JCS), for large scale development on this land. There is a risk that the land might be made a JCS Strategic Site targeted for large scale development. Both councils are strongly opposed to this for reasons that are brought out in this submission:

- the amenity value of the land;
- its great importance to the view from Leckhampton Hill and proximity to the Cotwolds AONB;
- the history of Leckhampton village, dating back over a 1000 years;

- the highly valued ecology and wildlife in the area;
- the problems of traffic congestion, air quality, surface water flooding and the shortage of secondary school places.

LWWH PC has made detailed submissions with strong evidence in the JCS public consultation, but the Council fears that decisions could nevertheless be imposed on the area that are very damaging not only to the parishes but to the town and future generations. Accordingly, the Council has gathered together the expert evidence presented in this submission both of the value of the Leckhampton land and of the dangers facing local people and the Cheltenham area, particularly from the severe traffic problems that would result from development on this land.

The Council has gathered the views of local residents about the future of the Leckhampton land. Chiefly this was done through a Council survey that was conducted at the exhibition held by the developers' consortium on 22 September 2012 to present their initial development proposals for public comment. The survey showed overwhelming public opposition to development. A similar finding came from the exit polls conducted by Leglag at all four of the public exhibitions that were held. The main public concerns are over the loss of the green field land and over the problems of traffic congestion, secondary schooling and flooding.

This submission seeks to make a positive input into the Joint Core Strategy on the current strategic site allocation and to contribute to the process of updating the Cheltenham Borough Council and Tewkesbury Borough Council local plans to be NPPF-compliant.

The forum would like to acknowledge the support from Cllr. Mrs Jo Sobey, chair of Shurdington Parish Council, and from Cllr. Paul Rider, chair of Leckhampton with Warden Hill Parish Council, in the compilation of this Concept Plan and Local Green Space Application.

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Executive Summary

In 2012, Leckhampton with Warden Hill Parish Council (LWWH PC) and Shurdington Parish Council set up a joint neighbourhood forum (JNF) for the purpose of developing a neighbourhood plan for the area covered by the two parishes. This submission, which has been led by LWWH PC with support from Shurdington Parish Council, is the first output from the work of the JNF.

Both parish councils have been greatly concerned by the proposals for large scale development on the Leckhampton Green Field Land. They have strongly and consistently opposed such development for reasons that are brought out in this submission: the amenity value of the land; its great importance to the view from Leckhampton Hill; the history of Leckhampton village, dating back over a 1000 years; the ecology and wildlife in the area; the problems of traffic congestion, flooding and the shortage of secondary school places. LWWH PC has made detailed submissions with strong evidence to the JCS and now fears that decisions could be imposed on the area that are very damaging not only to the parishes but to Cheltenham as a whole.

Accordingly, LWWH PC has assembled the expert evidence presented in this submission both of the value of the Leckhampton land and of the dangers facing local people and the Cheltenham area, particularly from the severe traffic problems that would result from development in Leckhampton. Expert summaries of the history of the area and of its ecology and wildlife are included in the submission in sections 3.1 and 3.2. Sadly, until the 1960s, scant importance was attached to preserving the UK's historical heritage and many buildings and areas were destroyed. The cultural and economic value of historical areas is now much better understood and rightly protected. The ecological and wildlife survey prepared for the Council by three experts shows the rich diversity of habitats. Part of the aim for the Local Green Space is to enhance its value to Cheltenham as a wildlife area.

The Council has gathered the views of local residents about the future of the Leckhampton land. The survey showed overwhelming public opposition to development. Similar findings have come from polls conducted by Leglag.

The traffic surveys, model and analysis have involved considerable work by LWWH PC. The findings have been independently verified by traffic consultant Rob Williams, a director of Entran Ltd and well respected by Mark Power of Gloucestershire Highways, from whom the Council has also received valuable advice. The traffic model allows various scenarios to be examined. It shows that development on the scale currently being proposed would cause the A46 traffic queue to extend to the A417 and potentially to the M5. The time it would take to commute into Cheltenham would impose a great economic cost and would make it hard for people living south of the A417 to work in Cheltenham.

Even tighter constraints are imposed by two other factors discussed in Annex 2: the need, confirmed by Mark Power, to prevent any major increase in traffic levels on Church Road during the morning peak period, and secondly the pollution levels on the A46, particularly around the Moorend Park Road intersection, which exceed permitted EU levels. These two factors leave little or no scope for sustainable development on the Leckhampton Green Field Land, particularly when taken in conjunction with the rise in general UK traffic levels from 2015-2025 now predicted by the Department of Transport. LWWH PC has also looked at possible new employment sites around Cheltenham being considered by the JCS to check that these do not materially alter this conclusion.

Under the NPPF a neighbourhood plan cannot be used to prevent sustainable development. Having regard to this, LWWH PC has investigated various options for the size and boundary of the Local Green Space, as described in Annex 2. For the reasons explained in Annex 2, the Council resolved at its public meeting on 25 July 2013 to include all of the Leckhampton Green Field Land in the LGS. This decision has been supported by Shurdington

Parish Council in a draft letter of endorsement which is included at Annex 1 and which Shurdington Parish Council intends to formally ratify at its next public meeting.

This submission seeks to make a positive input into the Joint Core Strategy on the current strategic site allocation and to contribute to the process of updating the Cheltenham Borough Council and Tewkesbury Borough Council local plans to be NPPF-compliant.

This Neighbourhood Planning Concept Plan & Local Green Space application is compliant with the National Planning Policy Framework ^[1] (NPPF) published in March 2012 in policy, both in the definition of sustainability and recognises the importance of the natural environment.

In the Ministerial Foreword to the NPPF, the Rt Hon Greg Clark MP states that in the past communities have been excluded from Planning and that this process must be a creative exercise in finding ways to enhance and improve the places in which we live our lives. The National Planning Policy Framework is a radical change and has introduced neighbourhood planning to positively encourage Parish Councils & Communities to get involved, *‘written simply and clearly, we are allowing people and communities back into planning’*.

[1 - NPPF Ministerial foreword]

- *Sustainable means ensuring that better lives for ourselves do not mean worse lives for future generations;*
- *Our natural environment is essential to our wellbeing, and it can be better looked after than it has been. Habitats that have been degraded can be restored. Species that have been isolated can be reconnected. Green Belt land that has been depleted of diversity can be refilled by nature – and opened to people to experience it, to the benefit of body and soul;*
- *Development that is sustainable should go ahead, without delay – a presumption in favour of sustainable development that is the basis for every plan, and every decision. This framework sets out clearly what could make a proposed plan or development unsustainable.*

These principles, of seeking sustainable development so elegantly defined, together with the protection of the natural environment, have underpinned the development of this Neighbourhood Concept Plan and Local Green Space Application.

The village of Leckhampton is situated to the south of Cheltenham linked to Cheltenham to the north and east by developments along Leckhampton Road. To the west is the Leckhampton Green Field Land and on the south side it borders the Cotswold AONB and the scarp of Leckhampton Hill. The village has retained much of its rural character and this character is greatly valued by residents in the village and also by people in Cheltenham who use the Leckhampton Green Field Land and Leckhampton Hill. The village also has easy access to Cheltenham by foot, bicycle and bus route F every 30 minutes along Leckhampton Road. Crime levels are low and the village has a relatively good, friendly and caring community. The village is very heavily used for many activities. There is an OFSTED outstanding primary school (Leckhampton Primary School) and the village attracts families with young children, although as already noted some then move away to find secondary schooling. The village is mainly residential and has little local employment. Residents commute mainly into Cheltenham, and to Gloucester and locations north and south along the M5 and via the rail services from Cheltenham.

In terms of the three NPPF principles cited above:

1. Leckhampton Village is sustainable, it is a desirable area to live in, as reflected in relatively high local house prices, and it has good local facilities.
2. The local environment is well looked after, particularly by volunteer groups, notably Friends of Leckhampton Hill and Charlton Kings Common, Leckhampton Green Land Action Group (Leglag) and the Cotswold Voluntary Wardens. Cheltenham Borough Council and Leckhampton with Warden Hill parish council also help to look after footpaths and to deal with any litter. Local people take a pride in the area, which has special beauty at different times of the year. The Leckhampton Green Field Fields serve not only the residents of Leckhampton Village but also residents from a radius of about a mile in Warden Hill

and Up Hatherley to the west, in urban Leckhampton and The Park to the north, and in Pilley and Charlton Kings to the east.

3. The South West Regional Spatial Strategy suggested locating 2000 new homes in the area south of Cheltenham. Much of this would almost certainly have fallen on the Leckhampton Green Field Land. The SWRSS was simply gathering as many potential sites for development as it could find and did not appreciate the serious traffic implications discussed in Annex 3. The SWRSS has now been set aside, but its legacy has lingered and there is now a serious risk of damaging unsustainable development slipping through, fostered by pressure from developers eager to exploit the relatively high house prices in the Leckhampton area.

Land at Leckhampton has been the subject of development pressure for a number of years with numerous enquiries. The Inspector considering objections into the Second Review of Cheltenham Borough Local Plan^[3] concluded that, *“development of the objection site would materially harm the rural character and appearance of the area, and the important contribution that this makes to the landscape within the site and when seen from the AONB.”*

In the Cheltenham Borough Local Plan^[4], Second Review, Adopted July 2006, para 7.41 the Inspector’s report was discussed, *‘the Council supports the Inspector’s conclusions and considers that the intrinsic value of the land should be protected as a resource for its recreational, landscape, wildlife and archaeological interest. Any proposals for development within this area will be considered against policies CO 1 (landscape character) and CP3 (sustainable environment)’.*

There is one ancient monument under S.1 of Ancient Monuments and Archaeological Areas Act 1979, the Leckhampton Moated Site to the west of St Peter’s Church and marked by ordinance survey.

A neighbourhood plan is primarily about the use and development of land and buildings. It forms part of the planning for shaping the future of the area, alongside a sustainable community strategy. In modern times Leckhampton has retained its rural character whilst being well connected to the urban centre with good schools, health care and work opportunities within the town and local area. This section reviews some of the main issues and public concerns with large scale development and provides inputs to the neighbourhood planning process.

Roads and commuting: Leckhampton and Shurdington suffer from heavy traffic congestion at peak times on Shurdington & Church Roads; the local network is near capacity. As a direct result, in recent years we have seen a deterioration of air quality on Church Road and now evident on the Shurdington Road with a new monitoring tube added in March 2013. Both monitoring positions in Leckhampton will break the EU limits of $40\mu\text{g}/\text{m}^3$ of Nitrogen Dioxide (NO_2) in some months, this may be linked to a worrying increase in the incidence of respiratory disease at local schools (NHS report and schools nursing organisation). Leckhampton is also the most car dependent ward in Cheltenham as reported by the County Statistics Office.

Both LWWH and Shurdington are mainly residential, with little employment located in the parishes. Residents commute mainly by car. Safer cycling routes would be helpful, but unfortunately the narrow roads, congestion and density of parked cars make this difficult. A more frequent bus service with routes connecting to more parts of the Cheltenham area would be helpful. Unfortunately, however, there is a viability problem in that people will not use buses if there is a long wait for the bus or long delays in changing buses, but providing frequent buses and a rich route network is only feasible financially if the buses are well used. The number 10 bus runs every 10 minutes along the A46 in peak times. Yet it was observed during the traffic surveys along the A46 that very few people seem to be using it to travel to work. The developers proposing to build houses on the Leckhampton Green Field Land have suggested that greater use of the buses could solve the traffic problem. But there seems little hope of inducing significantly more people to use buses. A park-and-ride scheme on the A46 has been considered many times, the width constraints of the A46 make a bus lane impossible. Experience with park-and-ride schemes elsewhere in Cheltenham shows it can be hard to make these really successful even in more favourable locations. Traffic and the link to air quality is a concern on Church Road and along the A46 and this is discussed further in Annex 2.

Increased Flood Risk: Leckhampton and Warden Hill has seen an increasing flood risk due to changes in rainfall patterns compounded by surface water runoff due to the close proximity of Leckhampton Hill and the clay soil conditions south of Farm Lane. Forty five homes were impacted by the floods of 2007 in Leckhampton & Warden Hill and now struggle to get home insurance, the fields flood most winters and are saturated for long periods. Only a minimal flood protection scheme has been put in place on a small section of the Shurdington Road and all proposed new development is on the other side of this barrier.

Health and fitness: Encouraging people to walk more would be beneficial for health as well as traffic congestion. To encourage walking for fitness and leisure, LWWH PC sponsors four walks around the Leckhampton Green Field Land and on Leckhampton Hill and Charlton Kings Common, providing some funding and effort for footpath maintenance. The Council is also developing a website describing local walks to encourage more people to walk in the countryside. The Cotswold Voluntary Wardens and the Ramblers organize regular local walks. The local footpath infrastructure is maintained by the Friends of Leckhampton Hill and Charlton Kings Common (FOLK), by the Cotswold Voluntary Wardens, by the parish councils and by the County Council. The Burrows Sports Field provides facilities for team sports and there are other sports and fitness facilities close by in Cheltenham.

Housing, population balance and employment: Shurdington Parish Council sees a need for a steady trickle of new development in Shurdington Village in order to bring in younger residents and to maintain the balance and

vitality of the community. Leckhampton and Warden Hill on the other hand are much larger communities where there is a natural cycle with generations move in and out. Leckhampton has an outstanding primary school, which attracts families with young children. Whilst major new development is not needed in Leckhampton to keep the community balanced, there is a general problem in Cheltenham of an ageing population. This is due not only to people living longer but also to a net inward migration of people in the over-60 and over-75 age groups and by net outward migration of younger people and loss of local employment. LWWH PC raised this issue strongly in its response to the JCS consultation in February 2012. According to the Cheltenham and Gloucester Connectivity Study Draft Phase 1 Report May 2010, Cheltenham suffered a decline in local employment of around 2% per annum from 2003 to 2008; this requires further study.

Shopping and community facilities: The LWWH area has a thriving shopping centre in the Bath Road as well as supermarkets within easy reach and local shops on Leckhampton Road and in Salisbury Avenue. The village hall in Church Road is very well used and is well supported financially by local people. A large hall is available at Leckhampton Primary School able to take public meetings of over 300 people. More use could also be made of St Peter's Church when it is not being used for worship. St Peter's is sometimes used for concerts and the church cottages provide a room and facilities for small events.

Youth facilities and Unemployment: There are sufficient facilities for youth work. The scout hut in Leckhampton needs major renovation, but this may occur as part of the proposed redevelopment of the adjacent brownfield site. The Brizen Young People's Centre near the Up Hatherley Way roundabout is new and is a good facility that is available for general use as well as for the youth work. The local schools also provide activities. What the area needs is not more facilities but more funding for professional youth workers and more volunteers to help with youth work. The youth work at Brizen Young People's Centre is supported by donations, by revenue from lettings and by funding from LWWH PC. Local churches also fund two professional youth workers serving the south Cheltenham area.

The young unemployed remains a problem, commerce & business enterprise would benefit from closer links with the University and Colleges to improve job opportunities, working on vocational training, job creation in spin out companies and applied research. A large proportion of the town's population have higher educational qualifications and local skills are underutilised.

Maintenance of the local area: With further major austerity cuts coming between now and 2018, the maintenance of the local area and local services will be an increasing problem. The pot-holed state of the roads and the uneven pavements are common complaints from local people and present a risk of injury to cyclists and pedestrians. Dog fouling is a significant local problem; more enforcement is needed, but impossible with the austerity cuts. Littering and dumping are minor problems on the Leckhampton Green Field Land. LWWH PC does occasional litter picks. Litter on Leckhampton Hill is a bigger problem, but the FOLK has frequent volunteer working parties that keep the area pristine. Volunteers also maintain the flower bed at the Leckhampton Road and Moorend Road junction, with funding support from LWWH. In Warden Hill there is strong volunteer activity through In Bloom for Warden Hill maintaining the attractiveness of the area. With the further austerity cuts in the pipeline, more volunteer effort like this is going to be very important.

Agriculture: Leckhampton has been farmed for centuries and local food production will become increasingly important in a renewed drive to transition the UK to a low carbon economy. For every calorie of food produced, modern farming requires up to 10 calories of input energy from the fossil fuels used in fertilizers and pesticides and for powering farm machinery and transporting food over long distances. This energy demand makes the system vulnerable as carbon emission and global warming become increasingly serious. The need to increase the land use for food production will become more important in the coming decades as global warming takes greater affect, with large projected rises in global population (9.1 billion by 2050), and the prospect of soaring food prices, food security will come to the top of the international agenda^[7]. In the last decade the UK balance

of trade in all foods has seen an increasing deficit to -£18.5 Billion (DEFRA AgriStats^[8]) in combined arable and livestock production, an increased deficit of over 120% in just one decade. However, in Gloucestershire there are real opportunities in local fruit and vegetable production, the Countryside & Communities Research Unit reported on county production^[10], *'demand for local produce is high in the county along the entire food supply chain, listing the local grower's name with the produce does differentiate the product and boost sales, as local provenance is increasingly valued'*.

Gloucestershire Food Vision predict an inability to meet local demand of fruit & vegetables, *'an integrated food policy for the people of Gloucestershire'* (Gloucestershire First, 2005), highlighted that there is *'a distinct lack of good Gloucestershire evidence around food related issues'* and that *'research that is distinct to Gloucestershire needs is essential'*. This finding reinforced an earlier observation of the Gloucestershire Food Procurement Strategy Group (2004) that - *'Despite a vast array of products it is well known that Gloucestershire is very heavily focused on meat and dairy items. We would be in short supply to meet the demand for fruit and vegetables. That said, there is no specific evidence base from which to work... we recommend a detailed audit be carried out of every item produced within Gloucestershire.'* There are real economic growth opportunities in local fruit and vegetable production within the county, the Leckhampton Green Land is a valuable agricultural asset.

There is a high demand in Cheltenham for more allotments and this should be encouraged. One objective of the Local Green Space application would be to make more allotment land available and possibly to introduce one or more community-supported agriculture (CSA) schemes. CSAs are already popular in the US, Japan and France. There are many different CSA models but essentially they involve local people buying an interest in a small farm, small-holding or market garden and in return getting a share of the produce. Some CSAs start with a producer looking for local supporters and consumers; others are started by communities forming co-operatives that acquire land and/or glasshouses and produce food on it. Sometimes the effort is all voluntary; sometimes the CSA has employed staff as well as volunteers. CSAs are one of the ideas for enabling the Leckhampton Green Field Land to benefit more Cheltenham people and to help residents connect more strongly to the land and food production. A CSA can also help to build more community involvement and volunteering.

The Leckhampton Green Field Land is substantially grade 2 agricultural land. It has been farmed for over a thousand years and until the 1960s it had thriving market gardens, orchards, small holdings and small farms. These declined as a result of modern intensive horticulture but the prospects are reasonably good that the area could thrive again both through conventional, zero carbon hydroponic farming with research links to both Gloucestershire and Bristol Universities and also through CSAs.

2.1 RESIDENTS VIEW ON THE FUTURE OF LECKHAMPTON

There has been long-term strong opposition from the local residents and other stakeholders to large scale development on the open countryside at Leckhampton and on the adjacent land in Shurdington; this area has been protected by many generations. Many residents now feel that Leckhampton faces the perfect storm, with the absence of NPPF compliant local plans, a push for house building from the coalition government and the myth that the NPPF is pro-build without constraint. However, this is not affecting public opinion, from the numerous exit polls conducted by both LWWH PC and Leglag at developer exhibitions, it has been found consistently that over 90% of people were strongly opposed to large scale development in Leckhampton, the same has been clearly evident in both the JCS Public Consultations.

In November 2012, developer exhibition plans were unveiled for large scale development on the green fields in Leckhampton & Shurdington. Over eight hundred and fifty people attended the three day event, a significant fraction of the total ward residents. The outline plan covered a large 1300 houses development on open farm land & recreational green space which had been designated in the draft JCS as a 'Strategic Site'. Very few people

positively supported the proposals at 26 (3%) with 837 (94%) opposed; this result has been broadly repeated at repeat exhibitions in December 2012 and February 2013.

LWWH Parish Council has also gathered the views of local people about the future of the Leckhampton Green Field Land. Chiefly this was done through a survey at the exhibition held by the developers' consortium on 22 September 2012 to present their initial development proposals for public comment. A total of 183 survey forms were completed by people attending on 22 September. The results showed overwhelming public opposition to development: 79% of respondents were strongly against development, 13% were against, 5% were neutral and only 3% were in favour. The Leglag polls at all three of the public exhibitions and also at two later exhibitions held in 2013 highlighted specific concerns expressed by residents in the survey: loss of the green fields (74%); effect on the view from Leckhampton Hill (66%); shortage of secondary school places (49%); traffic congestion generally (37%); traffic congestion at specific locations as follows - Church Road (46%), A46 (40%), Farm Lane (35%), Moorend Road (26%); NHS cuts, hospitals and care (33%); flooding (21%); protecting wildlife habitats (10%). Issues that did not provoke as much concern as might have been expected were: need for affordable housing (2%); crime (2%); effect of large scale development on local house prices (2%).

In another public consultation, two thousand local residents signed the Leglag petition to protect the Leckhampton land from inappropriate development and to make the land into a designated 'Cheltenham Country Park'. This proposal is, by their words, being taken seriously by Cheltenham Borough Council, but quite what a 'country park' means is not certain. It does not mean leaving the land in its present state. There may be some small scale development but of a form consistent with a park, and probably improving the beauty of some of the fields and streams, especially those north of Kidnappers Lane. It also envisages maintaining the rural feel; it would not be the same as a town park.

The 'country park' is a good basis for an NPPF Local Green Space (LGS) application since it is already well supported by local people and contrasts with the more formal town parks in the centre and north of the town. The land has been used for arable farming and grazing cows & sheep for centuries, has been safeguarded in local plans and large scale development has consistently failed sustainability test. It should now be possible to implement an overall plan for a NPPF LGS covering not only the Leckhampton land within LWWH parish but also within Shurdington.

Since 1970, there have been repeated applications from developers to build on the Leckhampton fields and all have been rejected on sustainability grounds and on the proximity to the Cotswolds AONB. The vast majority of local people would be very happy to see this situation continue, people who were originally attracted to this area simply due to its rural character. However, there is now an unprecedented pressure from developers to build on the land and it would be a high risk to assume that planning approval will be refused in a reinterpretation of the evidence. The result of the recent planning appeals in Bishops Cleeve has demonstrated that the Parish Council needs to have a positive plan for using the land, otherwise, it could get designated for high density housing by default. We need the Leckhampton land to be identified in the local plan as a strategic site not for development but valued for food production, recreation for the wider town population and for the rich natural environment.

The Joint Neighbourhood Forum has carefully considered many alternative uses of the Leckhampton open countryside adjacent to the Cotswolds AONB. Leckhampton with Warden Hill Parish Council, as the lead Council for this work, now formally submits this application for a NPPF Local Green Space as part of the joint neighbourhood planning to Cheltenham and Tewkesbury Borough Councils. The area of the proposed Local Green Space is detailed in the maps of Appendix 1.

One of the core planning principles of the NPPF ^[1] is to “take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it.”

Leckhampton with Warden Hill Parish Council submit this Local Green Space application in accordance with Paragraphs 76-78 of the NPPF ^[1] :

76. Local communities through local and neighbourhood plans should be able to identify for special protection green areas of particular importance to them. By designating land as Local Green Space local communities will be able to rule out new development other than in very special circumstances. Identifying land as Local Green Space should therefore be consistent with the local planning of sustainable development and complement investment in sufficient homes, jobs and other essential services. Local Green Spaces should only be designated when a plan is prepared or reviewed, and be capable of enduring beyond the end of the plan period.

77. The Local Green Space designation will not be appropriate for most green areas or open space. The designation should only be used:

- *where the green space is in reasonably close proximity to the community it serves;*
- *where the green area is demonstrably special to a local community and holds a particular local significance, for example because of its beauty, historic significance, recreational value (including as a playing field), tranquillity or richness of its wildlife; and*
- *where the green area concerned is local in character and is not an extensive tract of land.*

78. Local policy for managing development within a Local Green Space should be consistent with policy for Green Belts.

Protecting Green Belt land

79. The Government attaches great importance to Green Belts. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence.

The NPPF contains specific policy to protect our Natural Environment and recognises the importance of both accessible green space for our wellbeing and to maintain or restore biodiversity and habitat:

[NPPF Ministerial Forward]

Our natural environment is essential to our wellbeing, and it can be better looked after than it has been. Habitats that have been degraded can be restored. Species that have been isolated can be reconnected. Green Belt land that has been depleted of diversity can be refilled by nature – and opened to people to experience it, to the benefit of body and soul.

On Sustainable Development, again the NPPF is very clear:

[NPPF Achieving sustainable development p2 – KEY OBJECTIVE]

International and national bodies have set out broad principles of sustainable development. Resolution 42/187 of the United Nations General Assembly defined sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs. The UK Sustainable Development Strategy Securing the Future set out five ‘guiding principles’ of sustainable development: living within the planet’s environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; promoting good governance; and using sound science responsibly ^[1].

And setting out an important environmental role ^[1] – *contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.*

The following NPPF core planning principals add the detail lend support to Neighbourhood Planning and to this Local Green Space application ^[1] Para 17 bullets 1, 6, 7, 8 & 10

- *be genuinely plan-led, empowering local people to shape their surroundings, with succinct local and neighbourhood plans setting out a positive vision for the future of the area. Plans should be kept up-to-date, and be based on joint working and co-operation to address larger than local issues. They should provide a practical framework within which decisions on planning applications can be made with a high degree of predictability and efficiency;*
- *support the transition to a low carbon future in a changing climate, taking full account of food risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy);*
- *contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies in this Framework;*
- *encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value;*
- *conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations; take account of and support local strategies to improve health, social and cultural wellbeing for all, and deliver sufficient community and cultural facilities and services to meet local needs.*

The NPPF on green space used for recreation.

74. Existing open space, sports and recreational buildings and land, including playing fields, should not be built on unless:

- an assessment has been undertaken which has clearly shown the open space, buildings or land to be surplus to requirements; or
- the loss resulting from the proposed development would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or
- the development is for alternative sports and recreational provision, the needs for which clearly outweigh the loss.

Section 11 of the NPPF on ‘Conserving and enhancing the Natural Environment’, has been extracted in full for reference; please see Appendix 2.

The Department of Communities and Local Government have provided some important guidance on the application of the NPPF and dispelled some of the myths:

Response from the Department of Communities & Local Government (DCLG) on the NPPF ^[1]

There is a myth being promoted that the NPPF is a developer's charter, this is simply not true. From the birth of modern planning in 1947 there was a presumption in favour of development. This was turned into a plan-led approach in 1991. The presumption in favour of sustainable development carries forward this emphasis on positive planning, while reinforcing the primacy of the democratically produced local plans. Where plans are not up-to-date, the strong national policies we have set out provide a robust framework for making decisions, safeguarding the things matter like the Green Belt and areas at risk of flooding.

The presumption is not a green light for development. All proposals will need to demonstrate their sustainability and to be in line with the strict protections in the Framework. Strong environmental safeguards remain as part of the planning system, including protecting communities and the environment from unacceptable proposals. The Presumption is principally about good plan making. Once a local plan is put in place local decisions should be made in line with that plan.

The Framework puts local people in the driving seat of decision making in the planning system. Communities will have the power to decide the areas they wish to see developed and those to be protected, through their Local Plan. Once a local plan is in place which has the support of the local community that is what will drive decision making.

The Framework puts local people in the driving seat of decision making in the planning system. Communities will have the power to decide the areas they wish to see developed and those to be protected, through their Local Plan. Once a local plan is in place which has the support of the local community that is what will drive decision making.

Green Belt, Areas of Outstanding Natural Beauty and other designated land will retain the protections they enjoy today. In addition communities will be given a new power to protect locally important green spaces which are a vital part of residents' quality of life. Rather than imposing targets or blueprints from above, this Government is changing things so local people and their councils decide for themselves where to locate development and how they want their local area to grow. Development will need to be sustainable and not in breach of the framework's environmental protections.

The new framework re-affirms the Government's commitment to maintaining Green Belt protections that prevent urban sprawl. Inappropriate development, harmful to the Green Belt, should not be approved. Legislation will also remove the top down pressure on councils to build on the Green Belt.

DCLG National Planning Policy Framework Myth-Buster Thursday, 08 September 2011

[NPPF Para 73]

Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities^[1]. Planning policies should be based on robust and up-to-date assessments of the needs for open space, sports and recreation facilities and opportunities for new provision. The assessments should identify specific needs and quantitative or qualitative deficits or surpluses of open space, sports and recreational facilities in the local area. Information gained from the assessments should be used to determine what open space, sports and recreational provision is required.

The green space within Leckhampton is absolutely of local significance for its aesthetic and recreational value, a fairly flat area of rolling grassy fields bounded by hedgerows and with the Hatherley Brook & Moorend Stream traversing the area. This area of natural green space is therefore accessible to a range of people of differing physical abilities (e.g. families, the disabled, children and the very elderly). It has historically given a characteristic rural charm to Leckhampton which was once a homestead which grew into a village. The land with its riverine corridor and numerous hedgerows and lines of trees provides habitat for a variety of bird species typical of rural landscapes, as well as bats, amphibians and numerous small mammals. The open semi-improved

fields of tall tussocky grassland provide habitat for reptiles, badgers and birds such as skylarks, which prefer open habitat. There are numerous mature trees, especially oaks scattered throughout the fields, which provide additional character to the area. The green space also acts as a sponge and soaks up the large amount of water which runs off Leckhampton hill, without which many parts of the area, especially land to the south of Leckhampton (e.g. Warden Hill) could be flooded during periods of high rainfall, which is now becoming increasingly frequent.

3.1 THE HISTORY OF LECKHAMPTON

It is important to understand the history of Leckhampton in order to assess the merits of this Local Green Space application; an understanding of what shaped Leckhampton will hopefully guide future decisions. What is it about Leckhampton that makes it more than just an extension of Cheltenham?

The Anglo-Saxon name and its listing in the Domesday Book establish the settlement's identity. Today the following are visible characteristics of a village which for most of its existence has been not only physically separate from Cheltenham but also independent in outlook:

St Peter's church	St Philip & St James's church
Leckhampton Court	the remains of the Moat
a few thatched cottages	some stone-built farm houses
Leckhampton Hill	the Devil's Chimney and quarry workings
the Village Hall	the war memorial
the Parish Reading Room	the Delancey Hospital (frontage has been retained)
the 'horse's grave'	Tower Lodge
the rural character	the protected glebe & county land

The name Leckhampton was first recorded in the 9th century, when the settlement was the home farm for the royal manor of Cheltenham. The word is now generally considered to mean, '*homestead where leeks (meaning any kind of vegetable) are grown*'. Indeed, market gardening still thrives on the fine alluvial soil of the valley, while traces of earlier ploughing can still be made out in the ridge and furrow patterns on the lower slopes of the hill, now used for grazing.

The medieval village was close to both court and church. That earlier layout is indicated by a row of 17th-century thatched cottages - 'Moat Cottage,' 'Field Cottage' and 'Sheeps Head Row'. These probably follow the line of an old track and lie at right angles to Collum Street (now Church Road), where there are or were a few other timber-framed cottages, including the so-called 'Cromwell Cottage', demolished in 1962.

The historic parish, both civil and ecclesiastical, was comparatively large and extended from the prehistoric camp on the hill top down as far as Warden Hill - not the same as today's electoral division or the postal district. It was sparsely inhabited until early in the 19th century and its land was largely devoted to agricultural use. Such industry as existed occurred on the periphery, and some artisan dwellings near the top of Old Bath Road and in Pilley housed quarrymen and brickmakers. In general it was not until the mid- to late 19th century that new housing began to spread up the hill from the Norwood Arms, in addition to a few scattered villas occupied by the gentry.

In the Domesday Survey of 1086 two manorial estates (at least) were listed under the heading of Leckhampton. One was probably centred on an island surrounded by a moat. Some of the latter is still recognisable, though much overgrown with trees, beside the rectory; older inhabitants recall being able to skate on its frozen surface!

When the moat was excavated in 1933, traces of a stone building were uncovered, with access by a bridge and a fortified gateway dating from probably the 14th century. Some 16th-century floor tiles were also found. Later the building evidently fell into disuse, and an 18th-century map shows trees growing on the site. A new manor house was built behind the present rectory, serving as a farmhouse until early in the 19th century. This was eventually demolished, some clumps of nettles betraying its former location until these were ploughed over in the 1980s. The moat itself may have much older origins and is comparable to numerous other sites to be found at the foot of the Cotswold escarpment.

The other manor, whose administrative centre will have been on the site of Leckhampton Court, was more powerful, and in due course absorbed the first-mentioned estate. The Court itself, one of the oldest non-religious buildings in the county, was saved from dereliction 20 years ago and very sympathetically restored by the Sue Ryder Foundation. The oldest part, the 14th-century banqueting hall on the east side, has now been converted into a chapel. The south wing, with its half-timbering, is Tudor - the date '1582' is carved over a doorway - as is the section at the end of the north wing, with its twisted brick chimneys. In 1732 a fire destroyed the central part of north wing, which at first was partly filled in by a 3-storey Georgian house. This was demolished at the end of the 19th century and replaced by the north wing, whose 'Tudorbethan' facade is what passers-by now see from Church Road.

From the early 14th century onwards the title to the manor of Leckhampton was held for nearly 600 years by a succession of three interrelated families: the Giffards, Norwoods, and Tryes. All produced men and women of distinction as well as benefactors to the local community. Sir John Giffard, d. 1330, was the first builder of the Court - and of the church, where he and his wife are commemorated by carved effigies. When Eleanor Giffard married John Norwood in 1486 the tenure passed to the Norwoods. The 16th-century William Norwood (whose portrait hangs in Cheltenham Art Gallery) was probably the most distinguished. He was MP for Gloucester, and Lord of the Manor of Cheltenham through his marriage to Elizabeth Lygon, to whom he dedicated a fine memorial brass in the church.

The Trye family's fortunes relied heavily on income from the quarries. The demand for stone declined in the 1880s, and in 1894 it was decided to sell off the estate by auction. This was effectively the end of the old order for Leckhampton, whose status was in any case being eroded; in the previous year a large area in the north-east of the parish had been incorporated into Cheltenham Borough.

The fortunes of St Peter's church and its incumbents are closely linked to the Court. The lords of the manor were patrons until 1903; later that rôle was assumed by the Bishop of Gloucester. No religious house is mentioned in the Domesday Survey, but in 1133 Henry I endowed the Canons of Cirencester Abbey with the church at Cheltenham and its attached chapels. One of these must have been at Leckhampton, for in 1162 its priest, Henry by name, was summoned before Archbishop Thomas-à-Beckett in a dispute over payment of dues to the Canons of Cirencester. Henry was found liable and fined two shillings.

In the churchyard the earliest identified burial dates from 1670, and the oldest person to be interred was Richard Purser, who died in 1868, aged 111. There are also graves of numerous Victorian generals and men who had influential careers in India, in the army, civil service or as planters. Three holders of the Victoria Cross have memorials, as does Dr Edward Wilson, who died on Scott's Antarctic expedition. Baron de Ferrières, a great benefactor to Cheltenham, is buried there, and two stained-glass windows are dedicated in his memory.

Several of the parish priests were members of the Norwood or Trye families. Notable among these was Charles Brandon Trye, son of the surgeon of the same name, who held the post for 58 years, from 1830 to 1888. He was responsible for a number of improvements for the public good: not only the moves to enlarge the church in 1834 and 1866, but also the building of the National School in about 1840 (now used as the canteen) and of the

present rectory. He was a moving force behind the creation of a daughter church to cater for worshippers in the Park and Naunton areas. The church (originally just 'St Philip's') was dedicated on St Philip and St James's day in 1840; it became a parish church in its own right in 1869 and the present larger building, designed by Middleton, replaced it in 1882.

Over the period 1894 - 1906 Leckhampton Hill was the focus of a significant episode with wider implications in the history of Cheltenham. This was the struggle to protect traditional rights of way across the hill, which its new owner H J Dale proposed to close to the public. He built a house ('Tramway Cottage') for his quarry foreman in an old gravel pit beside Daisybank Road, which had been a favourite spot to set up side-shows and stalls on bank holidays. The building also blocked the main footpath up the hill, and later the area above it was also fenced off. There was much local opposition, not least from R C Barnard and other gentry, whose homes backed on to the hill. In 1902 Miss Beale, Headmistress of the Ladies' College, whose pupils were wont to visit the hill for recreational walks, retaliated by sending 100 of her girls to walk over the rights-of-way and by ordering Dale to remove all of his pianos from her establishment!

On several occasions crowds destroyed fences which Dale had had erected. In 1902 four working men, who came to be known as 'the Leckhampton stalwarts', were charged with obstructing the police, they were acquitted, with Ballinger's remaining as a test case. This encouraged as many as 2000 people to gather and walk in procession to Leckhampton. They stopped at the Malvern Inn to hear a rousing speech. They then made for Tramway Cottage, which they dismantled until hardly a stone was left standing. The long awaited trial, 'The Leckhampton Quarries Co. v Ballinger & Cheltenham Rural District Council began in London before Mr. Justice Eady on 29th April 1904. The trial lasted till 12th May and was daily reported verbatim in the press such was the public interest. The judge found in favour of Dale's enclosure and only three paths were granted as public rights of way, court costs totalled £6,000. However, Cheltonians put on a brave face and big victory demonstrations took place on the 25th May 1904. The Chronicle & Graphic issued six halfpenny postcards of the scenes, one showed Clarence Parade solid with people end to end.



The Leckhampton Stalwarts on the ruins of Tramway Cottage, the picture was taken in the summer of 1904 by Miss N. Moorman in the early morning before work at 6am, Left to Right: Lane, Townsend, Barrett ,____, Luce, Tom Field, Ballinger, Heaven, Price (seated), Sparrow, Burford, Mourton & George Richings, determined men, what would they say 100 years on ...

Dale rebuilt the cottage exactly where it had been. On Good Friday 1906 another crowd assembled at the site and the Riot Act had to be read. Arrests followed and eight men were tried at Gloucester Assizes. Sentences of up to six months' hard labour were imposed, though these were substantially reduced on appeal. Leckhamptoners licked their wounds, and Dale imposed many conditions for access to the hill.

The story had a happy ending, however. By 1929, the Quarry Company had gone out of business and Cheltenham Town Council was in a position to purchase the 400-acre estate, the price was £6,500 thus securing the freedom to walk on the land. The dream had come true at last, and there was never a doubt that the decision to buy was right. Councillors enthusiastically marched over the hill and were amazed at the extent of the property, the whole escarpment from Salterley to the far end of Charlton Common, with 300 acres of agricultural land above and below; one of those Councillors was Walter Ballinger.

In a sense, today's successor to the 'Stalwarts' is the Leckhampton Green Land Action Group (LEGLAG), which acts, in a strictly law-abiding way, to conserve and protect local rights. That is a reminder that Leckhampton's history is still in the making. In recent years, for example, we have witnessed the closure of the Malvern Inn, pressure to build more houses, and moves to plant trees on part of the hill. It is for a later generation to assess these developments in truer perspective.

3.1.1 THE FIELDS BENEATH

The history of Leckhampton, like that of so many other once rural parishes, is deeply rooted in the land and in the field systems on which, for centuries, its very existence depended. Changes were slow to evolve and, for the most part, life in the fields and village went on largely unaltered, reflecting only the ebb and flow inherent in the rhythm of the seasons.

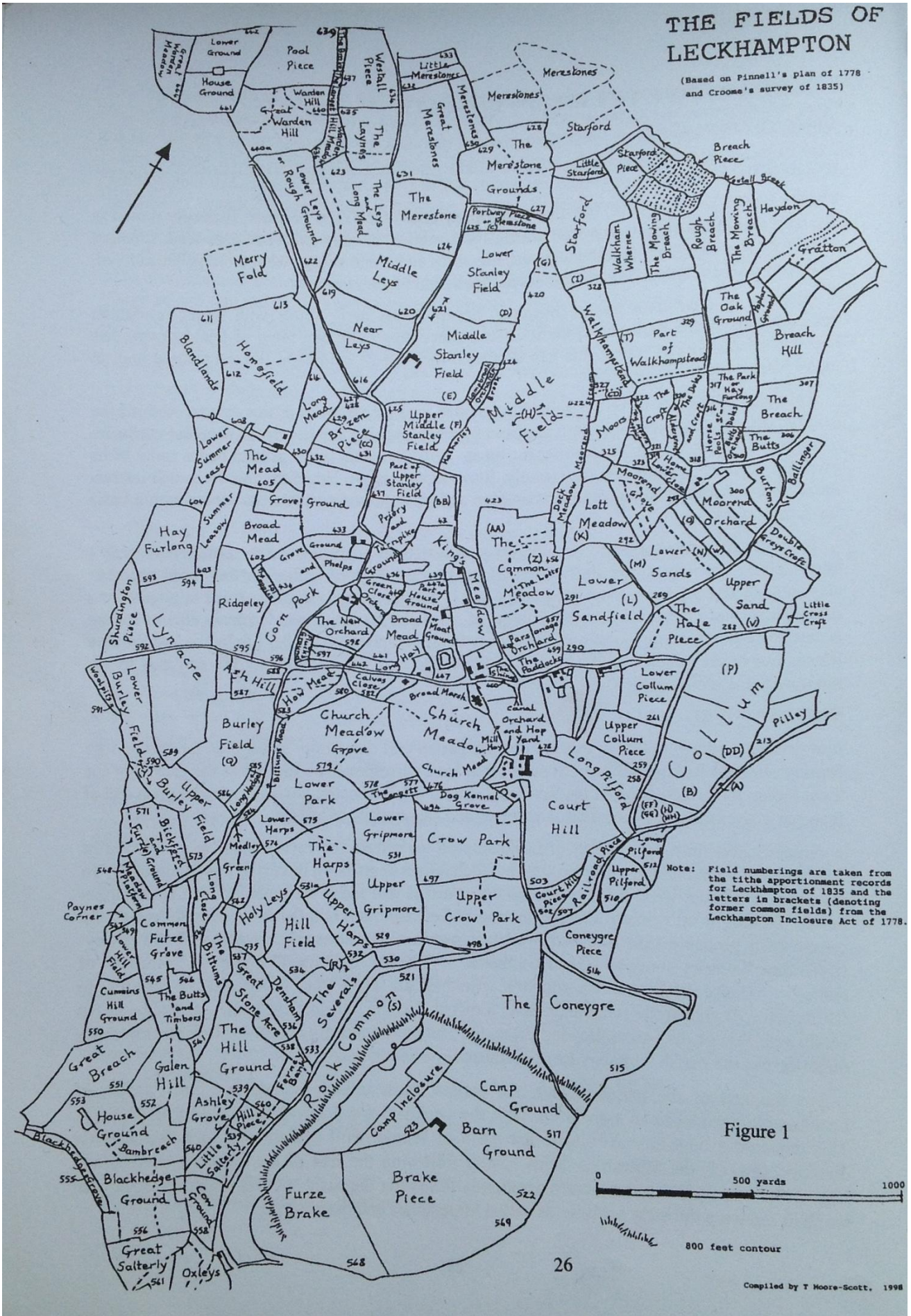
Change of a different nature, however, began in the early 1800s with major residential developments in the Park and Gratton estates. Since then more and more of Leckhampton has become urbanised and where this has happened the ancient landscape lies submerged and, in many places, totally obliterated.

It may come as a surprise to many that at one time virtually every piece of land under cultivation in Leckhampton had a name of its own, given to it by those who lived by the land itself and used by them in their everyday language. In all, and discounting alternative spellings, well over 200 fieldnames are known for Leckhampton and recorded in a variety of documentary sources. The majority are provided to us by land surveys and estate plans of the 18th and early 19th centuries, but some date back much further to between the 12th and 15th centuries [6]. Some of these earlier names are clearly of ancient origin and may derive from even Saxon times.

The map below shows the layout of named fields and field boundaries much as they would have been around about the end of the 18th century; it also shows the parcel number(s) for each piece of land as allocated systematically by Croome in 1835.

THE FIELDS OF LECKHAMPTON

(Based on Pinnell's plan of 1778 and Croome's survey of 1835)



The first great open fields in Britain are generally believed to have been laid out during the 8th and 9th centuries in response to various demands at the time, not the least of these being population increase and growing

demands for royal and ecclesiastical taxation. Development of the more efficient heavy plough would also have been a factor especially in areas of heavy clay soils. At that time, every manorial estate was in two parts: the lord's demesne, or the manorial home farm (which could be a separate part of the manor or intermingled with the lands of tenants in the open fields) and the land let out to tenants (villeins and bordars).

The open or 'common' fields were broad unenclosed areas of land divided into smaller areas known as 'furlongs' or 'shots' which in turn were subdivided into around a dozen parallel strips, each one running the full length of the furlong and held by diverse individual tenants. These strips were known as acres, ridges or lands ^[10].

It is clear from written records of land ownership in Leckhampton that even in the mid to late 17th century, within any one open field, varying amounts of land could be held by a number of different owners or tenants, including both manors in the parish as well as the rectory (glebe land). For example, one open field known as Burley is recorded about that time as containing two acres of arable land belonging to the second manor (then held by the Partridges of Wishanger) and also one 'small arable land or butt' of about a quarter of an acre belonging to the rectory ^[11].

As consolidation of holdings in these open fields took place and landowners began to seek greater independence to cultivate as they wished, the fields gradually became enclosed but this process did not start until around the 14th century. The fact that the Merestones and Starford fields lay on both the Leckhampton and Cheltenham sides of the parish boundary points to at least these open fields existing prior to the setting of the boundary and its related 'mere' stones around the 9th or 10th century. From this, one may reasonably conclude that the lands under cultivation in Leckhampton at the time of Domesday consisted primarily of such open fields.

For evidence of the actual extent of the original open fields in Leckhampton, one has to rely on later sources. Prominent among these is the schedule accompanying the 1778 Act of Inclosure for Leckhampton in which formerly common fields were designated by letters as distinct from numbers which were used for those fields already enclosed. Crow's plan of 1746 is also useful since it indicates where land was still being cultivated in unenclosed narrow strips. Individual fieldnames can provide a clue ^[12] and occasionally a record will go so far as to refer to a field as 'common' or 'formerly common' land.

From such detail, it can be deduced that Leckhampton once contained at least eight, possibly nine, open fields. Beginning in the north of the parish, these were; Merestones, Starford, Stanleyfield, Walkhampstead, Middle Field, Sandfield, Collum Field, Burleyfield and Hillfield.

Many, if not all, of these open fields would have existed in the 11th century when Domesday was compiled; those like Middlefield, Starford, Walkhampstead and the aptly named Sandfield may have been the first to be exploited because they lay on the more easily farmed sandy soil, although by medieval times and the advent of the heavier plough to England, the more fertile clay soil would have been preferred ^[21].

While some conversion of the open fields in Gloucestershire may have been underway from as early as the 14th century, it has been suggested that, compared to other parts of England, enclosure of fields in this county began relatively late ^[25]. Leland, travelling through the county in the early 16th century, was able to say that conditions in Gloucestershire were still very largely 'in champion', that is in open field. By the end of the 18th century substantial areas of land in Leckhampton were already enclosed since, according to the 1778 Inclosure Act, the area of common fields remaining in the parish was little more than 343 acres, barely a fifth of the total available ^[30].

The 1778 Act of Inclosure for Leckhampton [31] states its purpose as 'an Act for dividing and inclosing the Open Common Fields, Common Meadows and Pasture Waste Grounds and other Common Lands in the Parish of

Leckhampton, in the County of Gloster; and several small parcels of the said fields which extend into the Parish of Cheltenham' [32]. All these acts had the same basic purposes: to implement and legally register the change from ancient methods of land usage by once and for all extinguishing common rights over a piece of land; to appoint commissioners to survey the relevant land and allocate parcels or blocks to different owners in compensation for the loss of scattered strips and rights of common pasture they had previously held in the open fields; and finally to require the new owners to plant and maintain adequate hedges and roads.

The Act was apparently promoted by the Earl of Essex, who at the time held the impropriation (and was thereby entitled to the tithes) of the rectory of Cheltenham. In addition to the Earl (whose holding of common land was only 8 acres), other persons then holding significant common rights in Leckhampton were:

Henry Norwood Esq (lord of the principal manor of Leckhampton), 82 acres.

Edward Draper (rector of the parish church and as such entitled to certain glebe lands and tithes), 160 acres - with some tithes in kind (i.e. wheat or barley) continuing to be paid on certain properties.

Richard Critchett Esq (who had become lord of Leckhampton's other manor in 1766), 28 acres.

Abraham Wallbank (who had acquired the so called Iles (or Berry) estate and farm (today's Leckhampton Farm), 26 acres.

The Act further provided for:

- the rector's power to lease out land
- the setting out of roads
- the laying together of small allotments
- the removal of trees, hedges etc.
- the leaving of convenient gaps in fences and inclosures, for a period of twelve months, for the passage of cattle, carts and carriages (specific mention being made of 'the new road to be used in place of the road or way to Birdlip and Cirencester')

Thus came to an end in Leckhampton a system which had existed in some form since at least Norman times. The theory behind such changes was that the way would become open for leading landowners of the parish to modernise their land husbandry and increase productivity to meet the growing demands of an increasing population. The lord of the manor and the incumbent of the parish church would receive sufficient compensation for the loss of common land rights and tithes while the more lowly copyholders (the 'deserving poor') would find their new plots easier to work than the scattered strips in the open fields. The 'undeserving poor', in their tumbledown homes, would be better off being compelled to work more regularly for an employer

[33]

3.2 LECKHAMPTON ECOLOGY, WILDLIFE & HABITAT

The open countryside at Leckhampton is now under immediate threat of large scale development, a re-run of past events seemingly locked into a ceaseless cycle. The area under threat is of immense value to wildlife, biodiversity and the people of Cheltenham; this we will try to demonstrate.

The green fields around Leckhampton comprise a collection of semi-improved grassland meadows, several traditional orchards and small holdings bordered by numerous species-rich hedgerows and trees composed of native species (many of which are mature), with two streams traversing the area. Many of the hedgerows are ancient and date back before Enclosure, in the doomsday book of 1086 the settlement was divided among three landowners and recorded as Lechametone, meaning 'homestead where garlic or leeks were grown'. These rich habitats provide a refuge for a variety of wildlife as frequently recorded by local residents; and were validated these have been catalogued and added to the county database.

A data search from the Gloucestershire Environmental Records Centre revealed numerous wildlife records, including many protected species or those of conservation concern, within the site and close proximity: Willow warblers, Blue tits, Great tits, Cuckoos, Goldfinches, Yellow hammers, Starlings, Song thrushes, Siskins, Redwings, Mistle Thrushes, Kingfishers, Kestrels, Greenfinches, Adders, Grass snakes, Hedgehogs and Badgers.

In the JCS Sustainability Appraisal - C6 Land to the South of Cheltenham, the area was described as, *'intimate rolling landscape, predominantly pastoral with improved and semi-improved pasture. Good hedgerow condition, and good proportion of orchard many displaying old over mature Peary pears. Good number of parkland trees and many veteran oaks along with other species. Small pockets of woodland dotted around the site. Area around Leckhampton displays unusual land use pattern with many small holdings, orchards and allotment/market gardens. Good brookline and associated tree cover. Overall this area displays a good mosaic of habitat types which could make mitigation difficult. The dominant land use is grazing, which has potentially higher ecological value in comparison to more intensively managed agricultural land. The impact of development would be negative'*.

Hedgerows and traditional orchards are listed as Priority Habitats under the UK Biodiversity Action Plan (BAP) and the preservation of these habitats within the site is therefore promoted. The current large scale development proposals would result in the loss of the old orchards and the associated species assemblage of plants and wildlife that has developed over the years. It is therefore recommended that the orchards be preserved and enhanced rather than destroyed and new ones planted elsewhere with the resulting loss of associated ecological features. The site contains numerous species-rich hedgerows and many of the hedgerows are important under the Hedgerow Regulations 1997. The development will result in the loss of several species-rich hedgerows and hedgerows designated as important under the Hedgerow Regulations 1997. The hedgerows contain a mixture of native species of trees and shrubs and provide habitat for foraging and shelter for a variety of species including bats, dormice, woodmice and other small mammals, slow-worms, grass snakes and a variety of bird species, some of which are of conservation concern.

During a LEGLAG bat walk this summer, several soprano and common pipistrelle bats were recorded flying along the hedgerows bordering Lott Meadow and Kidnapper's Lane, a bat roost was found in a mature oak in Lott Meadow. More comprehensive bat activity transects have been undertaken by Hankinson Duckett Associates in 2010 and 2011, which recorded the following species:

- Common pipistrelle
- Soprano pipistrelle
- Noctule
- Natterer's
- Whiskered/ Brandt's bats

Most activity was recorded along linear features (hedgerows and tree lines etc.) especially those associated with tree lines/streams running north-south. Noctule and soprano pipistrelle bats are listed as a Priority Species under the UK

Biodiversity Action Plan (UK BAP). The hedgerows not only provide valuable commuting routes for all bat species, but two hedgerows at the western end of the site support non-maternity summer roosts for pipistrelle and Natterer's bats (Hankinson Duckett Associates 2011). As all bat species are protected from deliberate killing, injury and disturbance and their roosts are protected from damage or destruction under Conservation of Habitats and Species Regulations 2010 and Wildlife and Countryside Act 1981(as amended) it is vital that these hedgerows be retained and strong artificial lighting along bat commuting routes be avoided.

The fields contain a number of mature trees, many of which have Tree Preservation Orders, and provide suitable features for roosting bats and therefore the area should be protected from development. For example, during an organised bat walk this summer, a common pipistrelle bat was recorded using one of the mature oak trees in Lott's Meadow as a roosting site. The bat surveys undertaken during 2010 and 2011 by Hankinson Duckett Associates recorded the majority of roosting sites for various bat species in the northern and southern ends of the site. These included:

- A small summer non-maternity roost for Natterer's and pipistrelle bats within ash trees on the north-west and north-east boundaries respectively;
- A small non-maternity summer roost for common pipistrelle bats in the old water tower on the southern edge of Berry's Nursery land adjacent to Lott's Meadow;
- And an unconfirmed noctule roost within trees associated with the Hatherley Brook.
- The badger survey recorded low levels of badger activity within the site and two active badger setts within the western part along Hatherley Brook (Hankinson Duckett Associates 2011). Over half the areas of highly suitable habitat for badgers (i.e. land to the east and west of Farm Lane) are targeted for development in the proposals. Badgers and their setts are protected under the Protection of Badgers Act 1992 and again the area should be protected from development, with longterm protection given to the setts and areas of good foraging habitat in the development proposals.

The reptile survey undertaken by Hankinson Duckett Associates in 2011 reports a maximum count of eight slow-worms on any one occasion within the Leckhampton site, which constitutes a medium population of slow-worms. Local residents have reported one or two slow-worms in the field by the footpath on the east side of Kidnapper's Lane. The highest numbers of slow-worms were located in the north-eastern part of the site where the largest area of highly suitable slow-worm habitat is situated (Hankinson Duckett Associates 2011). However, this area is proposed for development as are other areas of good slow-worm habitat. Considering the limited degree of success of reptile translocations and the length of time needed for other less suitable areas of retained habitat to develop into really good slow-worm habitat, it would be advisable to retain the area of good habitat where the majority of slow-worms were found. All reptile species are protected from deliberate killing or injury under the Wildlife and Countryside Act 1981 (as amended) and slow-worms are a UK BAP Priority Species. It is also possible that the slow-worm population size may have been underestimated as only six instead of the recommended seven surveys were carried out and a proportion of the reptile refugia were constantly disturbed by people, dogs and cattle thereby reducing the likelihood of reptiles using them and hence the number of reptiles recorded.

The wetland areas provided by the two streams and associated vegetation traversing the site provides suitable habitat for grass snakes and amphibians. Grass snake and common toad are Priority Species under the UK BAP, the grass snake is protected under the Wildlife and Countryside Act 1981. These wetland areas also provide some habitat, albeit sub-optimal for water voles, which are fully protected from intentional killing, injury or capture and their places of shelter are protected from intentional or reckless damage, obstruction or destruction under the Wildlife and Countryside Act 1981 (as amended) and they are listed as a Priority Species under the UK BAP.

Several species of birds of conservation concern listed under the RSPB Red List were recorded on the site during the breeding bird surveys undertaken by Hankinson Duckett Associates in 2011, including skylark, song thrush, house sparrow and linnets, as well as 11 species listed under the RSPB Amber List. The loss of the orchards and hedgerows will reduce the available habitat for song thrush, house sparrow and linnets; while the loss of the semi-improved fields will result in a loss of habitat for skylark which require large areas of open space to nest thereby preventing further use of the fields by breeding skylark. While two breeding pairs were recorded within the site (Hankinson Duckett Associates 2011), as progressively more grassland fields are built on across the county and the UK, the available habitat for this declining species is diminishing with negative consequences for their long-term survival. Hence the pressing need to preserve areas of natural green open space such as the fields south of Leckhampton in order for the long-term survival of this species.

In a recent organised dawn chorus walk over the Leckhampton fields with local ornithologists Tony & Frances Meridith on the 11th May 2013, the group were amazed to witness four buzzards circling overhead at Kings & Lott Meadow, they have nested in some big oaks by the small holdings or the old Middle Field; this demonstrates the health of the ecology of the area more than any words. Other birds recorded that morning, some of these species are of Conservation Concern, being Red/Amber listed (ref JNCC, BTO, RSPB.2009 - Birds of Conservation Concern 2009, RSPB: Gold Finch, White Throat, Linnet, Black Cap, Jackdaw, Starling, Wren, House Sparrow, Wood Pigeons, Blackbird, House Martin, Swallow, Chiffchaff, Song Thrush, Robin, Grey Heron, Dunnock, Sky Larks, Bull Finch & the ubiquitous Crows & Magpies. Unfortunately it was reported on that walk that Sky Lark nesting sites have been destroyed on White Cross Green, first the grass near the hedgerows had been raked followed by heavy roller; this was not the work of the local farmer, Mr Kincart who uses that field for grazing.

In the DEFRA Biodiversity 2020, a Strategy for England's Wildlife and Ecosystem Services, Caroline Spelman, Secretary of State for Environment, Food and Rural Affairs describes the importance of preserving the environment, the important role of the public and speaks from the heart. *Biodiversity is key to the survival of life on Earth. Its loss deprives future generations of irreplaceable genetic information and compromises sustainability. Government will play an important role but can't deliver this strategy alone. Our conservation charities, supported by millions of members of the public and volunteers, already make a vital contribution in protecting biodiversity. Equally, farmers and landowners have a central role to play as the stewards of England's countryside. We fully recognise the importance of people in helping to arrest the loss of species. We must ensure that the value of nature's services is better understood and enhance people's personal connection with wildlife and nature. Ultimately, conservation efforts can only truly succeed with society's support;* exactly the goals we have set ourselves here in Leckhampton.

One of the actions in the DEFRA Biodiversity 2020 challenge is to setup a completion to support the creation of Nature Improvement Areas ^[1], this would be an excellent way of Cheltenham getting involved in the programme. Other actions include:

- *Working with key stakeholders to consider how the nature conservation sector can engage the public even more effectively in future and how government might support this.*
- *Getting more children learning outdoors, removing barriers and increasing schools' abilities to teach outdoors.*
- *Establishing a new green areas designation, empowering communities to protect local environments that are important to them.*
- *Helping people 'do the right thing', at home, when shopping, or as volunteers. For example, we will provide funding to support the Big Wildlife Garden scheme and launch a new phase of the MuckIn4Life campaign, offering volunteering opportunities to improve the quality of life in towns, cities and the countryside.*

[DEFRA Biodiversity 2020 para 18]

We also need to take better account of how much nature does for us. Biodiversity provides a range of benefits to people, but these are often not taken into account in decision-making. This is often because biodiversity benefits are outside the market economy, meaning that they are unpriced and therefore too easily ignored in financial decisions. This strategy therefore draws on the Natural Environment White Paper, and aims to ensure that the value of biodiversity is reflected in decision-making in the public and private sector. Developing new and innovative financing mechanisms to direct more funding towards the achievement of biodiversity outcomes will be a key part of this.

The key messages from the National Ecosystem Assessment (NEA) are clear; the UK is the first country to have completed the assessment of the benefits of Nature. *'Actions taken and decisions made now will have consequences far into the future for ecosystems, ecosystem services and human wellbeing. It is important that these are understood, so that we can make the best possible choices for present and future generations'*. The comprehensive strategy set out in the DEFRA Biodiversity 2020 report will guide the Local Green Space project and set the objectives.

This Local Green Space, if granted will provide long-term protection of the wildlife, the rich Leckhampton habitat, all the vital biodiversity and maintain the wildlife corridor to the wider vale. Leckhampton has access to hundreds of volunteers, also the close proximity to the Gloucestershire University Park Campus gives research opportunities to really make this conservation project work for the town.

The safeguarding of the habitat & wildlife in Leckhampton is fully supported by UK National Policy and the need to respond to the comprehensive review given in the State of Nature.

Environmental Initiatives & Policy at the National Level

Biodiversity 2020:

The Challenge for Local Authorities and Public Bodies

Recognising that a healthy, well functioning natural environment is the foundation of sustained economic growth, and that society cannot flourish without the benefits and services our natural environment provides, the government is striving to put the value of nature at the heart of decision making – in government departments, local authorities, communities and businesses.

In June 2011, the Department for Environment, Food and Rural Affairs (Defra) published the Natural Environment White Paper (the first on the natural environment for over 20 years), a radical vision outlining the government's plan for the next 50 years – along with practical proposals to realise these ambitions.

Building on the Natural Environment White Paper and published shortly after – 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' has at its core the objective to stop overall biodiversity loss. It also hopes to support healthy well-functioning ecosystems and establish coherent ecological networks, leaving more and better places for nature, benefitting wildlife and people alike.

Crucially, local authorities and other public bodies have an important role to play in conserving biodiversity. This was underpinned by a 'Biodiversity Duty' which was introduced by the Natural Environment and Rural Communities Act.

***- Caroline Spelman, Secretary of State for Environment, Food and Rural Affairs, August 2011
In the Government Report – A Strategy for England's wildlife & ecosystem services, DEFRA
" In October 2010 in Nagoya, Japan, over 190 countries around the world reached an historic global agreement to take urgent action to halt the loss of biodiversity. This agreement recognised just how important our wildlife and ecosystems are for sustaining a healthy planet and for delivering essential benefits for people... Biodiversity is key to the survival of life on Earth. Its loss deprives future generations of irreplaceable genetic information and compromises sustainability... This strategy provides the national framework for action to help us collectively achieve our goals. We need to work together, in partnership, to put this into practice, for the sake of England's wildlife, but also for ourselves and for future generations."***

In our recent Natural Environment White Paper we responded to Sir John Lawton's call for a more integrated landscape-scale approach. We need to build a wider network of places across England which enable wildlife to thrive and natural processes to be sustained, alongside other land uses such as farming. This will help nature to better withstand future pressures such as climate change – and set our continuing conservation efforts for particular important species into a wider context.

A ground breaking UK report published in May 2013, entitled, 'The State of Nature'^[8] by a coalition of leading conservation and research organisations. Scientists working side-by-side from 25 wildlife organisations have compiled a stock take of our native species, the first of its kind in the UK. The State of Nature report reveals that 60% of the species studied have declined over recent decades. Detailed evidence collated in the study show, 'more than one in ten of all the species assessed are under threat of disappearing from our shores altogether. We

have quantitative assessments of the population or distribution trends of 3,148 species. Of these, 60% of species have declined over the last 50 years and 31% have declined strongly’.

The report describes the impact on species, *‘of more than 6,000 species that have been assessed using modern Red List criteria, more than one in ten are thought to be under threat of extinction in the UK. A further 885 species are listed as threatened using older Red List criteria or alternative methods to classify threat’.*

Dr Mark Eaton, a lead author on the report, said: *‘This report reveals that the UK’s nature is in trouble - overall we are losing wildlife at an alarming rate’.*

The State of Nature report was launched by Sir David Attenborough and UK conservation charities at the Natural History Museum, *‘this report shows that our species are in trouble, with many declining at a worrying rate. However, we have in this country a network of passionate conservation groups supported by millions of people who love wildlife. The experts have come together today to highlight the amazing nature we have around us and to ensure that it remains here for generations to come.’*

In the forward to the report, Sir David talks about how local groups can make a difference, *‘although this report highlights what we have lost, and what we are still losing, it also gives examples of how we – as individuals, organisations, governments – can work together to stop this loss, and bring back nature where it has been lost. These examples should give us hope and inspiration’.*

But as a society why should we care, losing a few species matters little in the wider scheme, after all it is Darwin’s natural selection at work as the human population increases. Surely getting the UK economy back on track has to trump any short term concern for the environment, houses on Leckhampton could boost the local economy and certainly equate to profits for an ailing construction industry.

To answer this question it is useful to look at the international picture on environment and how scientists are seeing the strong economic links to environmental issues, consistent with DEFRA’s 2020 Biodiversity Strategy.

In a similar piece of research to the UK’s State of Nature, the International Union for the Conservation of Nature (IUCN) took a 50,000 species sample, this represents 3% of all species of animals and plants on Earth. Professor Antony Barnosky of the University of California in Berkley and Georgina Mace, Conservation Biologist at Imperial College London summarise the findings, *‘40% of this sample are threatened by extinction and have been red listed, that is those species which are in long term progressive decline or where a species are restricted to small areas and/or have small populations. Currently we have an estimated 3 to 12 times the extinction rates compared to background rates and could be as much as 80 times background rates. The rising curve of extinction rates depends on what we do in the next few decades.’*

The growing human population is taking habitat for food production. Agriculture in the form of farms and ranges now accounts for 40% of the land. Professor Paul Ehrlich, Stanford, taken from the transcript of the BBC Radio 4 Programme on Ecology - *‘population extinction virtually always precedes species extinctions, most species occur as a wide variety of populations in different places, often evolutionally different populations and what we are doing right now are wiping out huge numbers of populations and we don’t get the same level of species extinctions until we get to the end of the line on each one. So if there is a thousand populations in a species it takes time to wipe out all thousand of them before you’ve lost the species.’*

‘The way to see that population extinctions are crucial is to realise that if you could wave a magic wand and say every species on the planet would be preserved as one viable population for the rest of eternity, then the species extinction crisis would be over ... right? and we’d all be dead in a few months because we absolutely depend on

a wide variety of populations that run the ecological systems, the eco systems that are supporting our lives. For example, in the US something like 20 billion dollars a year in our agriculture production depends on pollinators. So when you have a collapse on your bee populations that's going to affect your pollination and hit your economy. Now if we had one population of honey bees in Italy that wouldn't do a dam thing for pollinating crops in north America. If you had only one population, say of birds of paradise that wouldn't do much for New Guinea's tourist industry because you need lots of populations so you can get people out to see them. All the things that we basically want to get from nature with very trivial exceptions depend on having various populations, often large numbers of populations.'

So from a practical point of view Prof. Paul Ehrlich suggests that historically many conservationists have been focused too much on protecting individual charismatic species and missed the bigger picture ... *'Much more important to us are pollinators and organisms that make our soils fertile and the plants that absorb the carbon dioxide that we are putting too much into our atmosphere and screwing up our climate and so on ... I think the main thing we should be done differently is to inform the public much more about the eco systems services, so they are quite happy to put political support and financial support into protecting entire eco systems. So we should be putting effort into protecting the charismatic species and gigantically higher effort into protecting the systems and populations. Because, you know, you get some jerk sitting in a Wall Street office who knows nothing about the world and he says why in hell should I protect the pandas. I'm never going to see a panda, I don't care about pandas, the only thing I care about is boozing and stealing people's money, typical Wall Streeter! But, if you say if you don't protect the eco systems you're not going to have any food, you're going to starve, then you can get your message across.'*

'We have a built in audience with self interest in saving the eco systems and the populations, we only have a relatively minor proportion of humanity that really cares about the polar bears, that really care about pandas, that really care about beautiful birds and so on ...'

Do we have a moral responsibility to protect species and habitats?

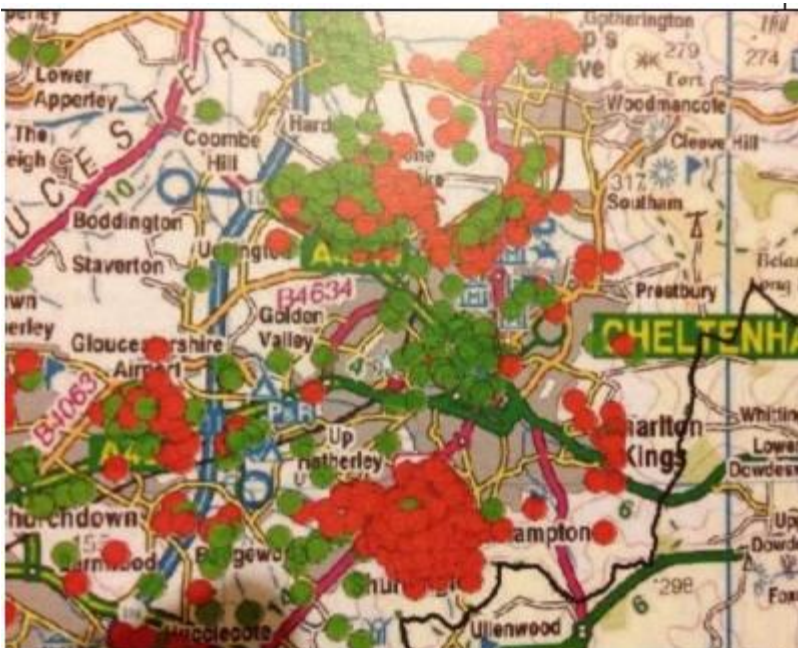
Prof. Paul Ehrlich again, *'humanity is carrying out a vast campaign of sawing on the limb it's sitting on, and the limb we are sitting on of course is all those populations of other organisms that support our lives, so what's more or less certain is, it's deeply stupid, so if you don't have a moral feeling about it then think: don't you want to belong to a species that acts intelligently rather than stupidly?'*

3.4 MATERIAL REASONS FOR AVOIDING LARGE SCALE DEVELOPMENT IN LECKHAMPTON

The recent JCS Sustainability Analysis, considers the land south of Cheltenham at Leckhampton, the report concludes ...

Table 1 JCS Sustainability Analysis – Leckhampton (Part of C6)

Summary Conclusion	Traffic Light Signal
'The broad location contains sites of biodiversity value'	RED
'Development of the site would be likely to lead to the fragmentation of important habitats'	RED
'The area displays a good mosaic of habitat types which could make mitigation difficult'	RED
For overall biodiversity impact, the site shows 'intimate rolling landscape, predominantly pastoral with improved and semi-improved pasture. Good hedgerow condition and good proportion of orchard ... good number of parkland trees and many veteran oaks along with other species. Small pockets of woodland dotted around the site. Area around Leckhampton displays unusual land use pattern with many smallholdings, orchards and allotment/market gardens. Good brookline and associated tree cover'	RED
It gives no rating, bizarrely, for climate change mitigation despite the obvious fact that loss of an overwhelmingly greenfield site would clearly have a major carbon impact, saying 'this objective is not assessed as part of the broad locations SA'	
It gives a GREEN rating on flooding despite the area's 3a rating from consultants Halcrow and the wide local knowledge that this land floods regularly	GREEN ?
It gives no rating for landscape sensitivity despite concluding that ' <i>the overall landscape sensitivity considered to be high</i> ' with ' <i>an impression of a well wooded landscape</i> ' and ' <i>a large network of hedgerows most of which are well maintained</i> '	
The JCS appraisal concludes that 95% of the site contains high grade agricultural land, it's a puzzle as to why only but only a GREEN/AMBER rating is given.	GREEN/AMBER
It gives no rating to archaeological significance despite reporting a 'scheduled ancient monument at Leckhampton'	
In the JCs Public Consultation events, the public were asked to place RED (no development) and GREEN (development) stickers onto the town map, the result below was a typical result of the public trying to protect green space close to the Urban area.	RED



The Sustainability Analysis reports health impact only in terms of proximity to the nearest GP surgery. The natural benefits of green space to mental and physical wellbeing and the potential reduction in health inequalities^[MIND] from free access to green space and recreation are not accessed. This results in an AMBER rating, given for other reasons.

Looking at the more critical questions asked about the value of the green space at Leckhampton:

Section 16 of the JCS Sustainability Analysis of Leckhampton, covering Green Space to Land to the south of Cheltenham (C6) of JCS Sustainability Analysis - (p118 of 171 in Appendix 1); critical questions have yet to be answered:

- 16a Does the location provide the opportunity for access to the countryside and natural environment? Yes/No
- 16b Does the site contains strategic open green space? Yes/No
- 16c Will it ensure existing open spaces are protected and enhanced? Yes/No

The feedback from the public in the JCS Consultation has been consistent and overwhelming on the value of Leckhampton Green Space. Thousands of petition signatures, marches, packed local meetings, hundreds of detailed submissions to the Joint Core Strategy consultation and before that numerous RSS consultations and local planning inquiries over 20 years from members of the public and representations from parish councillors, borough councillors, county councillors and MPs of all colours. The answer to these Green Space questions on Leckhampton must surely be YES, with a rating of RED.

In conclusion, this appraisal of the open countryside in Leckhampton within the JCS Sustainability Analysis provides good support to the NPPF Local Green Space application.

3.4.1 TRAFFIC CONGESTION & POOR AIR QUALITY ON THE SHURDINGTON & CHURCH ROADS

Probably the biggest issue for sustainable development in the Leckhampton area is the traffic congestion on the A46 and in Church Road. According to the Gloucestershire Local Transport Plan 2011-2026 (LTP3), workday traffic flows on the A46 are 15,000-20,000 vehicle a day. In the maps on pages 24 and 25 of LTP3, the A46 south of Shurdington is marked as being the worst congestion hot-spot in the Cheltenham-Gloucester area in 2003 and is shown as remaining a severe congestion hot-spot in 2026.

The traffic flow on the A46 is quite high throughout the day, but the major congestion occurs in the workday morning traffic peak between 07:30 and 09:15, when a traffic queue builds back from the junction with Moorend Park Road. This queue extends about 1.2 km, varying between 1.0 km and 1.4 km under normal conditions depending on the level of traffic. There is also traffic congestion in Shurdington caused particularly by vehicles queuing to turn right into Leckhampton Lane at the Bell Inn junction.

A preliminary estimate by Leckhampton with Warden Hill Parish Council in February 2013 suggested that if all of the currently proposed housing developments went ahead the traffic queue could extend beyond the A417 junction (a queue length of 5.3 km). To make a more detailed assessment of the scale of the problem, the Council has carried out 35 traffic surveys to date on different days during the peak traffic period. These have covered all of the main junctions along the A46 from the A417 roundabout to the Moorend Park Road intersection and they have also included surveys in Church Road, Leckhampton Lane and Farm Lane near the Lanes Estate. The surveys also included timing the journey times along the A46 between junctions over several

mornings during the peak traffic period in order to model the traffic speed and vehicle spacing as well as the traffic flow.

The modelling and analysis from the traffic surveys is included at Annex 3 and the implications for sustainable development in Leckhampton are discussed in Annex 2. The approach used for the modelling and analysis has been independently verified by traffic consultant Rob Williams, a director of Entran Ltd and well respected by Mark Power of Gloucestershire Highways, from whom the Council has also received valuable advice.

The findings from the traffic modelling are alarming for Cheltenham as well as for the parishes. The traffic model allows a wide range of scenarios to be examined. It indicates that if all of the development currently proposed were to proceed, including the proposed housing at Brockworth, the A46 traffic queue would reach the A417 by around 08:30 and would spread along the A417 and onto the M5. If just the proposed development at Leckhampton were to go ahead, the queue would still reach the A417, and if one also includes the increases in traffic between now and 2025 projected by the Department of Transport (“Action for Roads”, July 2013, ISBN: 9780101 867924, www.gov.uk/dft) the queue would again be likely to reach the M5. Even if the development were reduced so that the queue did not quite reach the A417 junction, the model shows that the time it would take to commute into Cheltenham would impose a great economic cost and would make it hard for people living south of the A417 to work in Cheltenham.

Even tighter constraints are imposed on sustainable development by two other factors discussed in Annex 2:

1. the need, confirmed by Mark Power, to prevent any major increase in traffic levels on Church Road during the morning peak period
2. the pollution levels on the A46, particularly around the Moorend Park Road intersection, which exceed permitted EU levels.

These two factors lead to the conclusion that there is no scope for any sustainable development on the Leckhampton Green Field Land, particularly taking into account the rise in traffic levels now projected by DfT. LWWH PC has also looked at the various proposals for new employment sites around Cheltenham being considered by the JCS to check that these do not materially alter this conclusion.

The findings from the traffic survey and analysis are a serious warning, particularly for the JCS, about the importance of taking a holistic approach to the future of the Gloucester-Cheltenham-Tewkesbury area and to the competitiveness of the local economy. A point that is emphasised by DfT in “Action for Roads” is the vital importance of husbanding the traffic network and the risk that many people will become unable to work because of growing traffic congestion. DfT observes that in a highly competitive world, the compactness of the UK should be a strong competitive advantage because of the shorter travel distances, but that it could easily become a weakness due to congestion. Whilst cities such as London are seeing a reduction in car use thanks to public transport infrastructure, areas such as Cheltenham and Gloucester that are very car-dependent, are particularly vulnerable, both economically and socially.

3.4.2 FLOOD RISK TO WARDEN HILL & THE LECKHAMPTON LANES

The JCS evidence base has provided valuable information on the increasing flood risk to the Leckhampton area and is in agreement with surface flooding experienced by residents in recent decades.

The Gloucester, Cheltenham & Tewkesbury Joint Core Strategy Level 2 Strategic Flood Risk Assessment, HALCROW Summer 2011, report extract covering the Leckhampton area:

- *Significant surface water runoff is generated from the area to the south*
- *Areas of historic flooding identified outside the modelled flood risk areas*
- *Two key risk areas identified along Hatherley Brook (upstream Church Road & rural land adjacent to eastern branch), a number of existing roads affected by flooding*

Hatherley & Ham Brook in Leckhampton identified as higher flood risk, a hydraulic model of Ham Brook is required, significant surface water runoff and an area of historic flooding, highways are also affected. The Halcrow report again, *'where historical records show incidents of flooding and surface water, then these areas should be treated as Flood Zone 3a; at risk and not suitable for development. Areas of existing open space acting as informal flood storage areas should be safeguarded from development'*, the open fields at Leckhampton provide important protection of areas to the west of the Shurdington Rd from flood risk due to surface water. In general Halcrow state that, *'areas of existing open space acting as informal flood storage areas should be safeguarded from development'*.

This is the case in Leckhampton where open land is protecting Warden Hill where flooding has been a serious problem, a minimal flood protection scheme has been put in place on a small section of the Shurdington Road, it is worth noting that all proposed new development is on the other side of this barrier. The area of open countryside adjacent to the flooded area provides important protection to the wider area of Leckhampton Lanes & Warden Hill.

Halcrow again, *'in some areas high hazard surface water risk areas affect locations outside of Flood Zones 2 and 3. Such areas should be treated as Flood Zone 3a with regard to the Sequential Test process'*, the heavy clay soil at Leckhampton regularly floods due to water run-off from Leckhampton hill.

A water survey had been completed from the 5th Nov. 2006 to the 17th Nov. 2006, this had been combined with an archaeological survey. Residents spoke to the team of university archaeologists and have a photographic record of the survey work conducted on behalf of David Wilson Homes & Martin Dawn PLC. Most of the 20m x 4m trenches (14 in number) were for a geological/water survey, confirmed by the archaeological team at the time and were marked 'water' with wooden stakes to differentiate from the three archaeological trenches.

David Wilson Homes & Martin Dawn PLC did not report the findings of the survey carried out in 2006, which would have confirmed a very high level of water table and wetness class for the majority of the proposed site caused by Infiltration form Leckhampton Hill. This whole area along Church Road (formally Collum streete) has had problems with flooding, with tithing records dating back to medieval times due to the close proximity of Leckhampton Hill.

3.4.3 LANDSCAPE AND VISUAL IMPACT OF LARGE SCALE DEVELOPMENT IN LECKHAMPTON & SHURDINGTON

The development of the Strategic Housing Location to the SW of Cheltenham covering the Leckhampton White Land within the Cheltenham boundary (1,300 dwellings) and the adjacent Farm Lane site in Tewkesbury BC (350 dwellings) would conflict with both the Local Plans and the National Planning Policy Framework and would have a significant adverse impact on the adjacent Cotswolds AONB and its setting.

On the JCS proposed policies, the choice of the Strategic Housing Location to the SW of Cheltenham for development in Phase 1 (2011 – 2021) of the proposed JCS conflicts with the AONB constraints policy which is also one of the Strategic Objectives in Developing the Preferred Option of the JCS. Under Strategic Objective 4.5 *“Conserve and improve the natural environment”*, is a clear policy including the Cotswolds AONB as part of the JCS’s unique natural environment and great biodiversity. Para 3.12 of the local authorities’ vision for developing the JCS Preferred Option highlights the way Cheltenham’s development pattern is encompassed on all sides by the Cotswolds AONB and the Green Belt, and, significantly, states *“ – The setting of Cheltenham is derived from its location at the edge of the escarpment”*. In choosing as a Strategic Housing Location the Leckhampton White Land plus Farm Lane, both areas immediately on the border of the Cotswolds AONB, and physically at the foot of the escarpment, the local authorities’ claim that they have avoided areas of *“high landscape value”*, clearly conflicts with the JCS Strategic Objectives 4.5. In para 5.27 the local authorities admit that *“the AONB presents a strong environmental constraint”*, but nevertheless their preferred Option disregards this constraint in its choice of the Leckhampton White Land, with Farm Lane, as a site for major housing development in the JCS.

Looking now to National Policies. The southern boundary of the Leckhampton White Land abuts the Cotswolds AONB, an extensive area designated in 1966 and extended in area in 1990. The primary purpose of AONB designation is to conserve and enhance the natural beauty of the landscape. The Cotswolds AONB Conservation Board was established in 2004, and in addition to the purpose of conserving and enhancing natural beauty, is also charged with increasing the understanding and enjoyment of the special qualities of the AONB. One of the most significant features of this landscape, generally acknowledged as one of England’s finest, is the dramatic west facing escarpment overlooking the Severn Vale, a factor already mentioned in the JCS. This escarpment immediately overlooks the Leckhampton White Land and Farm Lane.

Strong policy in the National Planning Policy Framework (NPPF6) retains rigorous protection for AONBs. Given the location of the Leckhampton White Land and Farm Lane site as an integral part of the setting of the Cotswolds AONB, the strong national policies for protecting AONBs should be taken into account in the framing of the JCS.

Local Plan Policies in the Cheltenham Borough Council Local Plan – Second Review (Adopted July 2006) cover the larger Leckhampton White Land part of the Strategic Housing Location and clearly refer, in Policy C02, to *“Development Within or Affecting the AONB”*. In the paragraphs of the Plan supporting C02, para 7.21 should be quoted – *“Development on sites outside but close to the AONB can also have an impact on its character. Such development should be designed and landscaped to avoid harming the natural beauty of the AONB. Special consideration should be given to the impact of proposals on the setting of the AONB and on views into or out of the area”*. The previous para (7.20) also underlines points made in the JCS (see para 5 above) concerning the need to protect the Cotswold escarpment as the dominant feature of Cheltenham’s setting. Para 7.21 of the Local Plan has been disregarded in the JCS *“Developing the Preferred Option”*.

The Inspector’s 2009 Report into the proposed Cheltenham Local Plan, and his specific comments on the value of the Leckhampton White Land, should also be considered. In this Report he set out his view that the southern part of the White Land was an important part of the setting of land in the AONB. Para 7.22 says *“In assessing proposals for development, the Council will be guided by the advice of the Cotswolds AONB Conservation Board”* while para 7.23 clearly states that any revision of advice *“issued by the Cotswolds AONB Conservation Board will be adopted by the Council and used as guidance for development control purposes”*.

The Tewkesbury Borough Local Plan9 (2006 – 2011 adopted March 2006) policies cover only the smaller, west of Farm Lane, part of the Strategic Housing Location. While the Plan includes a range of policies (Policy LND1)

relating to the extensive areas of the Borough within the Cotswolds AONB, these policies did not cover developments on land outside the AONB, but within its setting. Given the Inspector's 2005 Report on the Borough Plan (see para 13 below) that the land adjacent to Farm Lane at Brizen Farm was an attractive area of countryside important for the setting of the AONB, this omission of any Plan policies relating to the AONB setting was surprising. However, despite this omission, it is clear that since October 2008, when Tewkesbury BC (para 17 below) resolved to take the Cotswolds AONB Management Plan into account in planning matters, the Borough Local Plan has been required to take the setting and surroundings of the AONB into consideration in the determination of planning applications.

As mentioned above, the Inspector's Report (2005) on the Tewkesbury Borough Local Plan, in its comments on the inclusion of the Brizen Farm area (immediately to the north and west of the Farm Lane area, adjacent to the AONB, and also overlooked by the Cotswold escarpment) points out that development at Brizen Farm *"would entail development that would be visually prominent in the foreground views of the AONB escarpment from the A.46"* and *"would extend urban development into an attractive area of open countryside that is important for the setting of the AONB and the approach to Cheltenham ..."*. The Inspector believed that the Plan proposal to concentrate development in the eastern and central parts of the Brizen Farm site would not mitigate the visual impact to any significant extent, since it would have been prominent in the foreground of attractive views towards the foothills of the AONB. He argued that, notwithstanding its suitability in other respects, Brizen Farm was not an appropriate (Plan) allocation for new housing. The Inspector's conclusion on Brizen Farm, adjacent to the Cheltenham SW Strategy Housing Location, and clearly part of the AONB setting, has again been put aside in the JCS Preferred Option.

Again, given the reference, in para 16 below, to the Cotswolds AONB Management Plan¹⁰ (2008 – 13) it has already been noted that Tewkesbury Borough Council Planning Committee (for Tewkesbury BC), on 7 October 2008, endorsed the Management Plan, and subsequently resolved that the Plan be taken into account in the preparation of the JCS and in the determination of planning applications.

The Cotswolds AONB Conservation Board Management Plan (2008 – 2013) has been adopted for guidance by both planning authorities involved in the proposal to make the *"Leckhampton White Land – Farm Lane"* site a JCS Strategic Housing Land Location. A key issue in this Plan is LK3 *"The surroundings of the AONB are also important to its landscape character and quality. Views out of the AONB and into its surrounding areas can be very significant. Development proposals that affect views in and out of the AONB need to be carefully assessed in line with Planning Policy Statement 7 (PPS7) to ensure that they conserve and enhance the natural beauty and landscape character of the AONB"*. Expanding on the issues raised on development affecting the setting of the Cotswolds AONB, the Conservation Board have produced a Position Statement 11 *"Development in the setting of the Cotswolds AONB"*. This Statement also refers to a number of appeal decisions where the setting of an AONB (or a National Park) have been an issue in final decisions on planning applications by Inspectors or the Secretary of State.

The Landscape and Visual Appraisal of Land at Farm Lane / Church Road, Leckhampton, Cheltenham (the Leckhampton "White Land") Final Report, July 2003, by Landscape Design Associates (LDA), was the first, and many would argue, the definitive, appraisal of the overall value of the landscape of the area now under consideration as a strategic housing location, and of its sensitivity to change and/or development. Significantly it was commissioned by Cheltenham Borough Council, to inform the then ongoing review of the Cheltenham Local Plan, which included the exploration by the Council of the potential for additional protection of this Leckhampton White Land. Landscape Design Associates' Report followed a desk-based assessment of existing environmental information and a period of field-based landscape and visual survey, using methodology broadly in accordance with the now widely-used "Guidelines for Landscape and Visual Impact Assessment" published jointly in 2002 by the Landscape Institute and the Institute of Environmental Management and Assessment. For the purposes of this statement I shall only quote the all-important conclusions to the Report, and their relevance to the current JCS proposals and consultation. It is essential that the full report is again considered by the JCS authorities and their officers. Although written in 2003 its content and conclusions are still very relevant today. The LDA report forms Appendix 1 to this statement.

Its conclusions are therefore quoted, in full: *"The landscape character and value of the study area derives from the strongly rural and largely unspoilt character of the landscape, the condition and diversity of the existing*

landscape features, the relationship of the landscape with historic buildings and features, the character of the local lanes, the visual prominence of the landscape in views to and from the AONB, and the contribution the area makes to the setting of Leckhampton Hill and the character of the main gateway into Cheltenham from the west. It represents a valuable and sensitive landscape which is well used by local people as an area of countryside close to the urban area within which large scale development could be visually intrusive and adversely affect views to and from the Cotswold AONB. Whilst the site could accommodate small scale change and development, it is considered highly vulnerable to the effects of large scale development. The protection of the landscape should therefore continue to be the primary objective.”

3.4.4 PREVIOUS INSPECTORS REPORTS & ENQUIRIES

Four inspectors have rejected large scale development on the Leckhampton white land in recent time, to quote Inspector David Asher, *“development of the objection site would materially harm the rural character and appearance of the area, and the important contribution that this makes to the landscape within the site and when seen from the AONB, the rural character up to the edge of the town which would be lost if development were to take place”* - CBC Local Plan Second Review to 2011 Inspector’s Report.

Table 2 – Recommendations from Previous Inspectors looking at large scale development in Leckhampton

Enquiry	Ref	Extract
Cheltenham Borough Local Plan Inquiry (1993) - Inspector's Report Cheltenham Local Plan Inquiry (1993) - Inspector's Report	6.92	The land at Leckhampton should be protected for its special historical, landscape and amenity value. It represents the last example of the gradual transition between the urban area and the countryside which characterised the Regency town. It should be considered anew for green belt or AONB status, for 'landscape conservation area' status, and as part of a Leckhampton Conservation Area (35A, 129W).
	6.95	The land at Leckhampton continues to be farmed with no indication of decline. The structure plan says that development which leads to additional traffic on Bath Road will be resisted, as improvements would be damaging to the environment. The present sewerage system cannot accommodate even limited development on the Leckhampton land, and the Hatherley Brook is loaded to capacity.
	6.97	The land at Leckhampton was originally omitted from the green belt with the proviso that the green belt notation might be extended if it appeared at a later date that it should remain open in the long term. The CELP [Cheltenham Environs Local Plan] Inspector concluded that the principles which guided the planners in 1968 applied equally in 1984, and that the land should not be green belt, but should remain open. I have had the benefit of new evidence concerning the character, appearance and historic interest of the land. I have walked over it and examined it from Leckhampton Hill, and reached my own conclusions on its merits. I have also examined Swindon Farm, which the CELP inspector was not asked to do. The GSPFA [Gloucestershire Structure Plan First Alteration]with its strategy of restraint, in great contrast to the high level of development which occurred in the 1980s, was approved only recently (in 1992). In my opinion these are material changes, which have occurred since 1984, in the circumstances surrounding the question of longer term development in Cheltenham.
	5.100	I believe that it would be very sad indeed if development were to

		proceed at Leckhampton, with its variety and interest.
	6.103	The land at Leckhampton appears from the latest available classification (MAFF 1) to be a mixture of Grade 2, 3a and 3b. Although not of the highest quality, the land is in my opinion sufficiently valuable for this factor to be given some weight if it ever becomes necessary to consider whether the land ought to be released.
	6.104	The Structure Plan supports the council's contention that Bath Road does not have the traffic capacity to support further development. There is insufficient evidence for me to draw conclusions about the drainage question: there is, at the least, serious uncertainty. Whether these constraints might be overcome in the longer term is not a matter which I need to address. However, they seem to me to be of such importance, and to have implications for such a wide area, that it is reasonable to conclude that the land at Leckhampton would need to be the subject of comprehensive development proposals if it were ever to be developed, as the council suggest. In the meantime, it should in my view continue to be protected from development.
Tewkesbury Borough Council Local Plan To 2011 Report Of Public Local Inquiry Into Objections PINSM/G1630/429/5 December 2003 - Mary Travers Ba(Hons) DipTP MRTPI - The Planning Inspectorate. Tewkesbury Borough Council Local Plan To 2011 Report Of Public Local Inquiry Into Objections PINSM-G1630-429-5 December 2003 Mary Travers.pdf	2.25.11	The site consists of four fields subdivided by substantial hedgerows that are interspersed with hedgerow trees. It has a gently rolling, topography and an attractive pastoral character that in my view links strongly into the landscape of the AONB immediately to the south of. Leckhampton Lane. Generally the contours fall from south to north and from east to west and there is a distinct ridge running roughly northwest-southeast through the site- -so that the south-eastern corner is the most elevated part. A public footpath that traverses the northern part of the site forms a link in a network of rural paths to the east and west of the site.
	2.25.12	As can be observed from public vantage points, the site is highly visible from within the AONB, for example from the lower slopes of Leckhampton Hill and from higher up at the Devil's Chimney. It is also visible partly from the west and in long distance views from the north. There is a substantial hedgerow on the western boundary with the Green Belt but this area drops away towards the Vale of Gloucester As a result, development on the more elevated south-eastern part of the site would be very conspicuous from the western approach along Leckhampton Lane where it would be seen within the context of the AONB. And looking southwards from the public footpath across the site it is apparent that development would. entail a significant intrusion into views of the open countryside and the AONB from the existing edge of the built-up area. It would also sever the link between the rural footpaths to the east and west of the site and replace it with one of an entirely different character. For these reasons and taking into account the scale of the proposed development, I consider that its visual impact on the surrounding countryside would be very significant and that it could not be easily mitigated.
	13.0	In addition, the site forms part of a swathe of open land that sweeps down from the Cotswolds to pass between Cheltenham

		and Gloucester and it provides a link between the AONB and the Vale of Gloucester. Development of the site would form an incongruous promontory in this open area, eroding the link and cutting off the rural land to the east of Farm Lane from the tract of countryside to the west. I do not consider that there are any differences in character or appearance between the Cheltenham Borough safeguarded land and the SH1 site that are so significant as to render this incursion less harmful.
Cheltenham Borough Local Plan Second Review 1991-2011 Inspector's Report, pp 187, DP527 8 March 2005 David Asher BA DipTP MRTPI. Cheltenham Borough Local Plan Second Review 1991-2011 Inspectors Report pp 187 DP527 8 March 2005 David Asher.pdf	10.147	I conclude on this issue, therefore, that the development of the objection site would materially harm the rural character and appearance of the area, and the important contribution that this makes to the landscape within the site and when seen from the AONB.

An important part of the JCS Evidence is the Entec/AMEC Greenbelt Review, May 2011, this report recommended consideration of land to the south of Farm lane, Leckhampton, be incorporated into the Green Belt and marked it RED –no development. The updated JCS AMEC Greenbelt report, Sept 2011, reinforced this view, *“land to the south of Cheltenham (south of Leckhampton, SW of Farm Lane) having the strongest case”*; the strongest case for additional Greenbelt in the wider JCS area.

This Local Green Space, if granted would prevent the constant land speculation and expenditure of public money in the defence of this open countryside. It would also provide the vital stability necessary for investment, allowing longer term leases on the glebe smallholdings and investment in local food production; sustainable projects like zero carbon hydroponics and renewable energy. Various funding options for a city farm are being explored including the Big Lottery Fund and the Prince’s Countryside Fund.

3.5 WHAT A LECKHAMPTON LOCAL GREEN SPACE MEANS TO THE COMMUNITY AND TOWN

Local Green Space is a new designation contained in the NPPF for the protection of locally important green space and stresses the importance of locally derived standards. The Localism Bill also reflects the importance currently attached by Government to decisions being made locally and based on local information. The local community of Leckhampton abuts the green space, which provides a much treasured source of recreation for a variety of residents from families with small children, simply walking the dog to dedicated ramblers and nature lovers who follow the numerous footpaths through these fields.

The area concerned is of extremely high value to the local population and in recent years over two thousand local residents signed a Petition to protect the (Leckhampton) land from inappropriate development and to make the land into a "Country Park". This petition was well received by Cheltenham Borough Council and Tewkesbury Borough Council, see panel.

Thursday, 10th November, 2011, Leglag Country Park Petition submitted to full Council

Response from the Leader, Cllr Steve Jordan

Cheltenham Borough Council takes the issues raised in the petition very seriously and the resolution I am proposing to Council this afternoon restates the intention to protect Green Belt and open countryside around Cheltenham. Assuming the 3 Councils confirm agreement to start the consultation, the issues raised in the petition will no doubt feature in the feedback from LEGLAG and others.

In a follow-up members question on the Leglag Country Park Petition to Cheltenham Borough Council, Monday, 13th

December, 2010 *'The Cabinet Member responded that he was fully supportive of the LegLag aims for this area and would do everything possible to assist them'.*

The term "Cheltenham Park" was intentionally not fully qualified/explained, as this was left open for discussion with local people and other stakeholders. However, it could envisage some development but of a form consistent with a park, and improving the beauty of some of the fields and streams. It also envisages maintaining a country feel.

The Country Park is a good basis for the Neighbourhood Local Green Space application, since it is already favoured by the local people. This would incorporate alternative uses for the land such as a city farm where children and adults could view traditional farming practices. This would be an extension of the existing small holdings where sheep, chickens, pigs, goats and small breeds of cattle are kept. There could be displays of how wool is obtained from sheep, milk and eggs are gathered and maybe local cheese (and meat) production. The orchards within this area could be enhanced and better managed to increase fruit production which could be harvested as PYO by the local community. Bee-keeping could be instated which would provide pollinators for the orchards which would in turn provide the bees with a food source from the fruit tree blossoms among other wild flowers in the area. This would also provide a much sort after product – local honey. In addition to the city farm, a tie-in with Gloucestershire University using some land for hydroponics to grow local food efficiently and show people how this can be achieved. As the green space supports a wealth of wildlife, it is also envisaged that circular walk routes could be published to guide people to the best flora, fauna and stream lines in the area. Bat and dawn chorus guided walks have taken place, organised by local residents, these have been well-attended and there are plans for further wildlife events in the future.

Some financial backing would be required to give return to the land owners, and various possibilities could be found once the Country Park/Green Space application is given the opportunity to go forward, this may result in some development. There are other possible paybacks apart from the food production already discussed, for example renewable energy, educational projects, organised events and agricultural research while maintaining a local green area and the Country feel.

Two Town & Village Green applications have been submitted to the Gloucester County Council, detailed in the maps of Appendix 1, both have received the maximum scoring against the assessment criteria. These are Lott Meadow & White Cross, the latter being the best candidate for an extension to the greenbelt in the JCS area ^[1].

The Shurdington Rd and Leckhampton is one of the main gateways to the Regency Town of Cheltenham, and a green environmental feel to the area can only enhance Cheltenham as a favoured tourist destination. The JCS Sustainability Appraisal states that, '*Land around Leckhampton is particularly well connected to the urban centre*', thereby meeting an important NPPF criteria for Local Green Space and partly explains why the area is so well used and much loved by Cheltenham residents.

The Local Green Space will give permanent protection to Leckhampton land that is used by the public for recreation. These comprise Lotts Meadow between Kidnappers Lane, White Cross, Burrows playing fields, the fields between Kidnappers Lane and Farm Lane that are crisscrossed by public footpaths. Lotts Meadow is heavily used for recreation all year round by people in and around the parish. The fields between Kidnappers Lane and Farm Lane are less heavily used, partly because the footpaths have stiles rather than gates. But these fields are important for preserving the old rural part of Leckhampton Village and the view from Leckhampton Hill. The Cheltenham Circular Path runs through this land. Many of the stiles have now been replaced with the modern swing gates making the fields more accessible.

The 'country park' would include allotments. The land between Kidnappers Lane and Farm Lane should remain more or less as it is now. The 'country park' should extend west of Farm Lane and include White Cross and the green belt land. It is important not to build housing on the land west of Farm Lane as this would substantially reduce the appeal of the 'country park' for securing the investments needed.

In the United Nations Secretary-General Ban Ki Moon's keynote speech to the General Assembly, New York, 28 June 2012 he spoke of, *'encouraging leaders to focus on reducing poverty, creating jobs and prioritizing sustainable development'* and *'the importance of food production'*. The Food & Agriculture Organisation (FAO) is warning that, *'feeding a growing world population will require a 60% increase in food production by 2050'* – Alberto Sandoval; the world population is projected to reach 9.1 billion by 2050. Building on the farmland in Leckhampton will not fix our local economy nor create lasting primary jobs; it will deny future generations of Cheltenham an invaluable source of local food. The land has good quality, mixture of Grade 2, 3a and 3b MAFF 1 classification, extremely drought resistance, with a local water supply. The farming settlement of Leckhampton pre-dates Cheltenham for these very reasons.

Many ideas have been put forward for an improved and more sustainable income for the Glebe & County land, zero carbon hydroponics would combine renewable energy and all year round local food production. The latest approach to hydroponics would be supported by Gloucestershire & Bristol Universities through research into climate change, production & distribution and is an excellent match to the NPPF core objectives (Para 17,b1,6,7&9). This could be combined with a sustainable City Farm (cows, sheep, pigs, poultry etc) following the business model of similar initiatives in Gloucester and Bristol and linking to the existing smallholdings, allotments, orchards etc; all valuable for future food production.

3.5.1 LECKHAMPTON IS SO WELL CONNECTED TO THE URBAN AREA

Cheltenham has expanded enormously in our lifetime, but there still remains one nearly complete "Green Corridor" from the compact centre to the surrounding countryside. This is to the South, to the green fields of Leckhampton, Shurdington, and on upto Leckhampton Hill linking to the Cotswold Way. The open countryside in Leckhampton, mainly glebe and county owned land, formed from the original common land linked together through the green streets and spaces of park and Tivoli areas, to the very centre of the town. These fields are an asset to Cheltenham, contrasting to the formal parks to the North of town and provide opportunities for open-air play for children and recreation for adults. Evidence from the National Trust and others shows that, *'children who spend time experiencing nature, perform better at school, are more capable, and are happier; and we all know how important exercise is for maintaining good health in adult life'*.

In a wider context the open countryside at Leckhampton is part of the foreground and setting to the Cotswold escarpment bordering the town and the Cotswold ANOB which is recognised as a nationally important landscape.

3.5.2 THE NATURAL CHOICE

The Natural Choice: securing the value of nature, TSO June 2011, para 4.23, p49, published by the Coalition Government in June 2011 sets out a radical new approach to valuing natural capital, explaining at the outset that 'Nature is sometimes taken for granted and undervalued'.

- It sets out the importance of natural spaces such as farmland and urban green spaces to:
- Public health, including mental health and emotional wellbeing
- Children's learning and experience of nature
- The importance of Biodiversity & Wildlife
- Provisioning including food from allotments
- Recreation, landscape and cultural heritage
- Carbon storage
- Flood management
- Pollination
- Improving water, soil and air quality

The Natural Choice also promises a new Green Area Designation that will give local people an opportunity to protect green spaces that have significant importance to their local communities.

It was this new designation which became law in the National Planning Policy Framework, this Local Green Space designation was also contained in the Coalition Agreement. It is the basis of many ministerial statements that the government has produced, essentially a tool *that 'local communities can use to protect open places they value'* (Prime Minister to Dame Fiona Reynolds of the National Trust, 21 September 2011).

It was to offer protection to sites that were not necessarily of huge scientific significance or great landscape value but were of great importance to local people; the council believe Leckhampton meets all the criteria for a Local Green Space.

Fiona Reynolds, Director General of the National Trust has warned that children are developing "nature deficit disorder" because they are deprived of access to green spaces, *'children are deprived of the experience of being outside, which not only affects physical health but emotional and mental wellbeing'*. The Trust is trying to improve access to the countryside by encouraging people to take up activities like walking or adventure sports on their own properties and by providing allotments. There are also programmes to get schools and young people visiting farms and to teach children about the outdoors, including simple things like just skimming a stone or climbing a tree.

The National Trust has updated its list of 50 things to do before you are 11 ¾, because so many children have already completed the list, adding old favourites like playing pooh sticks and making a daisy chain. The top ten activities are, bike riding, building a den, climb a tree, cook on a campfire, hunt for fossils, discover what's in a pond, track wild animals, hold a scary beast (that would be the wife), birdwatching and walk barefoot, all doable in the Leckhampton countryside.

MIND^[1] has commissioned two studies from the University of Essex, this work confirms that participating in green exercise activities provides substantial benefits for health and wellbeing. this report Mind calls for a new

green agenda for mental health, following growing evidence in support of an accessible, cost-effective and natural addition to existing treatment options – ecotherapy. *‘Three of the Government’s six key priorities set out in the recent Public Health White Paper were to increase exercise, improve mental health and reduce obesity – we believe that implementing this green agenda would go some way to achieving all three’.*

- *90 per cent of people who took part in MIND^[1] green exercise activities said that the combination of nature and exercise is most important in determining how they feel.*
- *94 per cent of people commented that green exercise activities had benefited their mental health. Some of their comments included:*

The Environmental Health Research Foundation published a comprehensive study on the Benefits of Green Space ^[1] – Recent Research April 25, 2011; this study throws up some surprising results:

Environmental Benefits

- ☒ *Erosion Control and Water Run-Off Prevention*
- ☒ *Water Purification*
- ☒ *Air Purification*
- ☒ *Temperature Modification/Energy and Cost saving*
- ☒ *Oxygen Generation*
- ☒ *Carbon Sequestration*

Health Benefits

- ☒ *Recreation - Green spaces provide ideal surfaces for a variety of recreational and sports activity and high use activities including parks and playgrounds.*
- ☒ *Increased Physical Activity/Reducing Obesity - Access to green space is an important predictor of increased physical activity (“active living”) and reduced risk of obesity. A recent study of over 40 million people in England shows that health disparities between high income and low income people are much narrower in areas with ample green space, possibly because it allows residents to become more physically active and reduce stress.*
- ☒ *Healthcare/Stress Reduction – Just being in, or viewing, green space for a few minutes reduces stress. This has been demonstrated by medical studies with hospital patients and the general public.*

This work refutes the notion that green space is merely ornamental or aesthetic and indicates substantial environmental and human health benefits from healthy, properly maintained green space; this is the value of the accessible countryside at Leckhampton so close to Cheltenham.

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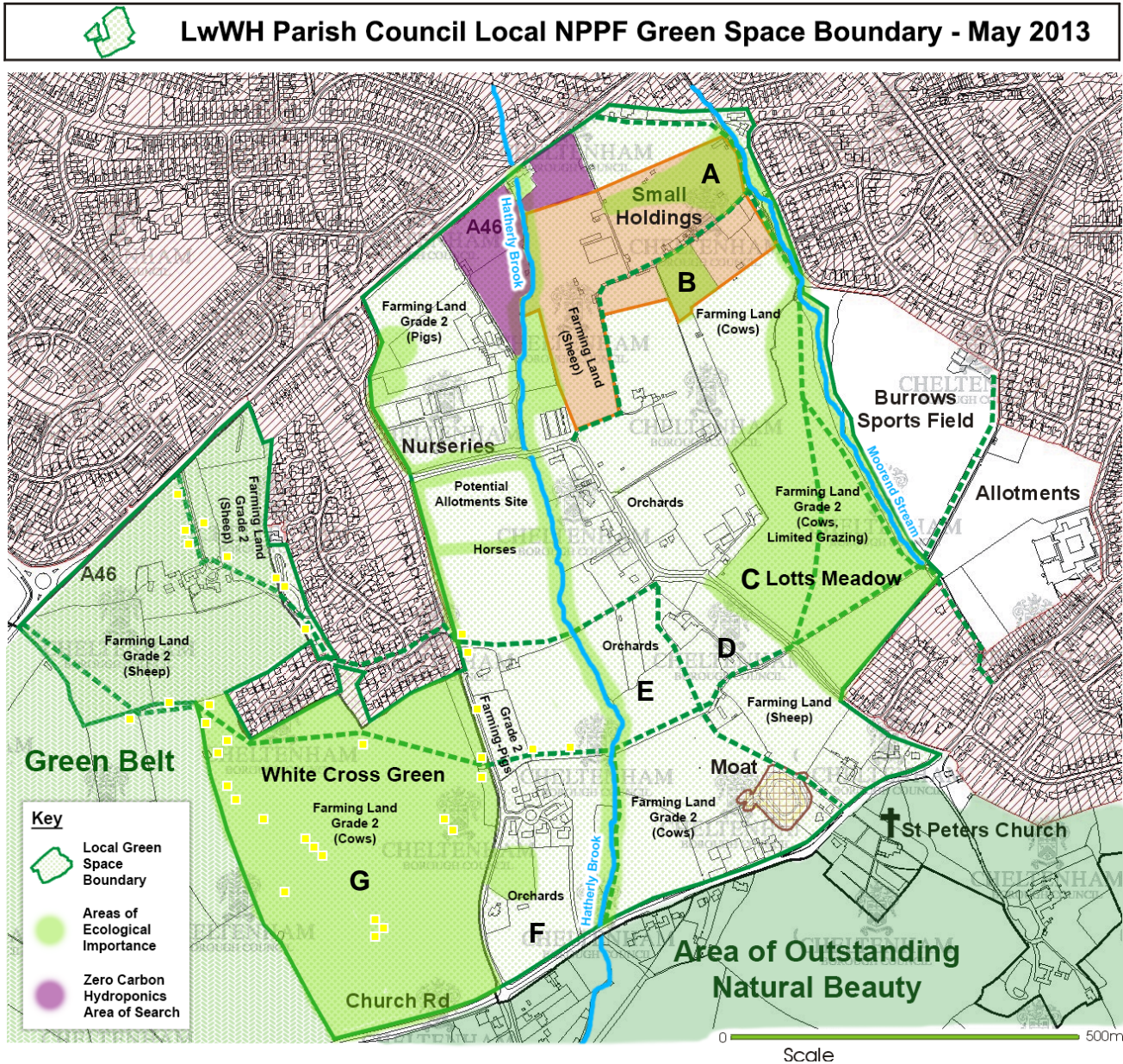
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Hackinson Duckett Associates 2011 Leckhampton Ecology Hedgerow Survey Report. HDA Ref 436.2

Hackinson Duckett Associates 2011 Leckhampton Ecology Badger Survey Report. HDA Ref 436.2

Hackinson Duckett Associates 2011 Leckhampton Ecology Dormouse Survey Report. HDA Ref 436.2






- A. Semi-Improved, long grassland provides good reptile, small mammal & badger habitat
- B. Old apple orchard provides good reptile habitat, orchards are part of the UK Biodiversity Action Plan (BAP) habitat and therefore of conservation priority
- C. Lott's Meadow, a large area of semi-improved, long grassland, providing moderate reptile habitat and good badger foraging habitat. Large mature oaks, possibly veteran status, providing roosting sites for bats. Pipistrelle bat roosts in eastern most oak, bordered to the east by stream and associated wooded habitat. This along with the hedgerows/trees and scrub bordering the meadow provides commuting/foraging routes for bats, other mammals and birds, plus nesting opportunities for a wide variety of bird species including the red listed song thrush, linnet & sparrow
- D. Grassland provides good reptile, amphibian & insect habitat
- E. Apple Orchards – UK BAP habitat
- F. Orchard & Natural Habitat, Hatherley Brook runs to the eastern edge and provides very valuable rivering habitat
- G. Neutral semi-improved grassland, large area provides nesting sites for red listed Skylark

Town & Village Green Applications

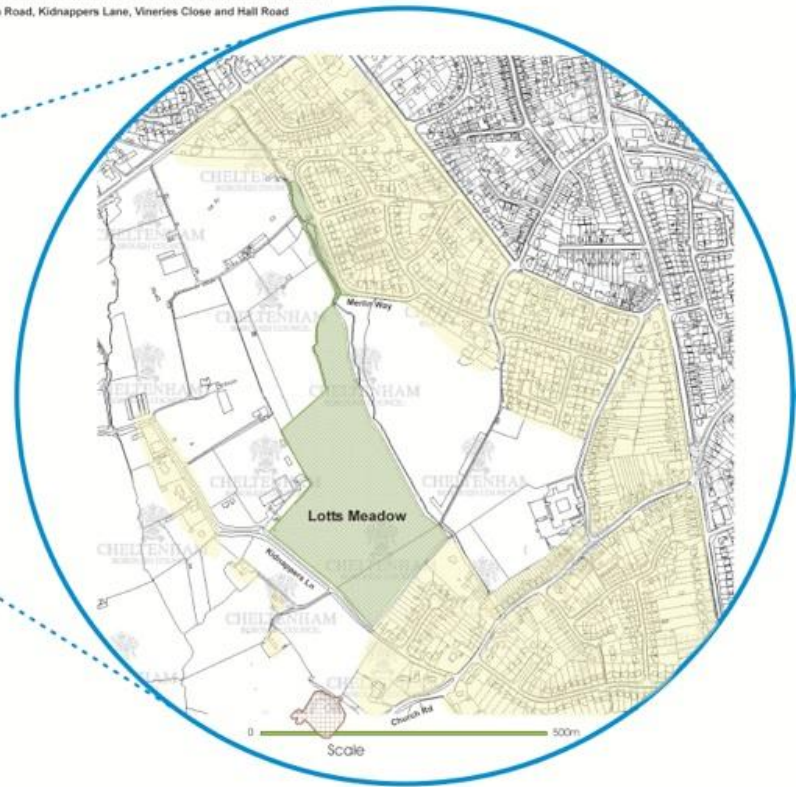
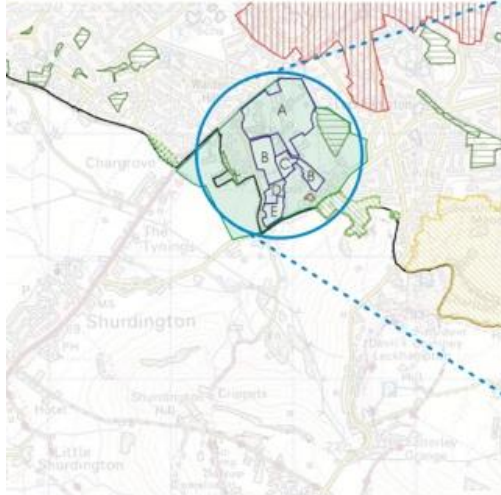
Map A Lotts Meadow

KEY

-  Leckhampton Country Park
-  Scheduled Ancient Monument
-  Green Belt
-  Conservation Areas (CA)
-  Public Green Space
-  Cotswold Area of Outstanding Natural Beauty







- A GR265609, Gloucester Diocesan
- B GR82227, Gloucestershire County Council
- C GR67416, Edwina Wiggins, The Nurseries
- D GR105271, Ian Ansell, Field House
- E GR306544, M. A. Holdings Ltd. (Incorporated in British Virgin Islands)

 Boundary of the Village Green and Neighbourhoods of the Western, Forests and Collum End Farm Estates, Church Road, Kidnappers Lane, Vineries Close and Hall Road



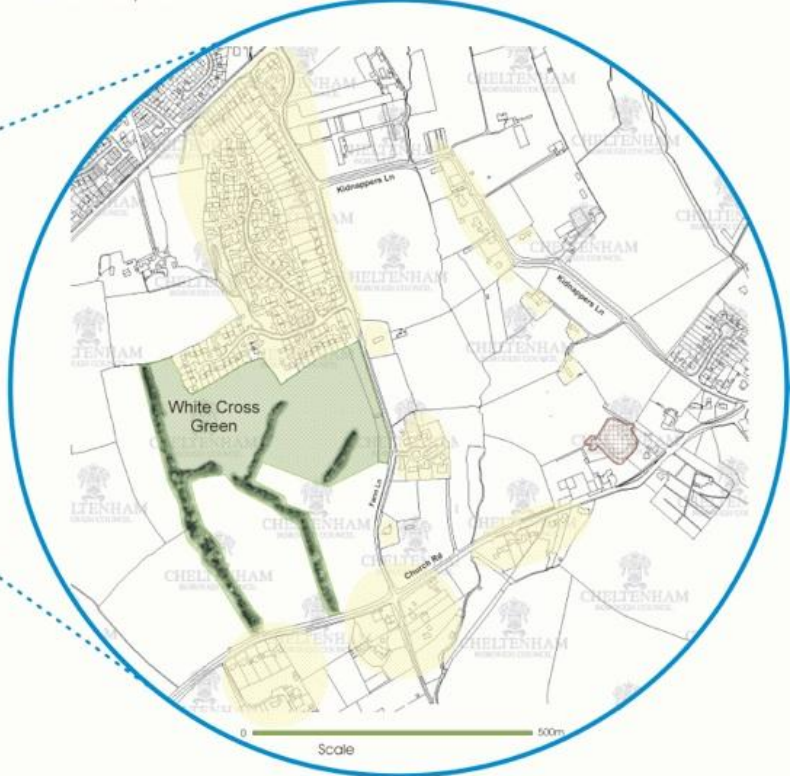
Map A White Cross Green

KEY

-  Leckhampton Country Park
-  Scheduled Ancient Monument
-  Green Belt
-  Conservation Areas (CA)
-  Public Green Space
-  Cotswold Area of Outstanding Natural Beauty

- A GR265609, Gloucester Diocesan
- B GR82227, Gloucestershire County Council
- C GR67416, Edwina Wiggins, The Nurseries
- D GR105271, Ian Ansell, Field House
- E GR306544, M. A. Holdings Ltd. (Incorporated in British Virgin Islands)

 Boundary of the Village Green, including ancient hedgerows and Neighbourhoods of The Lanes Estate, Farm Lane, Kidnappers Lane, Leckhampton Farm Court, The Crippets area, Church Road and Leckhampton Lane



11. Conserving and enhancing the Natural Environment

109. The planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, geological conservation interests and soils;
- recognising the wider benefits of ecosystem services;
- minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

110. In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Plans should allocate land with the least environmental or amenity value, where consistent with other policies in this Framework.

111. Planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value. Local planning authorities may continue to consider the case for setting a locally appropriate target for the use of brownfield land.

112. Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality.

113. Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites,^[24] so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.

114. Local planning authorities should:

- set out a strategic approach in their Local Plans, planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure; and
- maintain the character of the undeveloped coast, protecting and enhancing its distinctive landscapes, particularly in areas defined as Heritage Coast, and improve public access to and enjoyment of the coast.

115. Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The conservation of wildlife and cultural heritage are important considerations in all these areas, and should be given great weight in National Parks and the Broads^[25].

Ref [24] Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

116. Planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest. Consideration of such applications should include an assessment of:

- the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;
- the cost of, and scope for, developing elsewhere outside the designated area, or meeting the need for it in some other way; and

- any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

117. To minimise impacts on biodiversity and geodiversity, planning policies should:

- plan for biodiversity at a landscape-scale across local authority boundaries;
- identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;
- promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan;
- aim to prevent harm to geological conservation interests; and
- where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas.

118. When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;
- development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;
- opportunities to incorporate biodiversity in and around developments should be encouraged;
- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and
- the following wildlife sites should be given the same protection as European sites:
 - potential Special Protection Areas and possible Special Areas of Conservation;
 - listed or proposed Ramsar sites; ^[26] and
 - sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

ref [25] English National Parks and the Broads: UK Government Vision and Circular 2010 provides further guidance and information about their statutory purposes, management and other matters.

119. The presumption in favour of sustainable development (paragraph 14) does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.

120. To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.

121. Planning policies and decisions should also ensure that:

- the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;
- after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and
- adequate site investigation information, prepared by a competent person, is presented.

Ref [26] Potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are sites on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar site.

122. In doing so, local planning authorities should focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes. Local planning authorities should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.

123. Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts ^[27] on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts ^[27] on health and quality of life arising from noise from new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; ^[28] and
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

124. Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan.

125. By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

Ref [27] See Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

Ref [28] Subject to the provisions of the Environmental Protection Act 1990 and other relevant law.

Shurdington Parish Council supports the concept plan for a "Local Green Space" on land to the south west of Cheltenham in the parishes of Leckhampton (with Warden Hill) and Shurdington. We must point out that we do not have any funds to provide financial assistance. Additionally we could not support building of any sort on this land. As has been pointed out there could be a problem with the Shurdington land (White Cross and Brizen Farm) in that it is Tewkesbury Borough and may have to be considered separately. It would in such a circumstance be difficult for Shurdington to put forward a strong case as it could not be seen to benefit Shurdington residents. Leckhampton with Warden Hill PC has been able to call on considerable expertise to produce a very comprehensive plan but we do not have this luxury. Ideally we would wish White Cross (SD2) to be returned to green Belt and the Brizen Farm planning application to be rejected.

To summarise Shurdington Parish Council supports the LGS concept plan as we consider that any development in the area adversely affects the quality of life for the residents of both Leckhampton (with Warden Hill) and Shurdington.

The aim is to define the boundary of the Local Green Space (LGS), looking at whether any of the Leckhampton land should be omitted from the LGS in order to provide an area of search for potential sustainable development should any sustainable development on the land be feasible following the completion of the JCS and the Cheltenham and Tewkesbury local plans.

The main constraints on sustainable development comes from the traffic congestion as discussed in Annex 3, from the proximity to the AONB and to Leckhampton Hill, from the environmental and ecological value of the area, and from issues of air quality, which are linked to the problems of traffic congestion. Other constraints such as the availability of primary and secondary schooling can in principle be solved by building new schools or persuading schools to expand. But the traffic problems are fairly intractable.

For the A46, the traffic problem stems basically from the number of cars commuting into and through central Cheltenham. This problem might be reduced if employment could be moved to appropriate sites out of Cheltenham. Conversely it could be made worse if more employment is created in Cheltenham or in locations out of Cheltenham that would encourage more traffic to drive through central Cheltenham.

- Section 1 of this analysis therefore looks at where new employment might be located. It uses the reported findings of recent discussions on the locations of the JCS strategic development sites to examine how far individual locations might improve or worsen the situation.
- Section 2 then looks at the traffic problem in Church Road, where the main challenge is to prevent gridlock and also to prevent accidents to the children at Leckhampton Primary School. It uses data from the traffic survey conducted by LWWH Parish Council in September and October 2012. This survey included one day on which the traffic in Church Road gridlocked.
- Section 3 looks at the issue of pollution levels on the A46.
- Section 4 looks at four shortlisted options for the boundary of the Local Green Space and section 5 describes the Council's decision on which option to propose at this stage.

5.1 LOCATION OF NEW EMPLOYMENT

The JCS originally proposed that the main growth in employment would be located in the NW of Cheltenham, with the M5 junction 10 being upgraded to a full interchange. However, what has instead emerged has been a proposal to locate employment growth close to Kingditch. If this went ahead, it would make the A46 queue worse because the only good route from the south of Cheltenham to Kingditch is through the centre of Cheltenham. The alternative route round Cheltenham to the A40 and then along Princess Elizabeth Way is long and slow.

The Cheltenham Chamber of Commerce has recently been emphasising the importance of keeping traffic out of the centre of Cheltenham and has been pressing for the NW employment area to be located close to M5 junction 10 with housing located close by and with the junction 10 upgraded, as originally proposed. However, although the funding for upgrading junction 10 has apparently been pencilled in, finding the actual resources in the present economic climate may be difficult. Currently, the bridge at junction 10 is listed by DfT as a top priority maintenance project, but J10 is not listed by DfT as an improvement projects (source: DfT 2013 "Action for Roads", pg 31, fig 2.3). This has strengthened interest in other possible locations for employment growth that already have good access to the M5 via existing junctions. Possible sites relevant to the A46 and Church Road are the following:

- A. West Cheltenham in the area of Hayden Green and Fidlers Green, possibly with a new road linking from the A40 / B4063 to the B4634 / A4019, and accessible from M5 junction 11 via the A40 and from the north via the existing M5 junction 10 without needing an upgrade.
- B. To the west along the A40 and in the Staverton airport area, accessible from M5 junction 11.
- C. To the north at Ashchurch, expanding the existing industrial area and accessible from M5 junction 9.
- D. To the south at Brockworth adjacent to Gloucester Business Park and accessible from M5 junction 11A and from the A417.
- E. In south-west Cheltenham on the land south of Up Hatherley Way between Up Hatherley Way and Chargrove Lane. This is reasonably accessible from M5 junction 11 via the A40, Grovefield Way, Cool Pool Lane and Up Hatherley Way.
- F. In south-west Cheltenham, on the Leckhampton Green Field land.

Looking at the implications of each of these potential sites in relation to the traffic on the A46 and in Church Road:

Location A would be accessible from south Cheltenham and from the A46 via Up Hatherley Way - Cold Pool Lane - Grovefield Way – A40. The traffic would probably use this route rather than travelling through central Cheltenham provided the new spur road from the Golden Valley roundabout was constructed with good capacity. Traffic from further down the A46 could use Badgeworth Lane or the A417-M5-A40 route to the Golden Valley roundabout. So if new employment were created at location A, it would probably not greatly increase the traffic flow through the Moorend Park Road junction. However, it would be unlikely to improve the current traffic problem. If substantial employment could be relocated to location A from inner or north Cheltenham, it might reduce the A46 queue.

Location B would be accessible from south Cheltenham and from the A46 via the Up Hatherley Way - Cold Pool Lane - The Reddings - Badgeworth Road - Bamfurlong Lane route. From further south on the A46 it would be accessible via Badgeworth Lane. Traffic to location B from the south would be unlikely to travel through central Cheltenham. So, new employment at B should not make the A46 traffic problem worse. As for location A, if substantial employment were relocated to location B from inner or north Cheltenham, it might reduce the A46 queue.

Location C – Ashchurch, and also the NW Cheltenham development if located at an upgraded junction 10, would be accessible via Up Hatherley Way, Cold Pool Lane, Grovefield Way, A40 to M5 junction 11 and then to M5 junctions 9 and 10 respectively. From further south both would be accessible via the A417 to M5 junction 11A. So the impact of both sites would be similar to B, except that it might be less likely that substantial employment could be relocated to the Ashchurch site from central or north Cheltenham because Ashchurch is too distant.

Location D – New employment at Brockworth would be accessible via the A46 and via the A417. It could reduce the potential inward traffic on the A46 if more people living in Brockworth worked locally and fewer commuted into Cheltenham.

Location E would be accessible via Up Hatherley Way from A46 inward and outward. Because of the location close to the centre of Cheltenham, it might be easier, with sufficient inducements to employers, to transfer employment out of central Cheltenham to this location than to any other. If development at E just created more employment, however, it would make the A46 congestions substantially worse by attracting more commuting up the A46. It would also make the Church Road problem worse by drawing extra commuter traffic through Church Road / Kidnappers Lane. If E became the site for major development of new business, this might tip the balance in favour of building a new road from the A417 or from south of Shurdington to Up Hatherley Way, running west of the A46. This would reduce A46 traffic through Shurdington and on the section between

Leckhampton Lane and the Up Hatherley Way roundabout. A Shurdington by-pass has been considered many times, however, and rejected. It would not help to reduce the current A46 traffic from Up Hatherley Way to Moorend Park Road or the traffic congestion in the Bath Road.

Location F would increase the traffic in the worst areas: Church Road, Kidnappers Lane and the A46. It is substantially worse than location E because location E could be accessed via Hatherley Road and Warden Hill Road / Caernarvon Road and therefore would be less dependent on the A46. Location E is also accessible from the M5 without affecting the A46 traffic queue and is further away from Church Road, a point emphasised by Mark Power.

Out of options A to F, D has the best chance of ameliorating the A46 traffic problem. Unless it were possible to move substantial employment out of central and north Cheltenham and thereby to reduce the commuting into Cheltenham on the A46, E and F would make the A46 problem considerably worse. A, B and C might be neutral in their effect. At the moment the Council understands that it is more likely that any development at D would be primarily housing, with little or no employment. In that case location D would certainly make the traffic problem substantially worse as shown in Annex 3.

Relocating substantial employment out of central Cheltenham is bound to be difficult to implement without major inducements, which are unlikely to be available. So, the overall conclusion is that these potential development areas around Cheltenham are not likely to improve the traffic queue on the A46 significantly and could make it substantially worse. It will need complex traffic modelling of the sort provided by the Saturn Model to draw any firmer conclusions about this. The analysis affirms the importance of locating new housing close to employment.

5.2 CHURCH ROAD GRIDLOCK AND DANGER TO PRIMARY SCHOOL CHILDREN

The traffic flow in Church Road was surveyed by the Council at the Kidnappers Lane junction on six mornings in the period 10 September 2012 to 1 October 2012. The surveys covered all five weekdays and a second Thursday survey was carried out because on the first Thursday the traffic gridlocked. The data from these surveys is included at Table A.2.1.

On the five normal days, an average of 1606 vehicles passed along Church Road between Hall Road and Kidnappers Lane in the period from 07:30 to 09:30. Of these, 815 were travelling in a SW direction and 791 were travelling NE. The survey data shows that the flow through Church Road is fairly steady at 14 to 21 vehicles per minute from 07:45 to 09:00. Two traffic peaks occur; the first between 08:00 and 08:15 and the second from 08:30 to 08:45, associated with parents bringing children to Leckhampton Primary School.

The survey data for the day that Church Road gridlocked does not give much clue as to what initiated the congestion. The queue of traffic built up rapidly from 08:10 as the flow through Church Road fell to half its normal level by 08:20 and to a third of its normal level by 08:30. The shading in the table records the length of the traffic queue waiting to pass into the congested part of Church Road between Collum End Rise and the Leckhampton Road. The darkest shading indicates when the queue extended beyond St Peter's Church so that the end of the queue was out of sight from the survey point. The survey on 13 September was abandoned because the queue of vehicles was stationary. With hindsight it is a great pity that the survey was not continued to understand better how long the congestion persisted.

Normally the section of Church Road through Leckhampton Village works like a string of chicanes with vehicles in one direction waiting for a group of vehicles in the other direction to pass before themselves proceeding. A sudden surge of vehicles could cause both streams to proceed simultaneously and become locked and this maybe what happened. It seems most likely that gridlock would occur at the peaks times between 08:00 and 08:15 and 08:30 to 08:45. A build up of a traffic queue occurred at these times on other survey days, indicated by the shading for the surveys on 27 and 28 September and 1 October. Parents stopping to park and drop off children, and the traffic being held up by children crossing Church Road and Hall Road, could both increase the risk of gridlock in the 08:30 to 08:45 peak. Safety is also now a big concern after a child was hit by a car earlier this year, although fortunately not seriously injured. The Council is planning to do further traffic surveys in the autumn at the Hall Road junction by the school and at the junction with Leckhampton Road in order to try to understand the congestion problems better.

The criteria of preventing gridlock and avoiding accidents both point to the need to avoid any major diversion of vehicles from the A46 onto Leckhampton Lane. The measured pollution levels along Church Road exceed the EU limits in the winter months and this is another reason that one cannot afford to let the traffic increase. Various approaches to improve the problem have been considered, not least by the consortium of developers eager to build on the SD2 and LF sites. But none has been successful.

The problem of Church Road has been discussed recently by the Council with Mark Power of Gloucestershire Highways. Rob Williams, the traffic consultant that the Council has employed to help it in examining the traffic issues, also attended this meeting. Mark Power emphasised the importance of keeping traffic away from Church Road because there is no way to mitigate the problem. The road is narrow and hemmed in by housing and by the scarp of Leckhampton Hill and the AONB.

From table A.3.1 in Annex 3, the travel time from the Leckhampton Lane junction in Shurdington (junction L) to the Moored Park Road intersection (junction M) is about 13 minutes when the A46 traffic queue is at its maximum length. According to anecdotal taxi-driver comments, this is already enough to cause some drivers to use the Leckhampton Lane / Church Road route to by-pass the A46 queue. In its surveys, the Council has measured the journey time via the Leckhampton Lane - Church Road - Leckhampton Road route from Shurdington to the Bath Road roundabout and to the Moored Park Road intersection from 07:40 to 09:00. The journey time is 5 to 9 minutes depending on the traffic level in Church Road. This means that if there is no A46 queue at the Moored Park Road intersection, the journey time is faster via the A46 route. For relatively light traffic when the A46 traffic queue only extends a little beyond Woodlands Road, the A46 route is only a minute or two longer than the route via Church Road. However, if the A46 queue extends as far as Up Hatherley Way, the route via Church Road is typically 6 minutes quicker.

The route via Church Road is longer in distance, but it is well established in traffic modelling that most drivers use a longer distance route if it saves significant travel time. Currently, drivers cannot easily tell in Shurdington how bad the A46 queue will be and whether it would be worth diverting. However, if the queue were regularly bad, as it would be if it regularly extended past the Up Hatherley Way roundabout, the Leckhampton Lane – Church Road route would be reliably shorter and many drivers would divert. On that basis, and using the traffic model in Annex 3, the A46 queue cannot be allowed to lengthen by more than about 0.3 km. This equates to 36 vehicles at 8.2 metre spacing. However, as discussed in Annex 3, the number of vehicles in the queue is likely to increase by around 91 (0.75km) because of the general increase in the traffic levels as the UK economy recovers. This implies that there is no scope for additional housing at Leckhampton even if there is no building at Brockworth.

5.3 TRAFFIC POLLUTION AT MOOREND PARK ROAD JUNCTION AND ALONG A46

It is not yet certain how serious the pollution is along the A46. Measurements by Cheltenham Borough Council at the Moorend Park Road junction have recently started. The early results show that the nitrogen dioxide pollution levels are above the EU permitted levels. Monitoring at the Kidnappers Lane junction indicates that the pollution levels there are within the EU limit; this is not surprising because the traffic queue lasts less time and the area is more open, with the adjacent fields, so that the pollution is trapped much less than at Moorend Park Road.

If the further survey results show that the pollution levels at Moorend Park Road are consistently above the EU permitted levels, action would have to be taken. The only action that seems possible in this case is to reduce the traffic queue and certainly not allow any development that would increase the duration of the queue.

5.4 OPTIONS FOR THE LGS BOUNDARY

The Council has evaluated various options for the boundary of the LGS. The following four options (options 1, 2, 3 and 4) were put forward by the joint Neighbourhood Forum for the Council's debate on 25 July 2013. Option 1 includes all of the Leckhampton Green Field Land in the LGS. Options 2, 3 and 4 exclude part of the land: 9.4 hectares, 14.1 hectares and 14.6 hectares respectively. For all four options, the boundaries on the east, south, west and north-west sides of the LGS are identical; the options differ over the proposed boundary on the north side and how far the small holdings are incorporated within the LGS.

It should be noted that Burrows Field and the allotments were originally included in the LGS but have been excluded from all four options because they are outside the parishes of Shurdington and Leckhampton with Warden Hill and therefore outside the area currently covered by the joint neighbourhood planning. However, the fact that Burrows Field and the allotments have not been formally included in the LGS application does not in any sense mean that they do not need to be protected.

The small holdings are of great value from an amenity point of view. The Leckhampton Fields circular walk is much used by many people within a radius of a mile or more. It runs through the small holdings and round Lotts Meadow and Burrows Field via the Moorend Stream footpath and via Kidnappers Lane and the footpaths west of Kidnappers Lane. It is accessible from every direction: from the west using the footpaths from Farm Lane to Lotts Meadow; from Warden Hill using the footpath along Moorend Stream; from urban Leckhampton via the Burrows Field and the Moorend Stream footpath; and from Leckhampton village using the footpath from Church Road to Burrows Field and Lotts Meadow. It also links via the Cheltenham Circular Path to the footpaths on Leckhampton Hill. It is a walk with a huge variety of interest including the animals on the small holdings, excellent views of Leckhampton Hill, and the fields and medieval cottages of old Leckhampton. Preserving this walk is therefore a top priority. The three options differ in how far they succeed in doing this:

Option 2 preserves all of the small holdings and all of the amenities of the footpath through the small holdings, including the field marked Farming Land (Sheep). It also leaves a fairly wide finger of green land extending almost to the A46. The hedgerows are also incorporated within the LGS to preserve habitats and to provide screening.

Option 3 preserves within the LGS the small holdings of main public value and interest on both sides of the footpath. It does not incorporate the field marked "Farming Land (Sheep)". The sheep are a valuable feature of the walk, especially for children in the lambing season, but it is proposed that the sheep could be moved to land south of the footpath. The proposed LGS boundary cuts through the small holdings: starting from the Parish

boundary at Moorend Stream at a point approximately 22 metres north of the T junction of the footpaths, the proposed LGS boundary skirts the north side of a willow tree and runs 1 metre north of the wire fence that marks the boundary of the small holdings along the north side of the footpath. When it reaches the access track from the A46, the boundary follows along the track along the east and south edges of the field marked "Farming Land (Sheep)" to Kidnappers Lane, incorporating the hedgerows within the LGS. It then follows west along Kidnappers Lane incorporating the hedgerows and south along Farm Lane, again incorporating the hedgerows.

Option 4 follows the footpath, incorporating the small holdings on the south side of the footpath but not those on the north side. Provided the hedgerows are retained along the full length of the footpath, this option preserves much of the amenity value. But it is considerably inferior to options 1, 2 and 3 because it would not protect the attractive and interesting small holdings on the north side of the footpath, and the footpath would be running along the edge of any development, were development to happen.

For all options, access from the A46 must be preserved so that the small holdings remain viable. All four options retain to a greater or lesser degree a green finger of land towards the A46. This green finger is important when the land is viewed from Leckhampton Hill and the Cotswold Way because it creates a greater visual gap between Cheltenham and the AONB and makes the existing housing in the Lanes Estate and along Kidnappers Lane and Farm Lane look more like outliers and not part of the Cheltenham conurbation.

5.5 COUNCIL DECISION TO PROPOSE OPTION 1

The Council is aware, and has been advised by Tracey Crews, that a Neighbourhood Plan cannot be used to prevent sustainable development, this is NOT our intention. Options 2, 3 and 4, by excluding some of the land from the LGS, would more clearly conform to this requirement than Option 1. However, at its public meeting on 25 July 2013, the Council resolved, on advice from experts on the NPPF & Neighbourhood Planning (CPRE in their official role in Neighbourhood Planning & Martin Horwood MP who personally worked on the NPPF LGS designation) , to put forward Option 1. The arguments for doing this are as follows:

- a) Whilst the Council, as a local authority, has always taken a balanced and pragmatic approach on potential development, it has never accepted that any of the Leckhampton land is suitable for large scale development. Excluding any of the land from the LGS might be construed as the Council tacitly accepting large scale development on this excluded land.
- b) The traffic survey and analysis, particularly taking into account the July 2013 DfT report "Action for Roads: A Network for the 21st Century", makes a strong case that no development on the Leckhampton land can possibly be sustainable even if no development occurs at Brockworth. The Council cannot be accused of using the Neighbourhood Plan Concept to try to prevent sustainable development if no sustainable development is feasible anyway.
- c) CPRE advised that, whilst the Parish Council might have to be prepared to negotiate at a later stage, there was no reason not to put option 1 forward at this stage.
- d) The Council was advised by Martin Horwood, who was the author of the relevant LGS legislation within the NPPF, that although there is no specific limit for the maximum area for a LGS, the proposed area for the Leckhampton LGS is more than an order of magnitude smaller than the sort of size that might be deemed maximum.

6.1 INTRODUCTION

Modelling traffic flow is generally very difficult and computer-intensive. However, the A46 presents a relatively simple case. The A46 has a single lane each way along its whole length from the A417 to the centre of Cheltenham. During the peak morning traffic period, from about 07:30 to 09:15, there is a constant stream of traffic in both directions. The road is narrow and there is no overtaking or parking on the road. So in each direction there is an orderly line of traffic with vehicles primarily joining or leaving at the main junctions.

The traffic flow into Cheltenham is limited by the Moorend Park Road traffic lights. A queue of traffic builds up during the morning peak period. Its maximum length is typically around 1.2 km, extending past the Woodlands Road and Kidnappers Lane junctions. If traffic levels are high, or if there is some obstruction or roadworks on the A46 or in Church Road or Leckhampton Lane, the queue can extend beyond the Up Hatherley Way roundabout and even down to Shurdington.

Table A.3.1: Measured speed of traffic flow and transit times of inward traffic between the A46 junctions.

The speed was measured on three different days of the week by driving in the traffic flow and recording when each junction was passed. The darkly shaded readings indicate how far the queue has reached. The more lightly shaded readings indicate congestion in Shurdington or at the back of the queue. On day 1 (Wednesday) the survey had to be abandoned because a tree fell and partially blocked the A46. On day 2 (Friday) the traffic was sufficiently heavy that the queue reached slightly beyond the Up Hatherley Way roundabout. On day 3 (Monday) the queue reached to about 100 metres north of the Up Hatherley Way roundabout.

Transit times (secs) between A46 junctions during morning peak period																		
Day		2	2	3	1	2	3	1	2	3	3	2	3	3	2	3	2	3
Time at U		06:49	07:10	07:15	07:21	07:24	07:32	07:38	07:43	07:50	08:03	08:06	08:16	08:35	08:35	08:47	09:00	09:00
	km																	
A → B	1.75	85	100	108	109	106	107	115	130	131		131			125		125	
B → L	1.01	70	68	82	68	67	96	94	90	133		105			132		67	
L → U	1.23	73	72	72	72	69	86	82	78	106		78			77		78	
U → K	0.60	42	44	45		41	51		47	56	63	66	115	178	300	93	45	40
K → W	0.19	15	15	19		12	14		20	126	100	121	126	202	139	149	51	19
W → M	0.55	35	33	45		41	52		145	209	276	258	269	219	258	280	228	206

Traffic speed in km/h at various times in the morning peak period																		
Day		2	2	3	1	2	3	1	2	3	3	2	3	3	2	3	2	3
Time at U		06:49	07:10	07:15	07:21	07:24	07:32	07:38	07:43	07:50	08:03	08:06	08:16	08:35	08:35	08:47	09:00	09:00
	km																	
A → B	1.75	74	63	58	58	59	59	55	49	48		48			50		50	
B → L	1.01	51	54	44	54	54	38	39	40	27		35			28		54	
L → U	1.23	61	62	62	62	64	51	54	57	42		57			58		57	
U → K	0.60	51	49	48		53	42		46	39	34	33	19	12	7.2	23	48	54
K → W	0.19	46	46	36		57	49		34	5.0	6.8	5.7	5.4	3.4	4.9	4.6	13	36
W → M	0.55	57	60	44		48	38		14	9.0	7.2	7.7	7.4	9.0	7.7	7.1	8.7	9.6

The development of the traffic queue can be seen in Table A.3.1, which shows the speed of the inward traffic flow measured by driving in the traffic flow and recording the time at which each junction was passed. The dark

shading shows when the queue has formed and how far it has reached. The junctions are shown on Map A.3.1 and are designated:

- M Moorend Park Road crossroads, traffic-light controlled.
- W Woodlands Road T junction
- K Kidnappers Lane T junction
- U Up Hatherley Way roundabout
- L Leckhampton Lane T junction at the Bell Inn at the north of Shurdington
- B Badgeworth Lane T junction at the south of Shurdington
- A A417 roundabout. This is a motorway standard roundabout above the A417 with slip roads to and from the A417 dual carriageway.

Travelling from the A417 to the Moorend Park Road intersection takes about 5.5 minutes in good driving conditions before 07:00. As Table A.3.1 shows, the journey time increases to between 13 to 20 minutes in the 08:00 to 08:45 period. This is due not just to the traffic queue but also to congestion in Shurdington, which is caused particularly by traffic waiting to turn right onto Leckhampton Lane.

The outward traffic on the A46 is similar in volume to the inward traffic, but peaks earlier. The travel times and traffic speeds are shown in Table A.3.2. In light traffic, the outward journey from the M to A takes about 5.5 minutes. In the peak period congestion in Shurdington can add 5 minutes. The outward traffic flow is not discussed further in this annex, but it is worth noting that the surveys at M showed that the outward traffic occasionally backs up onto the junction and partly blocks it. This is an issue for potential housing development on the Leckhampton land, but is not discussed further here.

Table A3.2: Measured speed of outward traffic flow and transit times between junctions. The speed was measured on three different days of the week by driving in the traffic flow and recording when each junction was passed. The lightly shaded readings on day 2 show congestion in Shurdington. On day 1 (Wednesday) the survey had to be abandoned because a tree fell and partially blocked the A46.

Transit times in seconds between A46 junctions in the morning peak period																	
Day		2	2	2	1	3	1	2	3	1	2	3	3	2	3	2	3
Time at U		06:38	07:03	07:15	07:16	07:22	07:30	07:35	07:40	07:46	07:56	07:59	08:13	08:21	08:45	08:51	08:58
	km																
M → W	0.55	42		39		59		37	37		37	47	47	43	38	46	44
W → K	0.19	14		15		16		16	17		16	18	12	14	17	15	13
K → U	0.60	39	44	38		40		39	42		39	43	43	42	43	48	38
U → L	1.23	68	74	71	101	76	81	87	93	71	87			206		90	
L → B	1.01	68	67	70	72	79	73	66	95	70	66			191		101	
B → A	1.75	105	95	103	111	104	163	104	119	103	104			104		109	

Traffic speed in km/h at various times in the morning peak period																	
Day		2	2	2	1	3	1	2	3	1	2	3	3	2	3	2	3
Time at U		06:38	07:03	07:15	07:16	07:24	07:30	07:35	07:40	07:46	07:56	07:59	08:13	08:21	08:45	08:51	08:58
	km																
M → W	0.55	47		51		34		54	54		54	42	42	46	52	43	45
W → K	0.19	49		46		43		43	40		43	38	57	49	40	46	53
K → U	0.60	55	49	57		54		55	51		55	50	50	51	50	45	57
U → L	1.23	65	60	62	44	58	55	51	48	62	51			21		49	
L → B	1.01	54	54	52	51	46	50	55	38	52	55			19		36	
B → A	1.75	60	66	61	57	61	39	61	53	61	61			61		58	



Map A.3.1 showing the main A46 junctions. Also important is Leckhampton Lane which runs north-east from Shurdington, becoming Church Road after 1.7km at the Crippets crossroads with Farm Lane. Church Road provides the only route round the south side of Cheltenham – via Leckhampton Lane to the A46, A417 and M5 junction 11A and via Kidnappers Lane to the A40 and M5 junction 11.

6.2 PROPOSED LARGE SCALE DEVELOPMENTS

A number of large scale housing developments have been proposed or are imminent for sites along the A46, and these are of great concern from a traffic point of view. The main housing developments are:

Brizen Farm (BF) – This is a proposed development of 175 houses on green belt land in Tewkesbury Borough to the east of the Up Hatherley roundabout. An outline planning application for this development was submitted to Tewkesbury Borough Council in March 2013. The development would have one road entrance/exit, which would connect directly to the Up Hatherley Way roundabout, making this a 4-way roundabout rather than 3-way at present.

SD2 site (SD2) – This is a proposed development in Tewkesbury Borough west of Farm Lane and south of the Brizen Farm estate. An application was made for 350 houses on this site in 2009 and was refused on appeal. However, the SD2 site is currently in the Tewkesbury Borough Council development plan. The site would have one entrance/exit which would be onto Farm Lane and would be designed so that traffic from the estate could only proceed north along Farm Lane and could not turn south. This is to try to prevent any traffic adding to the morning traffic on Leckhampton Lane and Church Road. The SD2 site would also have a second entrance, but this would be for emergency vehicles only. If the proposed traffic measures work successfully, most of the traffic should flow to the A46 Kidnappers Lane junction. However, some of it could still double back to Church Road via Kidnappers Lane.

Leckhampton fields (LF) – An application for development on this site has been under consultation for over a year. This consultation involved a consortium of developers and covered both the LF and SD2 sites. Originally it was for a total of 1300 houses, with 350 on SD2, as in the 2009 submission, and 950 on LF. This number was later reduced to 300 on SD2 site and 800 on LF. The consortium has recently split up and the applications for the SD2 and LF sites will now be submitted separately. The original proposal included building on land east of Farm Lane owned by Gloucestershire County Council. GCC declines to make this land available and it is now expected that a new application will come forward for the remainder of the LF site at the end of August for around 600 houses. However, it is understood that the GCC land is still identified for housing development in the JCS strategic site options. So an additional application could come forward for this at a later stage.

Brockworth development – This is a proposed development of 1500 houses on green belt land in Tewkesbury Borough close to the A417 at Brockworth. It would infill between the north of Brockworth and the south side of the A417, extending west from the A46/A417 junction potentially as far as M5 junction 21A. The site has an excellent link to the A417 and to the M5 and to several centres of employment and although it is green belt, some development here may be likely.

Developments on the green belt south-west of Cheltenham – An application has previously been submitted to build around 80 houses on green belt land at Oaklands near the intersection of Up Hatherley Way and the A46. This application was refused. For the purpose of the current modelling, no development has been included on this land.

6.3 AVERAGE SPACING OF VEHICLES IN THE TRAFFIC QUEUE

The traffic queue that builds up at the Moorend Park Road intersection is a slowly moving queue that becomes stationary at the traffic lights while waiting for traffic to cross on Moorend Park Road. Further back, the queue generally moves steadily forward but sometimes comes to a temporary stop. The average vehicle spacing in the traffic queue is an important parameter in the traffic model because it relates the queue length to the number of vehicles in the queue. One can derive the average vehicle spacing by using the survey data in table A.3.1.

The traffic surveys at the Moorend Park Road intersection show that the maximum capacity of the junction for traffic flowing north-east on the A46 is around 900 vehicles per hour but that this falls to around 745 vehicles per hour during the peak traffic period because of the larger amount of traffic on Moorend Park Road that is crossing the intersection or joining the A46 traffic. The traffic queue starts to form at around 07:40 when the vehicle arrival rate exceeds the maximum capacity and it lasts until 09:00 to 09:15, depending on the volume of the traffic. The queue grows quickly, reaching W at about 07:45 and K at about 07:50. The growth then slackens and the queue typically extends slowly to a final length of about 1.2 km to a point 100 to 200 metres north of U. It starts to decline again at around 08:45 as the peak traffic flow reduces.

Between the Woodlands Road junction (W) and the Moorend Park Road intersection (M), the number of vehicles in the queue is given by the formula $N_{WM} = C_M * t_{WM}$ where C_M is the capacity of the junction (745 vehicles/hour) and t_{WM} is the time that vehicles in the queue take to travel from W to M. From table A.3.1, the average value of t_{WM} is 262 seconds and the average number of vehicles in the queue from K to M is 53.8. Hence, the average vehicle spacing over the 550 metres between M and W then works out at 10.2 metres.

For the Woodlands Road junction, the net number of vehicles per minute joining the inward A46 traffic in the period 08:10 to 08:40 is 1.6. The $K \rightarrow W$ vehicle flow is therefore $12.4 - 1.6 = 10.8$ vehicles per minute. From table A.3.1, the average t_{KW} is 136 seconds and the number of vehicles in the queue is 24.7. Hence their average spacing over the 190 metres between the junctions is 7.7 metres and the average speed of the queue is 5.2 km/h (3.3 mph).

In table A.3.1, there is only one measurement where the queue extended as far as the Up Hatherley Way roundabout. Using just this one measurement is not very reliable because one does not know the precise number of vehicles that turned out of the queue at the Kidnappers Lane junction. However, using the average value for this from the traffic survey would give the flow $U \rightarrow K$ as 12.5 vehicles per minute. The number of vehicles in the queue is then 63, giving a vehicle spacing of 9.5 metres and the speed of the queue as 7.7 km/h (4.5 mph).

These vehicle spacings are what one would have expected and are consistent with what has been observed in the traffic surveys. A spacing of 7.5 to 8 metres is typical in slowly moving traffic queues. The larger spacing from $W \rightarrow M$ is to be expected because drivers naturally leave a larger gap from the vehicle in front as the queue moves faster when the lights change. The value of 9.5 metres between U and K probably reflects the effect of the two traffic streams converging at the roundabout.

Based on this data, it seems reasonable to take a value of around 8.2 metres as the typical vehicle spacing for the purpose of calculating the length of the queue for different numbers of extra vehicles. This is slightly larger than the average spacing typically reported in the literature. But it has been observed in the traffic surveys that the traffic contains quite a high proportion of large family and executive cars as well as commercial vehicles and other large vehicles. So one would expect the vehicle spacing to be larger than for inner city traffic, where there would be a higher proportion of small and compact cars. Also when traffic is crawling slowly in a queue, drivers

often leave a gap in front and then catch up. These gaps add to the average vehicle spacing and length of the queue. This behaviour was observed in the traffic surveys at Kidnappers Lane.

6.4 CHECKING THE CONSISTENCY OF THE SURVEY DATA

In clear conditions, the number of vehicles per minute arriving at the Moorend Park Road intersection M at time t is given by the expression:

$$N_M(t) = A_{IF}(t-t_{AM}) + B_J(t-t_{BM}) + L_J(t-t_{LM}) + U_J(t-t_{UM}) + K_J(t-t_{KM}) + W_J(t-t_{WM}) \quad (1)$$

Here $A_{IF}(t-t_{AM})$ is the inward flow from the A417 roundabout at time $t-t_{AM}$, allowing for the travel time t_{AM} that it takes the vehicles to travel from A to M. $B_J(t-t_{BM})$ is the net number of vehicles per minute joining the inward traffic flow at the Badgeworth Lane junction at time $t-t_{BM}$ allowing for the travel time t_{BM} that it takes vehicles joining the flow at B to reach M. $B_J(t)$ is in fact negative during the morning peak period because more cars turn off the A46 onto Badgeworth Lane than join from Badgeworth Lane. The other terms in the equation are similar.

Over the period 07:45 to 08:45, the average net number of vehicles per minute joining the inward flow at each of the junction is:

$B_J(t)$	$L_J(t)$	$U_J(t)$	$K_J(t)$	$W_J(t)$
-2.7	-4.1	1.7	-1.5	2.3

One can test how well equation (1) works by calculating the expected flow arriving at each junction from the flow that came from the previous junction, allowing for the travel time between the junctions. One can then compare this calculated flow with the actual flow measured in the traffic surveys. The agreement is good for all the junctions, given that all of the surveys including the measurement of travel times between junctions were done on different days. On this basis, one can conclude that the manual analytical approach detailed above has been validated and is considered to be fit-for-purpose when considering future development implications.

In the surveys at each of the junctions, the number of vehicles in each direction was counted in 5 minute periods. The numbers fluctuate from one period to another because the flows tend to be bunched. However, the average flow is fairly constant over the 07:45 to 08:45 period and this makes it possible to model the flows and queue growth using these mean values. This makes the modelling much easier than using the time dependent flow of individual vehicles.

The average flows in vehicles per minute for the period 07:45 to 08:45 measured by the traffic surveys are shown below. This data has been used as the basis for the traffic modelling. For the A417 junction, the data is for the north corner of the roundabout, where traffic leaving the A417 from the west merges with the inward flow on the A46 and also turns right to join the outward flow on the A46. This discussed in section 6.9.

	A (NW corner)	B	L	U	K	W
A46 inward flow going straight over	11.9	14.2	11.3	8.2	10.2	10.6
A46 inwards turning off	Not applicable	3.7	4.1	2.7	2.1	0.2
Side road traffic joining inward flow	6.3	1.1	0.0	4.4	0.7	2.6
A46 inward flow into junction	11.9	18.0	15.4	10.9	12.3	10.8
A46 inward flow out of junction	18.2	15.3	11.3	12.6	10.8	13.1
Net joining	6.3	-2.7	-4.1	1.7	-1.5	2.3

6.5 GROWTH OF THE TRAFFIC QUEUE DOWN TO UP HATHERLEY WAY

At most times of the day, the number of vehicles $N_M(t)$ arriving at the Moored Park Road junction is lower than the capacity $C_M(t)$ of junction and so no queue forms (apart from a short queue waiting for the traffic lights to change). When $N_M(t)$ becomes greater than $C_M(t)$, the queue starts to grow. What then matters is the number of vehicles per minute $N_Q(t)$ arriving at the back of the queue. The vehicles in the queue are moving forward like a pipeline. The front end is emptying at the rate $C_M(t)$, which creates a similar space at the back of the queue. So the queue will grow at the rate of $N_Q(t) - C_M(t)$.

Once the back of the queue reaches the Woodlands Road junction W, the A46 queue will continue to grow if $N_Q(t) + W_J(t) > C_M(t)$. This assumes that all of the vehicles coming from Woodlands Road can still join the queue even though the junction can be blocked by the queue. The traffic surveys showed that a small queue does form on Woodlands Road but this queue does not build up. Enough drivers in the A46 queue, seeing cars waiting, give way to allow vehicles to exit from Woodlands Road. They also stop to allow vehicles to turn right from the A46 into Woodlands Road and this again allows vehicle from Woodlands Road to join the queue.

When the queue passes the Kidnappers Lane junction K, it continues to grow if $N_Q(t) + W_J(t) + K_J(t) > C_M(t)$. It is worth noting that the fact that it takes individual vehicles 6 to 7 minutes to travel from K to M does not introduce any time delays in this equation. Space at the front of the queue propagates quickly to the back as the vehicles jostle forwards. At Kidnappers Lane, vehicles have to turn right and cross the outward traffic in order to join the inward flow. Some vehicles wait several minutes to do this; others instead turn left into the outwards flow and do a U-turn at the Up Hatherley Way roundabout. The traffic surveys found that a short queue of ten or so vehicles can temporarily build back along Kidnappers Lane, but this does not last long and is not an important effect.

6.6 TRAFFIC GENERATED BY PROPOSED NEW DEVELOPMENTS

6.6.1 BRIZEN FARM SITE (BF) – PROPOSAL FOR 175 HOUSES:

The easiest of the proposed new housing estates to consider is the Brizen Farm site (BF). Vehicles would enter or exit at the Up Hatherley Way roundabout, which would become 4-way. Exiting vehicles would give way to the outward A46 traffic flows continuing along the A46 and turning right into Up Hatherley Way. This outward A46 traffic tends to be bunched and there are sufficient gaps in the flow so that a small flow of vehicles from BF should be no problem joining the roundabout. Any vehicles from BF heading inwards on the A46 would also have priority over the inward A46 traffic.

The housing proposed on the Brizen Farm estate is family sized and it is reasonable to assume that it would have a fairly high proportion of working families. The evidence from the adjacent Lanes Estate is that residents would be highly car dependent and that, although there are fairly frequent buses into central Cheltenham, most commuting would be by car or by bicycle. This leads to the following assumptions:

Per house	Number of vehicles	A46 to M	A46 to K and W	A46 outwards	A46 to Up Hatherley Way
0.60	105	45	11	24	25

This assumes that 0.6 cars per household are mobilised in the peak traffic period. This figure is what has been assumed by the developer's consortium according to information they provided at their public exhibitions. It is also consistent with the results from the traffic surveys that the Council has made at the Lanes Estate.

6.6.2 PROPOSED BROCKWORTH DEVELOPMENT (PB) - 1500 HOUSES

This proposed development is located between Brockworth and the A417. Residents would probably commute by foot, bicycle or car to the Gloucester Business Park and by car to various other sites in and around Gloucester and Cheltenham. The PB site would also be well placed for commuting to destinations to the east along the A417 and to the north and south along the M5, including to Bristol. A fair set of assumptions for PB mobilisations and traffic flow might be as follows. In order to present a robust analysis, the mobilisations have been spread over 90 minutes (07:30 to 09:00) because of the longer commuting distances to likely destinations.

PB: Assumed car mobilisations 07:30 to 09:00

Per house	Number of vehicles	NE on A46	West to Gloucester and M5	East on A417	SW on A46
0.6	900	350	400	100	50

Assuming that the proportion of vehicles leaving the A46 at each junction will be the same as for the *normal* traffic on the A46, a sensible distribution between the different destinations would be as follows:

PB: Flow of vehicles on A46 towards Cheltenham

	A46 NE	Turning left to Badgeworth Lane	Turning right to Leckhampton Lane	Turning left to Up Hatherley Way	Continuing to Moorend Park Road junction
Vehicles	350	73	68	53	156
% of total	39%	8.1%	7.5%	5.9%	17%

6.6.3 SD2 SITE – PROPOSAL FOR 300 HOUSES

The SD2 site is adjacent to the existing Lanes Estate and to the proposed Brizen Farm Estate. Unlike Brizen Farm, it is not green belt. However the site is all within a mile of the top of Leckhampton Hill and close to the AONB. It is also close to Leckhampton Lane and there is a risk that traffic from SD2 could add significantly to the traffic through Church Road. For both reasons, the Council has objected strongly to the proposal for building on this site. Unfortunately, however, because SD2 is not in the green belt or AONB, it is currently included in the

Tewkesbury Borough development plan. Recently Shurdington Parish Council made an application for SD2 to be converted to green belt as part of a green belt swap. This submission was strongly supported by Leckhampton with Warden Hill Parish Council. However, the SD2 site currently remains in the TBC plan and therefore needs to be included in the traffic analysis.

Because of the potential grid-locking problem in Church Road, the developers have proposed to design the exit from the SD2 site onto Farm Lane so that traffic is forced to travel towards the A46 and prevented physically and by traffic signs from turning right onto Farm Lane towards Leckhampton Lane and Church Road. Nevertheless, some are likely to double back to Church Road via Kidnappers Lane.

The likely peak period traffic flow from SD2 is as follows:

SD2 site: Assumed car mobilisations 07:45 to 09:00

Per house	Number of vehicles	A46 NE to Moorend Park Rd junction		A46 NE - left to Woodlands Rd	South and west via A46	Church Road
		Bath Rd / The Park	Right into MPR			
0.6	180	72	10	2	81	15
		40%	5.6%	1%	45%	8.3%

All of the 84 cars travelling NE on the A46 would contribute to the queue.

6.6.4 LECKHAMPTON FIELDS (LF) – PROPOSAL FOR 800 HOUSES

Of all the proposals, the LF site creates the most difficult traffic problems. Unlike the SD2 site, there is no easy way to prevent traffic from the new houses from flowing to Church Road. This has led to various proposals for mitigating the impact on Church Road, all of which have serious problems. Also, it is currently proposed that the development would have an exit at its north end close to M. This would create a route from the A46 in Shurdington to the Moorend Park Road junction that would by-pass the traffic queue on the A46. Although it is a longer route in terms of distance it would be much quicker if there were a long queue on the A46. This would create a problem at junction L with so much traffic turning onto Leckhampton Lane.

The public exhibition by the developers covered the proposed LF and SD2 developments jointly and figures were given for the expected vehicle mobilisations for the 1100 houses proposed on the two sites together. The mobilisations were predicted to be around 0.6 mobilisations per house in the peak period 07:45 to 09:00. As noted earlier, this figure is consistent with the number of mobilisations in the peak period from the existing Lanes Estate, which is adjacent to both SD2 and LF sites. Of the total of 660 vehicles mobilised, the developers assumed that 70 would flow to Church Road. A reasonable set of assumptions for both developments would therefore be as follows:

Site / homes	Veh.	A46 to M _{IF} /M _L		A46 to M _R		A46 to W _L		South & west		Church Rd		Total east		Total in queue		
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	
		1100	660	298	45	24	4	7	1	261	40	70	11	94	14	329
SD2	300	180	72	40	10	6	2	1	81	45	15	8	25	14	84	47
LF	800	480	226	47	14	3	5	1	180	38	55	11	69	14	245	51

The developers proposed that the LF site would have three traffic exits/entrances onto the A46: one at the Kidnappers Lane junction, which would become traffic-light controlled, and two at the north end of the site, about 400 metres south-west from the Moorend Park Road intersection. One of these would be bus-only and both of them would be controlled by traffic lights. The differences in percentages between the SD2 site and LF site shown in the table arise because the northern exit from LF would give very easy access to the Moorend Park Road junction. So the LF development would be a very convenient place to live for people working in Cheltenham. This would be slightly less true for the SD2 development. For convenience in the traffic modelling, the three LF exits have been treated as one. Since the existing traffic queue passes beyond all three exits, treating them as one makes no difference to the growth of the A46 traffic queue.

It is important to note that residents on the LF site would not be motivated to travel earlier to avoid the congestion because they have access to the front of the A46 queue. The same is substantially true also for the SD2 site and the Brizen Farm site. So there is no prospect that the congestion on the A46 would be mitigated by earlier travel, unless it is by commuters travelling from the A417 and further south.

6.7 COMBINED EFFECT OF THE PROPOSED DEVELOPMENTS ON THE QUEUE LENGTH

The analysis above has covered each of the four developments separately. In the modelling of their combined effect, the traffic that currently flows in the absence of any of the proposed developments is for clarity referred to as the *normal* traffic and the traffic arising from the proposed new developments is referred to as the *extra* traffic.

In calculating the combined effect of the proposed developments, we need to consider three components:

1. The rate at which the queue is lengthening because of the *extra* vehicles from the developments that are travelling to M.
2. The extent to which some *normal* and *extra* vehicles feeding into the queue at each junction may have difficulty joining the queue because the junction is being blocked by the queue. Vehicles waiting to join the queue could then build up cumulatively into a long queue on the feeder road. This feeder queue would reduce the number of vehicles joining the A46 queue; it would therefore be a negative addition to the A46 queue.
3. The rate at which the queue is lengthening because *normal* and *extra* vehicles wanting to turn off at a junction are instead getting trapped in the queue. The trapped vehicles cause the queue to lengthen at a rate equal to the difference between the rate at which vehicles are reaching the turn-off point and being released from the queue and the rate at which new vehicles wanting to turn off are feeding into the end of the queue. One must include in this not only the *normal* traffic but also the *extra* traffic from PB.

6.7.1 EFFECT OF THE *EXTRA* VEHICLES TRAVELLING TO M

If all of the developments were to go ahead, their cumulative effect would add 523 vehicles to the queue (BF:45 + PB:156 + SD2:82 + LF: 240). For the average vehicle spacing of 8.2 metres estimated in section 6.3, this would add 4.3 km. When added to the *normal* queue length, this would be enough to take the end of the queue to beyond the A417 intersection.

As noted in section 6.4, we can assume a constant value for the *normal* traffic in vehicles/minute for the period 07:45 to 08:45. It also makes the modelling easier to assume that the *extra* flow is uniform over the period 07:45 to 09:00. In practice, vehicles travelling to a distant destination tend to leave earlier than 07:45. The surveys

carried out at the Lanes Estate showed a group of vehicles departing before 07:15 and heading south on the A46. However, these early mobilisations affect the outward traffic flow rather than the inward flow.

6.7.2 DEVELOPMENT OF A FEEDER QUEUE AT JUNCTION U

The *extra* traffic from LF and SD2 should be able to join the queue easily if, as proposed by the developers, junction K is made traffic-light controlled. The traffic light priorities would need to be set to allow all the traffic from LF and SD2 to exit at K since otherwise this would encourage traffic to flow back to Church Road. So the modelling assumes that the *extra* traffic from LF, SD2 and BF joins the queue quickly with no feeder queues.

The traffic surveys for junction U show that, on average, 4.4 vehicles/minute currently join the queue from Up Hatherley Way whereas only 2.8 vehicles/minute leave the queue. So an extra 2.6 vehicles/minute are joining. However, the traffic flow (5 vehicles/minute) turning right from Up Hatherley Way to join the outward flow on the A46 holds back the other traffic and gives time for all of the 4.4 vehicles/minute to force their way into the queue. It was observed that two flows zip together.

The situation at U is likely to become more difficult if one adds the *extra* traffic from LF and SD2 joining the queue at K, because this means the queue will be moving forward more slowly from U, leaving less space for the joining vehicles. In the modelling two scenarios have therefore been considered: (1) that traffic light control and/or other measures are introduced to prevent any substantial queue building up on Up Hatherley Way, and (2) that a proportion of the traffic flow from Up Hatherley Way builds up as a feeder queue.

For scenario (2), the model generates a queue on Up Hatherley Way roughly proportional to how much of the proposed new housing building goes ahead. For the case where all of the proposed developments go ahead, the feeder queue on Up Hatherley Way grows at 3.3 vehicles/minute. This means that it would be 1 km long after 36 minutes. The feeder queue consists of vehicles turning right at U to join the outward flow on the A46 as well as the vehicles turning left to join the inward flow.

6.7.3 VEHICLE BEING TRAPPED IN THE QUEUE BETWEEN JUNCTIONS L AND U

For *normal* traffic, the end of the queue reaches a point between U and K and then remains roughly stable for about an hour. During this period the traffic flow from U to K and from K to W is queue limited. The traffic surveys show that these queue-limited flows are 12.3 vehicles/minute and 10.9 vehicles/minute respectively. Adding the *extra* traffic from LF and SD2 takes up 4.3 vehicles/minute of the queue-limited flow U→K and this leaves 8.0 vehicles/minute remaining for the other traffic.

At U, a further 0.75 vehicles/minute of the flow is taken up by *extra* vehicles from BF. Assuming there is no feeder queue on Up Hatherley Way, 4.4 vehicles/minute are also joining the queue from Up Hatherley Way. This leaves a residue of only 2.85 vehicles/minute remaining for the *normal* and *extra* inward traffic on the A46.

Without the *extra* traffic, the flow of *normal* traffic from L to U, as measured from the traffic survey, would be 10.9 veh/min, of which 2.7 veh/min would turn left at U and the remaining 8.2 veh/min would continue ahead on the A46. With the *extra* traffic, this flow of 8.2 veh/min falls to 2.85 vehicles/minute. The rate at which vehicles can turn left onto Up Hatherley Way falls in the same proportion, from 2.7 to just 1.0 vehicles/minute. Meanwhile, vehicles wanting to turn left at U are joining the end of the queue at a rate of 3.3 vehicles/minute (2.7 vehicles/minute *normal* traffic and 0.6 vehicles/minute *extra* turning-off traffic from PB). So the difference (2.4 vehicles/minute including 0.1 rounding) is trapped cumulatively in the queue whilst waiting to turn off at U.

The overall situation between L and U is therefore as follows. Traffic is flowing into the end of the queue at a rate of 13.2 vehicles/minute (10.9 *normal* plus 2.3 *extra* from PB). Meanwhile, vehicles are only able to flow into junction U at a rate of 3.8 vehicles per minute including those turning off. The queue is therefore lengthening at a rate of 9.4 vehicles/minute. At this rate of growth, the queue reaches L in 16 minutes at 08:08 (L→U =1.23 km or 150 vehicles at 8.2 metres spacing).

6.7.4 ANALYSIS FOR JUNCTION L

The above analysis applies similarly at junctions L except that one does not need to consider any feeder queue since all the traffic from Leckhampton Lane turns left and joins the outward traffic and none joins the inward traffic.

Using the traffic survey data for L, the average *normal* traffic flow from B to L is 15.4 vehicles/minute. Of this, 4.1 turns vehicles/minute turn right into Leckhampton Lane. The traffic flow L→U is 11.3 vehicles/minute. (This is slightly different from the measured flow of 10.9 vehicles/minute into U from L. This may be partly because the surveys at L and U were carried out on different days and also because a small amount of traffic leaves between L and U by turning left onto Chargrove Lane). With the *extra* traffic the flow L→U is reduced from 11.3 vehicles/minute to 4.2 vehicles/minute. The traffic turning right onto Leckhampton Lane is reduced in the same proportion, from 4.1 to 1.5 vehicles/minute. Including the *extra* traffic from PB waiting to turn off at L and U, 3.2 more vehicles/minute are now being trapped cumulatively in the B→L queue whilst waiting to turn off at L.

The overall situation for the queue between B and L is therefore as follows. Traffic is flowing into the end of the queue at a rate of 18.3 vehicles/minute (15.4 *normal* plus 1.73 *extra* from PB to M, 0.59 *extra* from PB turning off at Up Hatherley Way and 0.64 *extra* from PB turning off at L). Vehicles are flowing forward at L at 5.7 vehicles/minute (4.2 veh/min straight ahead and 1.5 veh/min to Leckhampton Lane). The remaining 12.6 vehicles/minute are building up cumulatively in the queue. Growing at this rate, the queue now reaches junction B in 10 minutes at 08:18 (B→L = 1.01 km or 123 vehicles at spacing of 8.2 metres).

6.7.5 ANALYSIS FOR JUNCTION B

The analysis at junction B is similar to that for junction U, except that even with the slow movement of the A46 queue, slightly more vehicles leave the queue at B by turning left into Badgeworth Lane than join the queue from Badgeworth Lane. So there will be enough space vacated in the queue for the joining vehicles. However, vehicles wanting to turn right from Badgeworth Lane onto the A46 (1.4 veh/min on average) may have difficulty in crossing through the A46 queue. So it is possible that some feeder queue could build up on Badgeworth Lane because of this right turning traffic. In the modelling, two scenarios have been run: (1) with no feeder queue and (2) where all of the traffic joining at B is held up in a feeder queue. The model shows this makes very little difference to the growth of the A46 queue. For the base case, the A46 queue arrives at the A417 junction at 08:32 for scenario (2) compared with 08:31 for scenario (1).

Using the traffic survey data for B, the average *normal* traffic flow from A to B is 18.0 vehicles/minute. Of this, 3.7 turns left into Badgeworth Lane and 14.2 continues ahead. With the *extra* traffic, the flow A→B is reduced from 18.0 to 5.6. The traffic turning left into Badgeworth Lane is reduced in the same proportion, from 3.7 to 1.2. Adding the *extra* traffic from PB, 3.4 more vehicles/minute are now being cumulatively trapped in the queue waiting to turn off at B.

The overall situation between A and B is therefore as follows. Traffic is flowing into the end of the queue at a rate of 21.8 vehicles/minute (18.0 *normal* plus 3.8 *extra* from PB) Vehicles are only able to flow into junction B at

a rate of 5.8 vehicles/minute (4.6 going straight ahead and 1.2 turning off). Therefore, 16.0 vehicles/minute are building up cumulatively in the queue. Growing at this rate, the queue now reaches junction A in 13 minutes at 08:31 (A→B = 1.75 km or 213 vehicles at a spacing of 8.2 metres).

6.8 TRAFFIC MODEL

A simulation of how the queue grows has been implemented as an Excel model in order to examine what constraints traffic congestion would place on the potential developments in the Leckhampton and Shurdington areas. The base case, described above in section 6.7, is shown in Table A.3.3. The model calculates the times at which the end of the traffic queue reaches each of the A46 junctions and also calculates the queue speed and the queue-limited travel time to junction M for each junction. The model allows the *normal* traffic to be altered in order to examine the effect of queues building up on other roads, particularly on Up Hatherley Way, and also the effects of future increases in traffic volumes. During the recession traffic volumes have fallen but they are expected to recover towards their historical trend as the UK economy improves. This is discussed further in section 6.8.2.

As a check on consistency, the model also calculates the number of vehicles in the queue using two semi-independent methods, as shown in the base case output in Table A.3.3. Method (1) simply multiplies the distance between each junction and junction M by the assumed average spacing of 8.2 metres between the vehicles in the queue. This method is independent of the model, except that the model also uses the same vehicle spacing of 8.2 metres. Method (2) calculates the number of vehicles in the queue at each junction by integrating the net increase in the number of vehicles in each section of the queue as the queue builds up from each junction to the next. The two methods give close agreement, as shown in Table A.3.3.

Assumptions		Homes		Mobilisation		Peak traffic period		Percentage of mobilisations added to inward A46 flow				
						Start	Mins	to M	to K	to U	to L	to B
Leckhampton Fields site (LF)		800		60%		07:45	75	50.0				
SD2 site (SD2)		300		60%		07:45	75	45.6				
Brizen Farm site (BF)		175		60%		07:45	75	42.9	10.5			
Proposed Brockworth site (PB)		1500		60%		07:30	90	17.3		5.9	6.4	8.1
		W	W-K	K	K-U	U	U-L	L	L-B	B	B-A	A
Normal traffic from traffic survey (veh/min)	In	10.8		12.30		10.9		15.4		18.0		11.9
	Turning off	0.2		2.1		2.7		4.1		3.7		0.0
	In fwd	10.6		10.2		8.2		11.3		14.2		11.9
	Joining	2.6		0.7		4.4		0.0		1.1		6.3
	Out fwd	13.1		10.8		12.6		11.3		15.3		18.2
	Turn off en route		0.0		0.0		0.4		0.0		0.2	
Extra traffic joining (veh/min)	Queue growing				0.3							
	LF @ K			3.2								
	SD2 @ K			1.1								
	BF→M @ U					0.6						
	BF→K @ U					0.1						
Traffic flow including extra traffic	In	10.8		8.0		3.8		5.7		5.8		2.8
	Turning off	0.2		2.1		1.0		1.5		1.2		0.0
	In forward on A46	10.6		5.9		2.8		4.2		4.6		2.8
	Feeder road normal	2.6		0.7		4.4		0.0		1.1		6.3

(veh/min)	Held in feeder road	0.0		0.0		0.0		0.0		0.0		3.1
	Fewer normal leaving	0.0		0.0		0.0		0.0		0.0		0.0
	Net normal joining	2.6		0.7		4.4		0.0		1.1		3.1
	Extra joining	0.0		4.3		0.7		0.0		0.0		0.0
	Out forward on A46	13.1		10.8		8.0		4.2		5.6		6.0
	Turning off en route					0.0		0.4		0.0		0.2
	Becoming trapped in queue (veh/min)							2.4		3.2		3.4
	Reduction in traffic flow		0%		35%		65%		63%		68%	
<i>Extra joining before A</i> (veh/min)	PB→M					1.73		1.73		1.73		1.73
	PB →turn off at U							0.59		0.59		0.59
	PB →turn off at L									0.64		0.64
	PB →turn off at B											0.81
Growth of queue (veh/min)	Veh/min joining the end of the queue							13.2		18.3		21.8
	Rate of queue growth (veh/min)		9.7		7.0		9.4		12.6		16.0	
Time end of queue reaches each junction	Distance between junctions (km)		0.19		0.60		1.23		1.01		1.75	
	Minutes for queue to reach next junction		2.4		10.4		15.9		9.7		13.3	
	Time queue reaches junction	07:40		07:42		07:52		08:08		08:18		08:31
Queue size and travel time	Queue length (km)			0.74		1.34		2.57		3.58		5.33
	Vehicles in queue (1)			90		163		313		437		650
	Vehicles in queue (2)			90		156		306		429		643
	Queue speed km/h			5.3		3.9		2.1		6.3		2.9
	Minutes to reach M			6.4		15.6		51.5		61.1		96.8

The *normal* traffic data in the model comes directly from the surveys. These were carried out on different days and the fact that the model joins well at each junction shows that the traffic flows on the A46 are quite consistent from day to day. The fact that the traffic queue extends each day to roughly the same point between K and U and lasts for roughly the same time (except if traffic is impeded on the A46 or in Church Road by road works or is affected by an accident on the M5) is another example of the day to day consistency in the average amounts of traffic. The traffic does however tend to bunch and to fluctuate in the short term, as illustrated for example in the survey data for the A417 junction in section 6.9. This means that the way the model links from one junction to the next is sensitive to the time period over which the traffic is averaged. In the model this time period has been kept rigorously at 07:45 to 08:45 for every junction.

There are slight differences in the survey data between the number of vehicles leaving each junction and the number arriving at the next junction. These differences may arise from the averaging discussed above, but they may also be genuine, at least in part. The difference of 0.3 vehicles/minute between the outflow from U and the inflow into K is what one would expect since the queue is growing and compacting between these two junctions during the 07:45 to 08:45 period. The difference of 0.4 between the outflow from junction L and the inflow into junction U might also be partly expected because of traffic turning left onto Chargrove Lane en route. What is perhaps surprising is to not find a difference between the outflow from B and the inflow at L. One would expect the latter to be larger because of some net traffic joining the inward flow in Shurdington. However, the population of Shurdington is quite elderly and allowing for vehicles travelling to Shurdington leaving the inward flow it may be the case that Shurdington contributes only a little net traffic in the peak period. Another factor is that, as shown in Table A.3.1, there is congestion in Shurdington during the 07:45 to 08:45 period particularly

due to vehicles turning right onto Leckhampton Lane. The difference between vehicles in a light queue between B and L at an average vehicle spacing of say 12 metres and vehicle flowing normally at a spacing of say 24 metres would reduce the average inflow by 0.7 vehicles/minute compared with the outflow from L. This could easily be masking the inflow of vehicles from Shurdington.

6.8.1 OUTPUTS FROM THE MODEL AND CONSTRAINTS ON SUSTAINABLE DEVELOPMENT

Table A.3.4 shows the result of running the model for a range of permutations for the number of houses on the four sites.

- **A417 roundabout:** If the queue reaches as far as the A417 roundabout, it is likely to disrupt traffic on the A417. This is discussed in section 6.9 below. The red, orange and amber shading indicates diminishing level of risk to the A417 and M5.
- **Leckhampton Lane:** As the traffic queue extends beyond the Up Hatherley Way roundabout, the journey time to the Moorend Park Road junction increases and it becomes attractive for drivers to instead use the alternative routes:
 - Leckhampton Lane → Church Road → Leckhampton Road → Bath Road;
 - Leckhampton Lane → Church Rd → Leckhampton Rd → Moorend Park Rd → M;
 - Leckhampton Lane → Church Road → Farm Lane → Kidnappers Lane → K

Table A.3.4		Current traffic levels as measured in the traffic surveys															
		No queue building up on Up Hatherley Way													Queue UHW		
	Case number	base	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Number of houses on each site proposed	LF	800	800	300	400	200	300	200	0	200	100	300	50	250	800	200	
	SD2	300	300	300	300	200	0	0	300	0	100	0	0	0	300	0	
	BF	175	0	0	0	0	0	0	0	0	0	0	0	0	175	0	
	PB	1500	0	1100	700	1500	1500	1500	700	700	700	0	700	0	1500	1500	
Time at which the traffic queue reaches each junction and the queue-limited travel time in minutes from each junction to M (italics)	Up Hatherley Way (U)	07:52	07:56	07:58	07:58	07:59	08:00	08:03	08:07	08:10	08:11	08:16	08:19	08:19	07:52	08:03	
		<i>16</i>	<i>16</i>	<i>14</i>	<i>14</i>	<i>13</i>	<i>13</i>	<i>13</i>	<i>13</i>	<i>13</i>	<i>13</i>	<i>13</i>	<i>12</i>	<i>13</i>	<i>17</i>	<i>13</i>	
	Leckhampton Lane (L)	08:08	08:21	08:27	08:28	08:31	08:35	08:42	08:59	09:09	09:11				08:11	08:44	
		<i>52</i>	<i>45</i>	<i>33</i>	<i>35</i>	<i>30</i>	<i>29</i>	<i>28</i>	<i>29</i>	<i>28</i>	<i>28</i>				<i>44</i>	<i>28</i>	
	Badgeworth Lane (B)	08:18	08:36	08:45	09:11	08:50	08:57	09:07							08:22	09:11	
		<i>61</i>	<i>54</i>	<i>43</i>	<i>44</i>	<i>40</i>	<i>39</i>	<i>38</i>							<i>54</i>	<i>37</i>	
	A417 (A)	08:31	08:56	09:10	09:11											08:38	
		<i>97</i>	<i>82</i>	<i>60</i>	<i>63</i>											<i>79</i>	

For each junction, the table shows the time the queue reaches the junction and below in italics the calculated travel time in minutes to junction M.

Feeder queue on Up Hatherley Way Cases 13 and 14 assume that a long traffic queue builds up on Up Hatherley Way because the roundabout is partly blocked by the A46 queue vehicles. The other cases assume that all the vehicle from Up Hatherley Way are able to join the inward queue fairly easily and no cumulative queue forms on Up Hatherley Way.

Currently the travel time from junction L to junction M is about 13 minutes when the traffic queue is maximum. As discussed in Annex 2, if it were allowed to increase significantly more, a lot of traffic could switch to the Leckhampton Lane – Church Road routes in order to by-pass the queue. It is very important to avoid this for two main reasons:

1. There would be a serious risk of causing gridlock in Church Road. If the route round the south side of Cheltenham through Church Road becomes blocked, or even if it becomes unreliable, this will force the traffic onto the A46. Occasionally this happens if Church Road or Leckhampton Lane are closed or impeded by road works, and the effect on the existing A46 queue is very pronounced. There is no way to mitigate the Church Road problem.
2. The traffic turning right at L holds up the traffic flow, increasing the congestion and pollution in Shurdington. Also, the right turning traffic has to cross the outward traffic flow on the A46. The junction is an accident hot-spot.

Various proposals have been made to limit the traffic flow on Leckhampton Lane, but none of these has proved satisfactory. Closing Leckhampton Lane is out of the question because of the volume of traffic that would be forced onto the A46 and Moorend Park Road, as happens if Church Road is closed by road works. Impeding the traffic using chicanes or traffic lights and one way sections has been considered. The problem is in adding sufficient delay to the Church Road – Leckhampton Lane route in a way that drivers would accept and not circumvent and that would not cause accidents.

6.8.2 EFFECT OF TRAFFIC GROWTH

According to a Department of Transport report “Action for Roads” published in July 2013 (ISBN: 9780101 867924, www.gov.uk/dft), traffic levels are currently below their historical trend because of the recession and are expected to return back towards their historical trend as the UK economy recovers. According to Table 1.2 of the DfT report, traffic on local roads (i.e. not strategic road network), was 6% lower in 2012 than in 2007 and 9.2% below its historical trend. If traffic recovers to its historical trend, then it will be 19% higher in be 2025 than in 2012 and 23% higher by 2031. The DfT report observes that traffic could rise even faster than this depending on future fuel costs and more fuel-efficient vehicles. Until recently fuel costs were expected to rise as demand increased and oil reserves became depleted. However, it is now being projected that the development of fracking technology and shale gas could make oil much cheaper.

How far this projected traffic growth would apply to the peak traffic on the A46 is not certain. According to the Cheltenham and Gloucester Connectivity Study Draft Phase 1 Report May 2010, employment in Cheltenham fell between 2003 and 2008 more than in other local areas including Gloucester. If this trend were to continue it would offset part of the general increase in traffic affecting the A46. However, the lower employment in Cheltenham will already be reflected in the data from the Council’s A46 traffic surveys and the employment is as likely to recover as to continue to decline. JCS is certainly predicting that employment will rise. Therefore it seems more likely that traffic levels will rise due to change in employment.

Overall, it seems reasonable to project that there will be at least a 10 per cent increase in the *normal* peak traffic on the A46 over the period 2013 to 2023. An increase in the *normal* traffic affects the queue on the A46 in two ways: it increases the number of vehicles in the inward flow on the A46; secondly, it increases the traffic on Moorend Park Road, which then takes up a larger proportion of the traffic light cycle at the junction. Currently the Moorend Park Road traffic causes the capacity C_M for the inward A46 traffic to fall from 15.0 vehicles per minute to an average of 13.1 vehicles/minute over the 07:45 to 08:45 period - a reduction of 1.9 vehicles/minute. One might expect any increase of in the Moorend Park Road traffic to reduce this proportionately.

An increase of 10% in the *normal* traffic with no new building either at Leckhampton or at Brockworth would increase the number of vehicles in the queue by about 91 of which 79 would come from the additional traffic on the A46 and 12 would come from the reduction in C_M . These 91 vehicles would increase the maximum queue length by 0.75 km at 8.2 metres vehicle spacing and this would mean that the end of the queue would extend beyond the Up Hatherley Way roundabout every day. As discussed in Annex 2, this would cause many vehicles to divert onto the Leckhampton Lane – Church Road route to by-pass the A46 queue. So a 10% increase in *normal* traffic seems likely to preclude any sustainable development in Leckhampton even if there were no housing development at Brockworth.

6.9 SPREAD OF THE QUEUE BEYOND THE A417 ROUNDABOUT.

The traffic model shows that if all of the developments were to go ahead as currently proposed, the A46 would reach the A417 roundabout at about 08:31. If the proposed development at Brockworth does not go ahead at all, then the proposed developments at LF and SD2, not including BF (case 1 in Table A.3.4), would cause the queue to reach the A417 roundabout at 08:56 when the peak traffic is declining but traffic levels are still high. If for case 1 one also includes the 10% increase in traffic as discussed in section 6.8.2, then the queue would reach the A417 at around 08:39.

Three traffic surveys were done at the A417 roundabout in March 2013, two on the north side, counting the inward traffic and the vehicles coming off the A417 from the west, and one on the east side counting the outward traffic and vehicles joining the A417 in an easterly direction. The data from the second longer survey on the north side is shown in the table below.

In all three surveys, a traffic queue was several times observed extending back from the A46 onto the west side of the roundabout. It was not possible to tell what caused the queue; it may have been due to the traffic streams from the west and south converging onto the single lane of the A46 or more likely it was due to vehicles turning right onto the road to Bentham which is a short distance NE of the roundabout. Whatever its cause, this queue blocked the vehicles coming off the A417 from getting onto the roundabout, both from turning left onto the A46 inward flow or from turning right to join the outward flow. It was also observed that at other times, the fairly constant stream of A46 traffic from the SW again held back the vehicles from the A417, particularly those wanting to join the inward queue. As a result a substantial queue of traffic built up on the A417 slip-road. It was not possible from the survey point to determine whether this queue reached beyond the slip-road onto the main A417, but it does seem very likely that if the A46 queue were to extend as far as the A417 roundabout it would cause a serious tailback onto the A417.

From	To	SN From A46 SW going NE	WN From A417 west going NE	SN+WN Total going NE on A46	WS From A417 W going SW	W Total from A417 W	SE From A46 SW going E	S Total from A46 SW
07 : 05	07 : 10	34	18	52	11	29	10	44
07 : 10	07 : 15	45	24	69	13	37	7	37
07 : 15	07 : 20	27	25	52	24	49	5	49
07 : 20	07 : 25	58	18	76	12	30	9	30
07 : 25	07 : 30	44	31	75	17	48	9	48
07 : 30	07 : 35	45	32	77	24	56	9	56

07	:	35	07	:	40	62	29	91	14	43	11	43
07	:	40	07	:	45	54	38	92	21	59	11	59
07	:	45	07	:	50	71	28	99	31	59	10	59
07	:	50	07	:	55	54	26	80	25	51	11	51
07	:	55	08	:	00	65	27	92	29	56	6	56
08	:	00	08	:	05	62	19	81	15	34	8	34
08	:	05	08	:	10	54	35	89	10	45	5	45
08	:	10	08	:	15	70	29	99	24	53	13	53
08	:	15	08	:	20	69	36	105	26	62	12	62
08	:	20	08	:	25	62	43	105	32	75	8	75
08	:	25	08	:	30	52	37	89	28	65	9	65
08	:	30	08	:	35	54	37	91	28	65	8	65
08	:	35	08	:	40	48	27	75	26	53	8	53
08	:	40	08	:	45	55	33	88	10	43	11	43
08	:	45	08	:	50	56	45	101	29	74	10	74
08	:	50	08	:	55	Traffic queue still on A417 slip road but clearing.						

Traffic flows measured at the north corner of the A46/A417 roundabout

The table above shows that between 08:30 and 08:50, vehicles leave the A417 at a rate of about 12 vehicles/minute; 7.2 join the A46 queue inwards and 4.8 join the A46 outward traffic. If this flow were completely blocked, the traffic queue building back on the A417 would reach the M5 slip-road within about 10 minutes. The A417 roundabout currently does not have any traffic light control and therefore the vehicles on the A46 from the SW have priority over the traffic coming from the A417. With traffic light control one could give equal priority to the two flows. This would reduce the build up of the queue on the A417 from 12 vehicles per minute to 6.6 vehicles per minute. Even so, the queue would still reach the end of the M5 slip road in about 19 minutes.

6.10 TRAFFIC ACCIDENTS

The accident statistics for the past 10 year, which have been kindly provided by Gloucestershire Highways, show three fatalities on the A46 between the A417 and Moorend Park Road: one just south of Badgeworth Lane, one in Shurdington and one between Shurdington and Up Hatherley Way. There have been nine serious accidents: four between the A417 and Badgeworth Lane, one in Shurdington, and four between Up Hatherley Way and Moorend Park Road.

Accident statistics for the section of the A46 between Badgeworth Lane and the Bath Road shops show a total of eleven fatal and serious accidents and a total 99 minor accidents involving one or more casualties in each case. All but one of the eleven fatal and serious accidents involved pedestrians, cyclists or motor cyclists. Of the minor accidents, 14 involved pedestrians, 13 cyclists and 14 motor-cycles. There were 18 nose-to-tail shunts. Sixteen accidents involved vehicles turning right, mostly at the Moorend Park Road and Leckhampton Lane junctions. Although the accidents were spread all along the length of the A46, particular hotspots were in Shurdington near the Badgeworth Lane and Leckhampton Lane junctions and at the Up Hatherley Way and Moorend Park Road junctions.

One fatality, three serious accidents and 13 minor accidents involved cyclists. During the traffic surveys, several near-misses were observed where the cyclist had to cycle very hard to avoid a car coming too fast or too close.

The Council raised this as a separate issue with Gloucestershire Highways and with the Highways Agency because of two near misses observed at the A417 roundabout. The household travel survey in the Gloucestershire Transport Plan 2011-2026 shows that commuting by bicycle increased from an average of 6.3% in 2004-06 to 8.2 % in 2007 and 8.4% in 2008. However, during the traffic surveys, cyclists commuting on the A46 were more conspicuous for their bravery and athleticism than for their numbers. If a safe cycle route could be provided along the A46, it could make commuting by cycle much more popular and could help to reduce the congestion.

6.11 CONCLUSION

According to the Gloucestershire Local Transport Plan 2011-2026 (LTP3), workday traffic flows on the A46 are 15,000-20,000 a day and in the maps on pages 24 and 25 of LTP3, the A46 south of Shurdington is marked as the worst congestion hot-spot in the Cheltenham-Gloucester area in 2003 and as still remaining a severe congestion hot-spot in 2026. The A46 is operating at close to its maximum capacity, particularly at peak times.

The results from this traffic survey and analysis show that the traffic system on the south of Cheltenham, with the A46 and Church Road as its key element, is still functional, but has very little capacity to spare; none if you take into account the likely increase in traffic as the UK economy recovers as discussed in section 6.8.2. The system was described as “broken” by Rob Williams, the traffic consultant who has advised the Parish Council. But the system has not yet fallen apart. The priority must be to hold it together and not to push it over the edge.

It appears from the 2013 DfT report “Action for Roads” that there is very little if any DfT investment planned for the strategic road network in Gloucestershire. The A417 south of Cheltenham up Crickley Hill and through Nettleton is shown in the report as having severe congestion, but there is no plan to improve this. Fig. 2.3 of the report shows that the priorities for strategic investment are in the south-east and north-west with nothing in this area.

LTP3 also speaks of the scarcity of funding for the Gloucestershire traffic infrastructure. The funding depends a lot on money from developers, but upgrading the A46 would take more funding than development would provide. So, it is essential for the Cheltenham-Gloucester area to keep the south Cheltenham traffic system viable and not to overload so it falls apart.

The Council believes that the results from this traffic survey and analysis are a serious warning, particularly for the JCS, about the importance of taking a holistic approach to the future of the Gloucester-Cheltenham-Tewkesbury area and to the competitiveness of the local economy. A point that is emphasised by DfT in “Action for Roads” is the vital importance of conserving the traffic network and the risk that many people will become unable to work because of growing traffic congestion. DfT observes that in a highly competitive world, the compactness of the UK should be a strong competitive advantage because of the shorter travel distances, but that it could easily become a weakness due to congestion. The World Economic Forum’s Global Competitiveness Index now ranks Britain twenty-fourth in terms of its road network – behind countries including France, Germany, Austria, Portugal, the Netherlands, Spain, Japan, Canada and the United States. Whilst cities such as London are seeing a reduction in car use thanks to public transport infrastructure, areas such as Cheltenham and Gloucester that are very car-dependent, are particularly vulnerable, both economically and socially.