
Non-Technical Summary

Land to the West of Park Farm, Thornbury, South
Gloucestershire

Introduction

This document is a Non-Technical Summary (NTS) of the Environmental Statement (ES) that accompanies an outline planning application for the development of Land to the West of Park Farm, Thornbury. The ES reports the findings of the Environmental Impact Assessment (EIA).

The site is located approximately 1.2km from Thornbury Town Centre. The site measures 35.97ha, and the centre of the site is located at ST 63348 91723.

The planning application is in outline (apart from primary access) and seeks approval for:

- Erection of up to ~~630~~595 dwellings (Use Classes C3);
- Land for a Primary School (Use Class D1);
- Up to 700m² for a Retail and Community Hub (Use Classes A1, A2, D1);
- ~~1.1ha of land for primary education provision and early years provision (Use Class D1) and dual use of sports pitches;~~
- A network of open spaces including parkland, footpaths, allotments, landscaping and areas for informal recreation;
- New roads, a sustainable travel link (including a bus link), parking areas, accesses and paths; and
- The installation of services and drainage infrastructure.

The EIA has been undertaken with input from a range of technical experts and qualified persons. This has enabled the preparation of a detailed ES which identifies and assesses the potential for significant environmental effects arising from the development and development process and the measures necessary to reduce and mitigate any identified impacts.

The ES is set out in a structured manner to allow easy navigation as follows:

- Volume 1: Main Document – provides the full text of the ES along with associated figures and tables of information;
- Volume 2: Technical Appendices – technical surveys, reports and supporting documents referred to in the main text of Volume 1; and

- Non-Technical Summary (this document) – a summary of the ES, the likely significant effects of the proposed development, appropriate mitigation measures and predicted residual effects.

The full ES, along with all the planning application documents, can be inspected at South Gloucestershire's offices at Badminton Road, Yate, Bristol, BS37 5AF, and on the Council's online portal at <http://www.southglos.gov.uk/environment-and-planning/search-planning-applications/>.

Copies of the ES can be obtained on CD format for £5.00 from Savills, Embassy House, Queens Avenue, Bristol, BS8 1SB. Cheques should be made payable to 'Savills (UK) Limited'.

Alternatively, printed copies of the main ES document can be provided at a cost of £400 (including a CD to view the appendices) by request to: Savills, Embassy House, Queens Avenue, Bristol, BS8 1SB, telephone 0117 910 2200. Cheques should be made payable to 'Savills (UK) Limited'.

Site and Surrounds

The site is located to the north west of the town of Thornbury, and covers an area of 35.97 hectares of land. The site falls within the administrative area of South Gloucestershire Council (SGC).

The site is bounded by Oldbury Lane to the north, which is a single carriageway road with grassed verges on either side. To the south and west are Park Mills Farm and associated buildings, and agricultural land.

To the east of the site is the consented Park Farm development; which was granted planning consent in March 2013 for up to 500 homes, open space and associated works. This site is partially completed, with a number of units now occupied

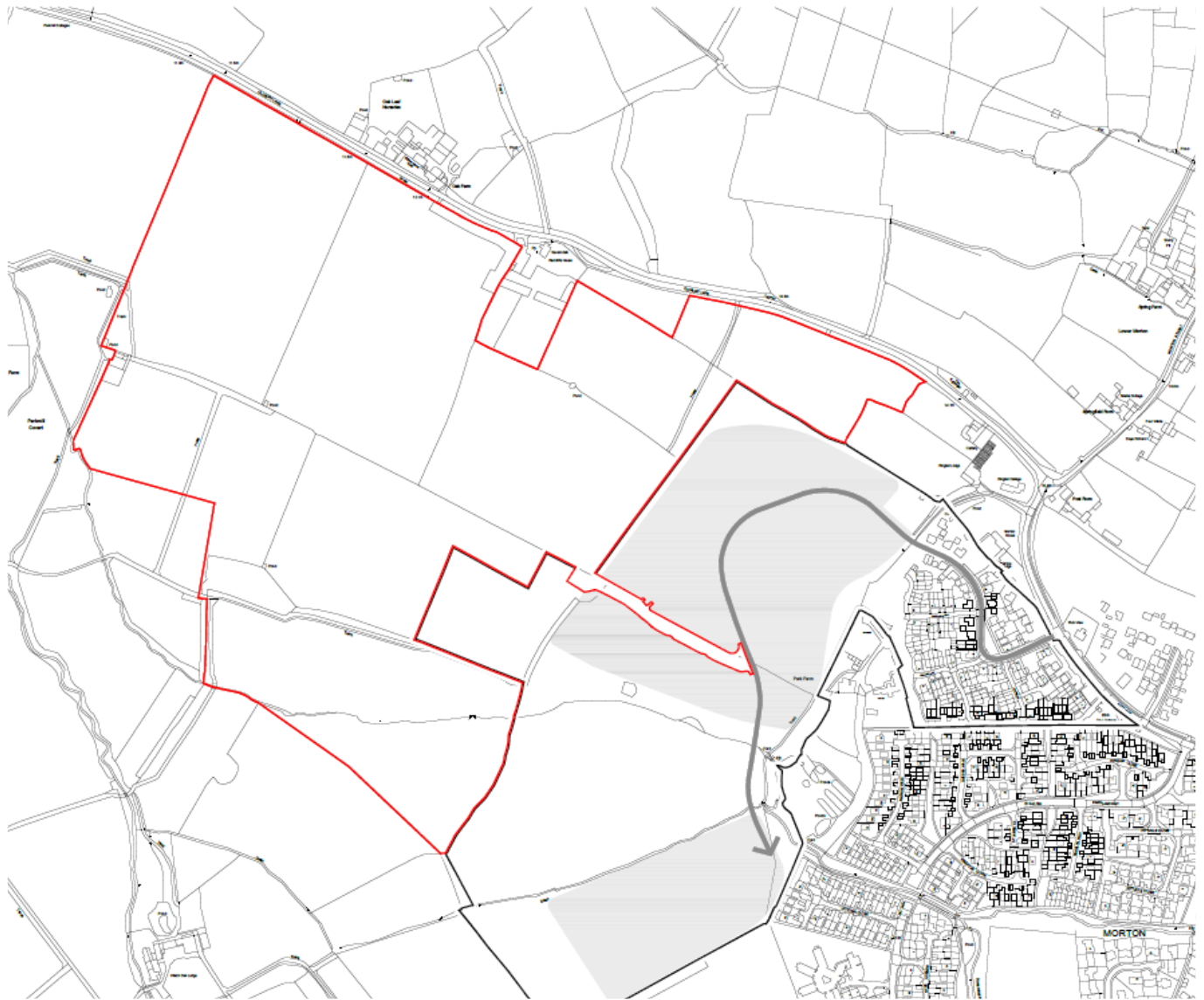
The site is predominately in agricultural use and comprises agricultural fields divided and bordered by areas of hedgerow, woodland and ditches. The land is relatively level, lying at approximately 10m AOD in the west, and sloping gently eastwards to around 15m AOD by the eastern boundary.

The Pickedmoor Brook flows east to west through the site. Alongside this Brook, there are associated areas of Flood Zone 2 and 3; with the majority of the site within Flood Zone 1.

There are no European designated sites within or immediately adjacent to the site; however there are six European designations within 10km; Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar Site (with overlapping boundaries): lie 2.8km to the west, Wye Valley and Forest of Dean Bat Sites SAC

(approximately 9.5km north west); Wye Valley Woodlands SAC (approximately 9.8km west); and River Wye SAC (approximately 8.2km west).

Site Boundary Plan (not to scale)



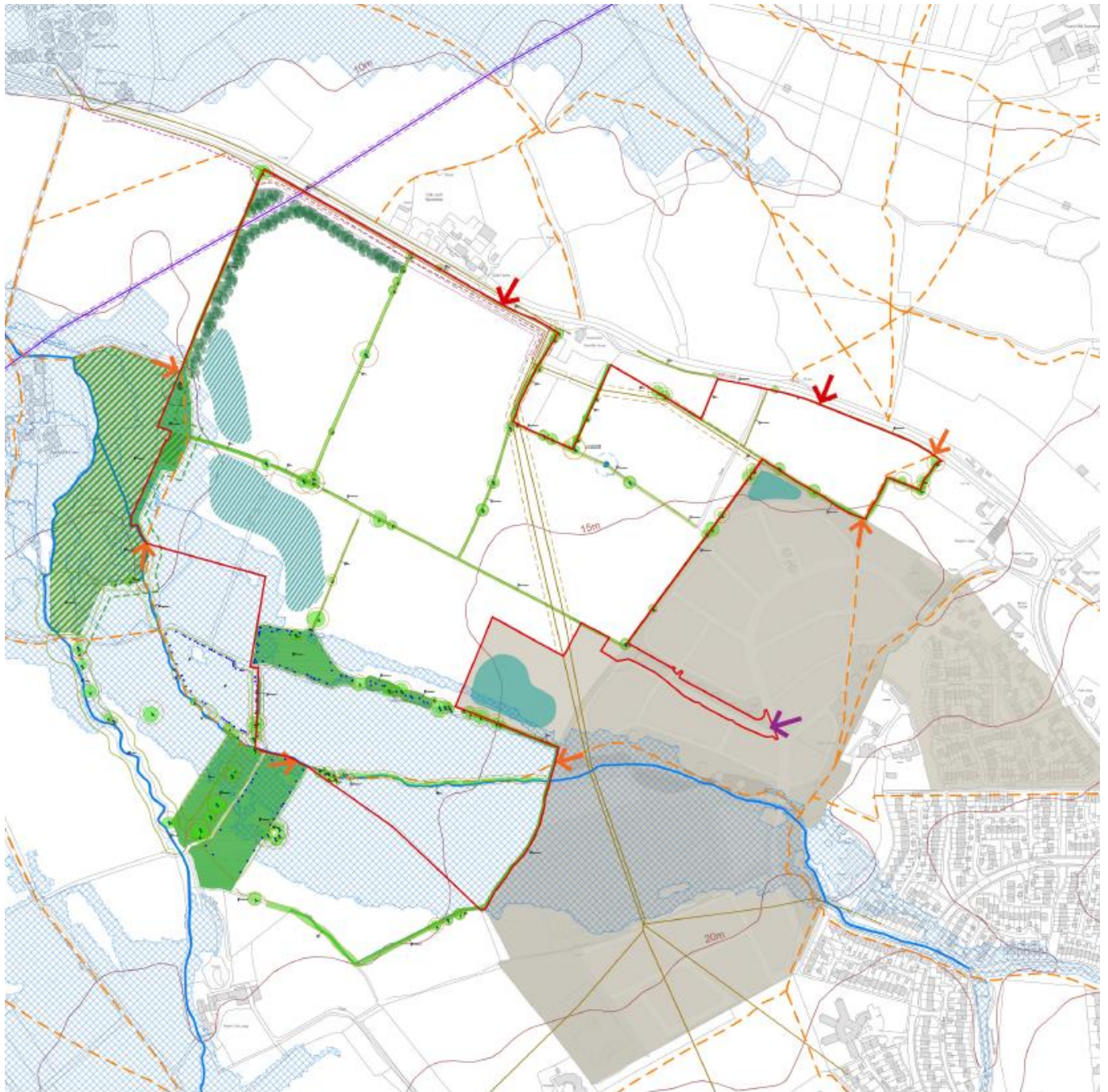
Four statutory sites of nature conservation value lie within 5km of the site. This includes the Severn Estuary Site of Special Scientific Interest (SSSI). In addition, the Park Mill Covert Site of Nature Conservation Interest (SNCI) lies immediately to the west of the site. A part of the SNCI is also Ancient Woodland.

The site does not fall within any national or local landscape designations. Natural England identify the Project Site within a transition zone, between the National Landscape Character Area (NCA) 106 'Severn and Avon Vales' to

the north and west, and NCA 118 'Bristol, Avon Valleys and Ridges' to the south and east. South Gloucestershire's Landscape Character Assessment (2014) identifies the Project Site within 'Area 18 Severn Ridges'.

There are no designated heritage assets within the site, nor any known undesignated heritage assets. Within the study area there are a number of designated heritage assets, lying to the south and east of the site.

Constraints & Opportunities (not to scale)



EIA Approach and Cumulative Sites

Due to the size of the Project Site (35.97ha) and the nature of the Proposed Development, the proposal falls within Schedule 2 Section 10(b) of the 2017 EIA Regulations as an "urban development project" in which "the development includes more than 150 dwellings" and "the overall area of the development exceeds 5 hectares".

An EIA Scoping Report was submitted to SGC in February 2018 in support of a request for a Scoping Opinion. The request was registered under planning reference PT18/012/SCO. This agreed the topics to be covered within the ES, and the methodology for the individual topic's assessments.

Part of the EIA process is to consider any cumulative effects which may arise from "*approved or pending*" schemes within the relevant study area. Seven cumulative schemes have been considered as part of the cumulative assessment within this ES:

- Park Farm (App. Ref: PT11/1442/O): Erection of up to 500 dwellings, open space and associated works
- Morton Way (App. Ref: PT/12/2395/O): Erection of up to 300 dwellings, a local shop, open space, landscaping and associated works.
- Post Farm (App. Ref: PT15/2917/O): Erection of up to 125 dwellings, open space and associated infrastructure.
- Land West of Gloucester Road (App. Ref: PT16/4774/O): Erection of up to 130 dwellings, public open space and associated works.
- Junction of Morton Way and Grovesend Road (App. Ref: PT/16/3565/O): Erection of up to 350 dwellings, 70-unit elderly care facility, up to 1,150sq m of community and/or commercial floorspace (Use Class A1, D1 or D2), open space and associated works.
- Pound Mill Business Centre (App. Ref: PT/13/3101/F): Change of use from paddocks and agricultural to the siting of 12 no. caravan pitches for showmen's permanent quarters.
- The Council Offices (App. Ref: PT/16/0982/F): Erection of 5 cottages and 57 sheltered apartments for the elderly including communal facilities, landscaping, parking and associated works.

The Proposed Scheme

The Vision for the new neighbourhood at Pickedmoor is to :

“Create a sustainable and healthy neighbourhood that helps to meet the identified local need and growing demand for new homes within the thriving market town of Thornbury. The development will be well integrated within its surroundings through excellent local connections and the provision of new green space for the enjoyment of the whole community. The design will sensitively respect the characteristics of the town to ensure the creation of an attractive, high quality and locally distinctive place to live”.

In addition to residential development, the proposals include a retail-community hub and substantial green infrastructure including parkland, natural green space, neighbourhood greens, children’s play and allotments; linked through a network of footpaths.

There are a range of pedestrian and cycle routes within the vicinity of the site, connecting to local facilities and services, and Thornbury Town Centre. The proposals include a Sustainable Travel Link which delivers a route for bus, cycle and pedestrian movement to the east, through the consented Park Farm development.

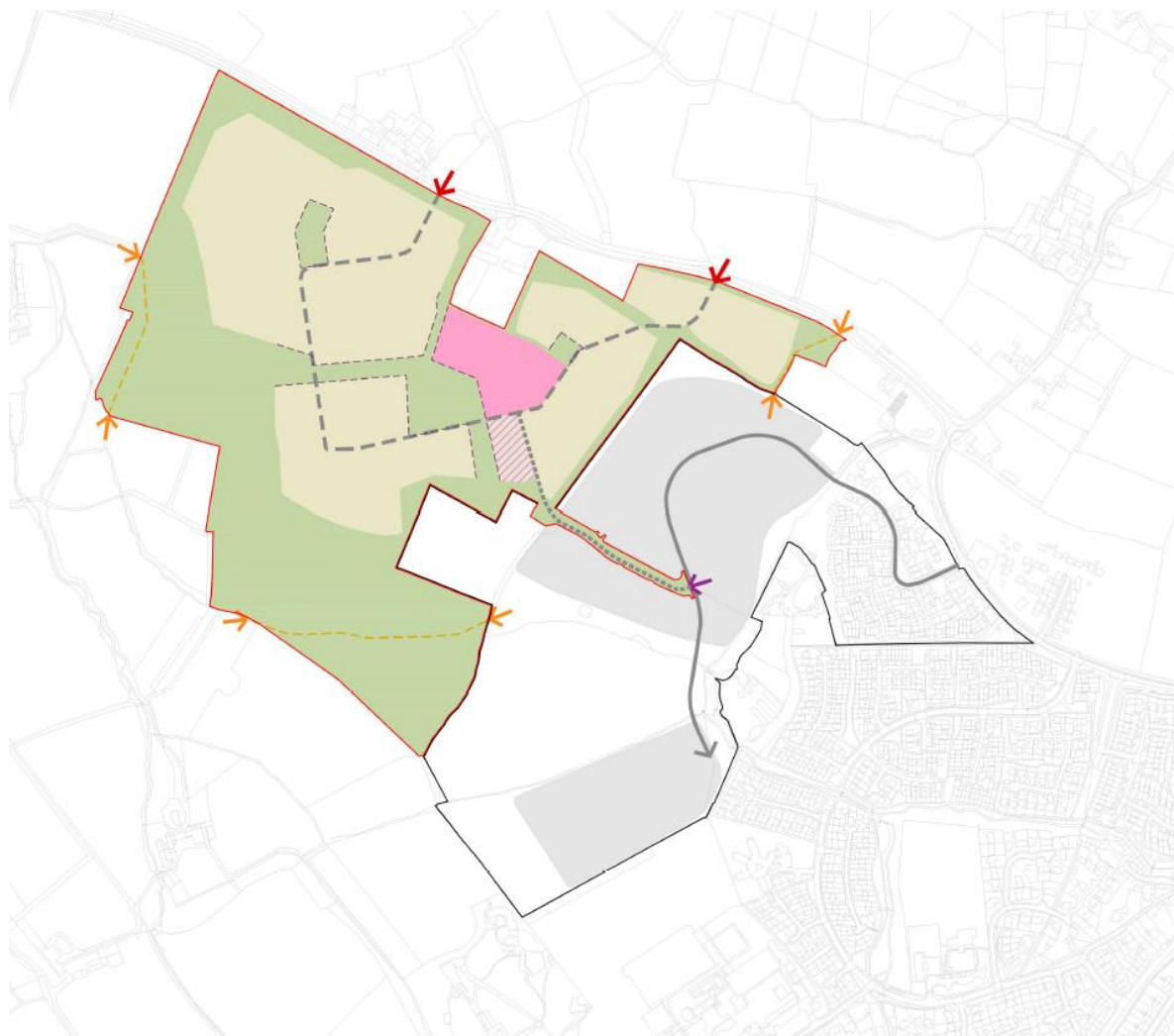
The EIA process involves the assessment of the maximum parameters, and as such, the ES assesses the delivery of:

- Up to ~~630~~595 dwellings (Use Classes C3), including 35% affordable housing;
- Land for a Primary School (Use Class D1);
- Up to 700m² for a Community and Retail Hub (Use Classes A1, A2, D1);
- Green infrastructure including parkland, footpaths, allotments, landscaping and areas for informal recreation; and
- Associated engineering and infrastructure provision including a new road network within the site, new points of access including a bus-only link, electricity sub-stations, surface water attenuation and associated drainage.

Subject to achieving planning permission, the delivery period for this site is likely to be around 8 years.

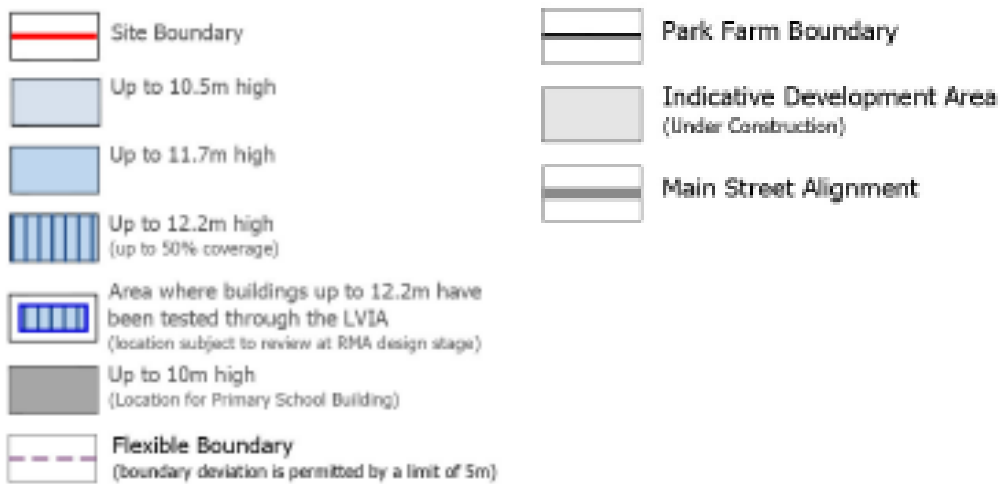
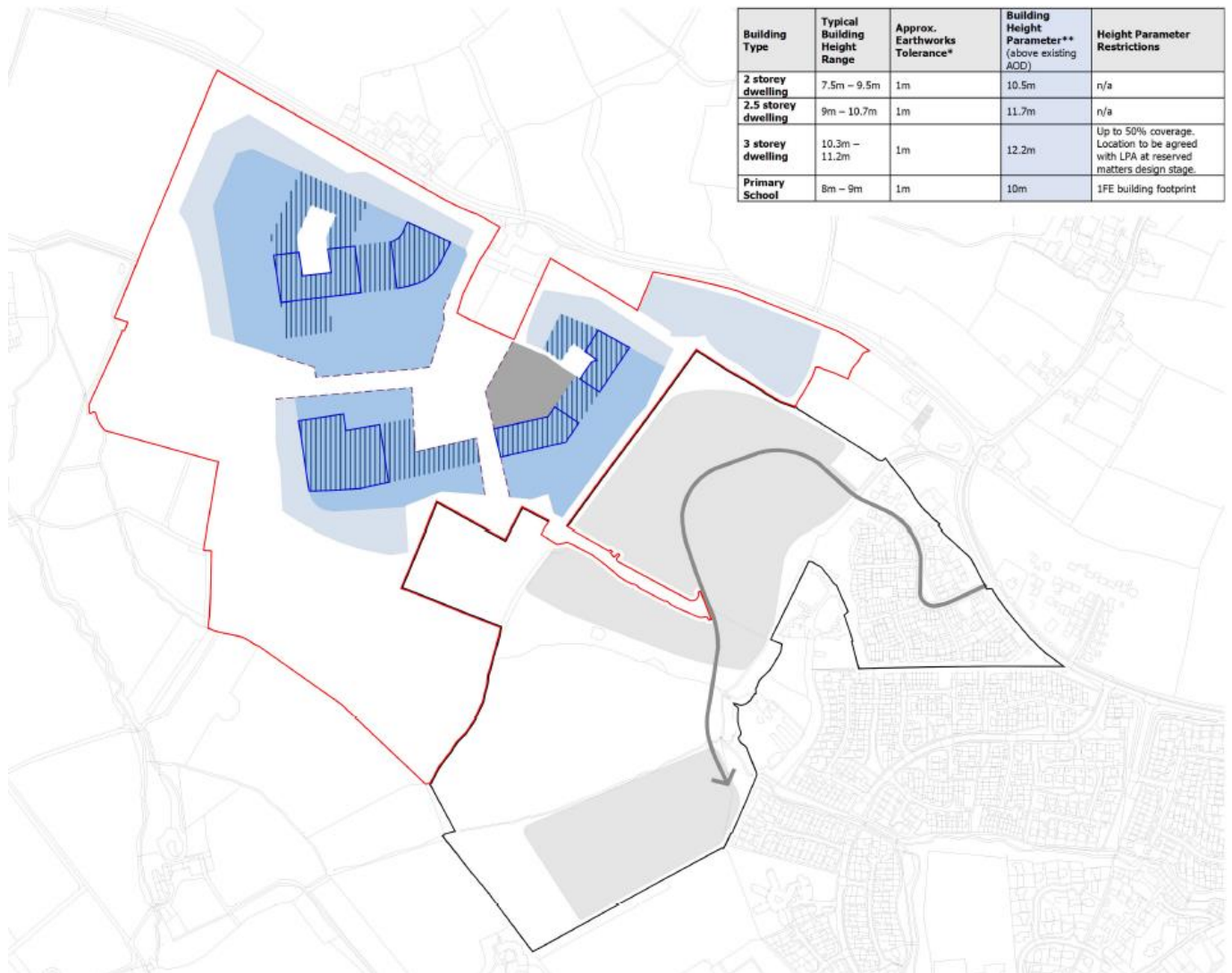
The planning application is submitted in outline, and as such, a series of parameter plans show land uses and access, building heights, and green infrastructure provision. The future detailed planning applications, through the reserved matters approval process, would be required to conform to these parameters.

Land Use and Access Parameter Plan (not to scale)

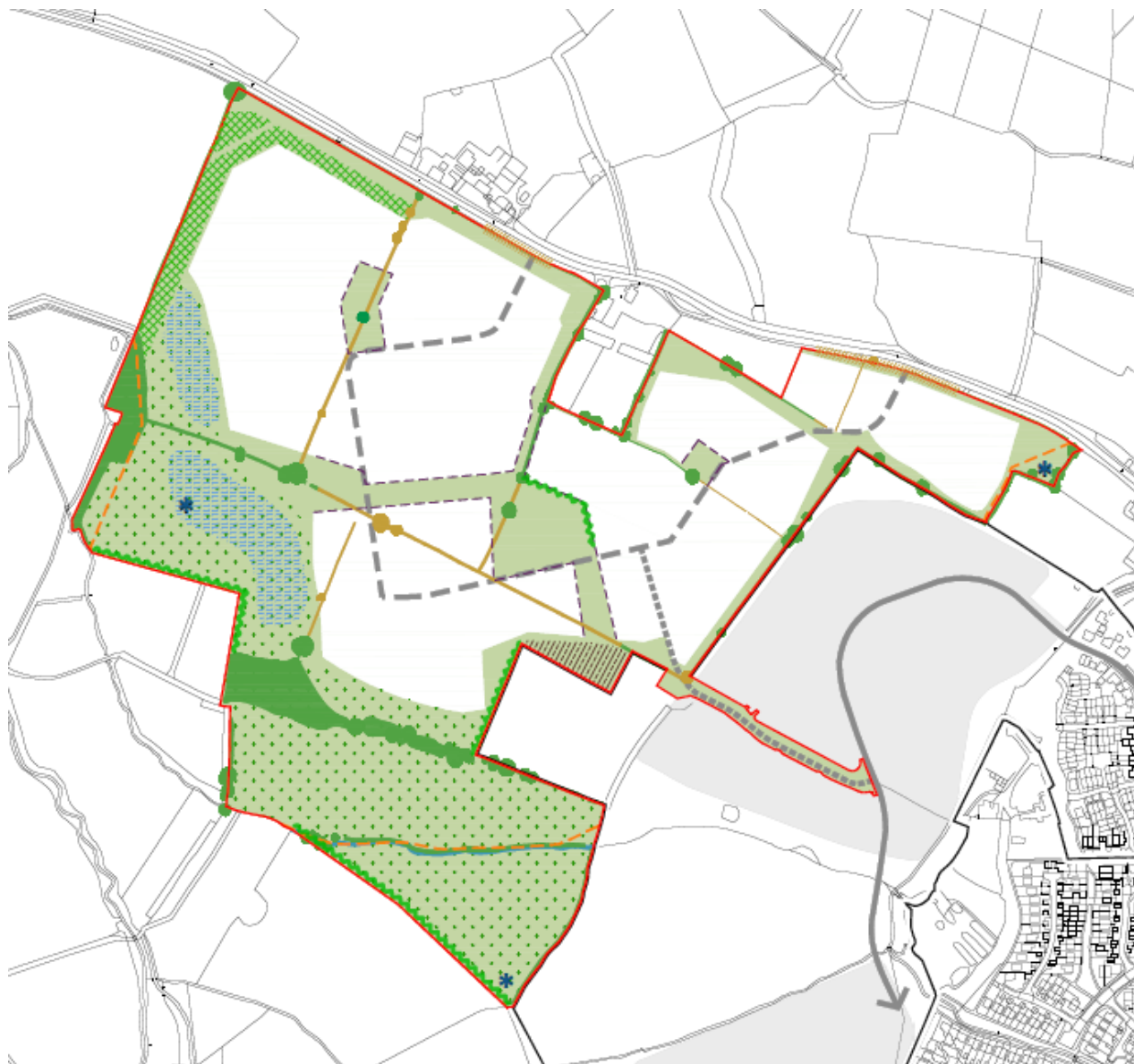


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|---|---|
|  Site Boundary |  Primary Vehicle Access Point |
|  Residential Development
(including, as required: retail and community hub, access, drainage, Public Open Space, landscaping, parking, pedestrian/cycle links and associated infrastructure) |  Pedestrian, Cycle and Bus Access Point
(Sustainable Travel link) |
|  Primary School Site |  Retained Pedestrian Access (PROW) |
|  Indicative Location of Retail and Community Hub |  Existing footpath (PROW) to be retained |
|  Public Open Space
(including, as required: access, play facilities, drainage, landscaping, amenity grassland, retained vegetation, allotments, pedestrian/cycle links, and all necessary infrastructure) | PARK FARM DEVELOPMENT |
|  Flexible Land Use Boundary
(Land use boundary deviation is permitted by a limit of 5m) |  Park Farm Boundary |
|  Indicative Alignment of Primary Street
(Exact alignment to be determined at reserved matters stage) |  Indicative Development Area
(Under Construction) |
|  Indicative Alignment of Pedestrian, Cycle and Bus Access
(Sustainable Travel link - exact alignment to be determined at reserved matters stage) |  Main Street Alignment |

Scale Parameter Plan (not to scale)



Green Infrastructure Parameter Plan (not to scale)



- | | |
|---|--|
| Site Boundary | Proposed wildlife pond |
| Amenity Public Open Space
(Including, as required: access, play facilities, drainage, landscaping, amenity grassland, retained vegetation, pedestrian/cycle links, and all necessary infrastructure) | Translocated hedgerow or new hedgerow |
| Flexible Land Use Boundary
(Land use boundary deviation is permitted by a limit of 5m) | Zone for parkland with meadow grassland and dispersed tree planting |
| Existing Trees and hedgerows to be retained | Zone for SUDS Basins with wet grassland |
| Veteran Tree to be retained | Indicative Alignment of Primary Street
(Exact alignment to be determined at reserved matters stage) |
| Existing Trees and hedgerows to be removed as required | Indicative Alignment of Pedestrian, Cycle and Bus Access
(Sustainable Travel link - exact alignment to be determined at reserved matters stage) |
| Zone where hedgerow removal is permitted to enable access | PARK FARM DEVELOPMENT |
| Woodland Structure Planting | Park Farm Boundary |
| Zone for New Allotments | Indicative Development Area
(Under Construction) |
| Existing retained Water Course | Main Street Alignment |
| Existing footpath (PROW) to be retained | |

The Design and Access Statement provides further design principles, for example a street hierarchy, access and movement strategy and play strategy; and these will guide future detailed planning applications on the site.

The Illustrative Masterplan is provided to assist the understanding of the scheme and how it could come forward in a manner consistent with the parameters, including how inherent mitigation may be achieved on the site. It may subsequently be refined during the detailed design process, but would be in general conformity with the parameters plans shown above.

Illustrative Masterplan (not to scale)



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In addition, an Illustrative Landscape Masterplan is provided to indicate how the range of identified drainage, ecological, landscape and recreational design principles, alongside identified mitigation and enhancement, could be delivered within the future detailed planning applications.

Illustrative Landscape Masterplan (not to scale)



Alternatives

The EIA Regulations require the ES to set out the main alternatives considered by the developer.

The need for housing within South Gloucestershire is identified through the current shortfall in five year housing land supply, and as such, alternative sites have not been considered within the assessment.

Since the inception of the project, there has been significant consultation and discussion on the form of the proposed development, both within the project team and as part of the pre-application dialogue and public consultation. The masterplan, and associated parameter plans, have been developed based on a series of key principles which form the design rationale for the layout. The submitted masterplan therefore reflects the process of dialogue, discussions, feedback and workshop sessions within the design team, and those with SGC, statutory consultees and parties who attended/responded to the public engagement exercise.

It also takes account of the opportunities and constraints identified from technical and environmental studies. A considerable amount of design work was undertaken by the Applicants, guided by the design principles discussed with local authority officers and from site surveys and analysis. The detail of the masterplan at this stage is appropriate for an outline application and provides a reliable framework for future, more detailed design.

The sections below provide a summary of the assessments presented in the main ES.

Socio-Economics

The effects of the proposed development upon people, the community and the economy have been considered as part of the EIA process. A number of positive socio-economic benefits are likely to arise as a result of the proposed development – both during site preparation / construction of the development and during operation. The effect of the proposals on local social and community facilities in and around Thornbury have been investigated in the following areas:

Employment and Economy – The development will help support construction firms operating in the area and provide direct and indirect jobs in the construction industry, as well as the supply chain. The construction phase of the development is predicted to support the direct and indirect employment of approximately 95 people per annum (net additional). The overall construction period is likely to be 8 years. The construction effects will therefore be beneficial for employment opportunities.

The proposed retail/community uses and homeworking would deliver ~~97–117~~ permanent jobs on the site; depending upon the mix of uses delivered, and an additional ~~29–27~~ off-site jobs. The site will therefore provide additional employment opportunities once operational – a beneficial impact within the assessment.

Provision of New Housing – The scheme will deliver housing which will assist in meeting the housing needs of South Gloucestershire and the Wider Bristol housing market area. The proposed mix of new housing, of up to ~~630~~ ~~595~~ homes, including up to ~~20820~~ affordable dwellings, will provide an important source of additional new homes to meet housing need. This will have a moderate beneficial impact.

Social Infrastructure – Early years, Primary and Secondary education provision will be addressed through the payment of the Community Infrastructure Levy (CIL). The proposals include space for the delivery of retail and community uses, and there is the potential that a health-centre (dentist and/or doctors) to be delivered onsite; should a provider come forward. In addition, CIL receipts can also be spent on existing health infrastructure within Thornbury.

Open Space and Leisure – The overall demand generated for additional public open space will be exceeded on the site through the provision of a new network of open spaces including new parkland, natural green space, allotments, green links and play spaces. These facilities will be integral for new residents, but would also benefit the existing community. The over-provision of open space will have a significant beneficial impact to the local community. The shortfall in playing pitch provision has the potential to have a minor adverse effect; which could be mitigated if required through a s106 contribution to enhance/extend existing facilities within Thornbury.

Traffic and Transport

An assessment has been undertaken of the traffic and transport effects of the proposed development during the construction and operation phase of development. The assessment has been based on a Transport Assessment prepared by Peter Brett Associates (PBA) which predicts and considers in detail the traffic generated by the proposed development in the context of the transport network.

Primary access into the site is proposed off Oldbury Lane; the primary accesses will be via new ghost island T-junctions with right hand turn lanes. In addition, a Sustainable Travel Link will provide a bus, cycle and pedestrian link through to the consented Park Farm scheme to the east of the site.

Consideration has been given in the ES to the likely significant effects of the proposed development in relation to a variety of factors including driver delay, pedestrian movement, and accidents and safety. Effects have been

considered during the construction and operation of the proposed development and appropriate mitigation is proposed to reduce and minimise any negative impacts.

The traffic modelling includes an allowance for future growth, as agreed with SGC, and as such, it includes the relevant cumulative sites already consented within Thornbury inherently within the predicted traffic flows. It is the change to this consented future base year as a result of the proposed development that is assessed.

The construction of the proposed development is likely to generate additional traffic, but this would be intermittent through the construction periods. As a mitigation measure, a Construction Environmental Management Plan (the "CEMP") will be applied to all construction activities across the site, and will include a Construction Traffic Management Plan (CTMP). This will define the appropriate hours of operation and routes to be used by Heavy Vehicles and other large construction vehicles associated with the site. The CEMP will also impose requirements for the various contractors on the site to co-ordinate activities to ensure that the construction activities with high HGV generation do not occur together.

An improvement scheme is proposed for the existing staggered junction at Butt Lane / Morton Way / Gloucester Road; this will signalise the junction, widen ~~three~~ all four arms, and provide ~~a~~ new pedestrian crossings. The speed limit along Oldbury Lane is proposed to be reduced from the national speed limit, to 40mph in the vicinity of the site frontage.

A Framework Travel Plan is submitted with the planning application, which provides a set of measures aimed at further limiting the impact of the development on the local highway network. The future reserved matters applications will be accompanied by the submission of full Travel Plans for the residential, and occupier uses. Financial contributions are identified to support existing bus services within the town, and to improve existing bus waiting facilities and cycle parking within Thornbury town centre.

Providing that mitigation is effectively implemented, the proposed development is predicted to have a neutral adverse effect during construction, with HGV construction vehicle movements and light movements associated with construction workers anticipated to impact on baseline daily flows by less than 1% in most locations: with an increase of 4.8% and 3.6% predicted on Grovesend Road and Butt Lane respectively.

Once operational, the development will have a negligible impact on forecasted traffic flows within the local highway network; with an increase of less than 10% forecasted at 23 of the 28 locations assessed. Of the remaining links,

two are at the site entrance; and the remaining three (with projected increases of 11.6%, 20.6% and 10.8%) relate to links on Morton Way and Gloucester Road.

With the provision of the potential Primary School on site, there will be a further reduction in external vehicular trips, with a reduction in the impact on the local highway network. [The assessment included in the ES is therefore robust and overestimates the forecast development impact.](#)

The development is anticipated to have a minor adverse effect on severance, and minor beneficial effects on pedestrian amenity and accidents/safety. It will have a neutral effect on fear and intimidation, driver delay and hazardous loads.

Water Environment

The ES assesses the potential hydrological (including flood risk) and drainage effects the development may have on the site and the surrounding area. The assessment includes a review of the current conditions within the area and identifies mitigation measures where appropriate for those effects that may potentially arise due to the development. The assessment is supported by a Flood Risk Assessment.

This chapter assessed the potential impacts on surface water and groundwater receptors, together with the flood risk associated with the development. Consideration is given to temporary effects during the construction phase as well as the effects during the operation of the development. The need for site specific mitigation measures is also identified and described. The nature of any residual effects that remain after mitigation is also discussed.

All construction sites have the potential to increase surface water runoff rates and volumes, alter drainage patterns and affect local and catchment wide flood risk. Therefore, mitigation measures will be incorporated through the Construction Environmental Management Plan to minimise the impacts; and this will include the use of best practicable measures.

Flood risk to future residents has all been mitigated by locating all flood vulnerable development in areas outside of flood zones. The Flood Risk Assessment includes a preliminary surface water drainage strategy; which sets out the principles for the future detailed design. This includes principles in regard to discharge rates, scale of attenuation and detailed design; for example ensuring attenuation design includes methods for improving the quality of water being discharged, and includes ecological enhancements. The Flood Risk Assessment confirms that the proposals will aid in reducing flood risk from fluvial sources downstream of the Pickedmoor Brook.

The assessment has demonstrated that with the use of appropriate mitigation measures, the site is suitable for development and would not result in any significant impact with regard to Flood Risk or Surface Water.

Air Quality

An assessment of potential impacts on air quality has been undertaken for the proposed development. The likely significant effects resulting from the construction and operation of the proposed development have been assessed in accordance with the relevant and accepted guidance. The main air pollutants of concern related to construction are dust and particulate matter (PM₁₀), for road traffic they are nitrogen dioxide (NO₂), PM₁₀ and fine particulate matter (PM_{2.5}), NO_x in relation to the Bluebell Wood Ancient Wood, and the potential impact of the nearby Thornbury Waste Water Treatment works on the suitability of the site for residential development.

The site is not located within an Air Quality Management Area (AQMA). The nearest AQMA to the proposed development is located more than 12 km away. Air quality monitoring of NO₂ concentrations in close proximity to the site indicates that air quality in the area is good; and below relevant national objectives.

For the construction phase assessment, the study area is defined as up to 350 m from the site boundary, up to 50m from roads used by construction vehicles and up to 500m from the site entrance in accordance with the Institute of Air Quality Management (IAQM) guidance on the assessment of construction dust effects. For the operational phase assessment, the study area is defined as roads within 250m of the site and those on which development traffic increases significantly in accordance with criteria defined by the IAQM and Environmental Protection UK (EPUK).

The projected concentrations are based upon the output of the traffic modelling contained within the Transport Assessment, and therefore inherently include the growth associated with the relevant committed sites identified within the traffic and transport assessment. [The transport assessment confirms that revised development proposals will result in fewer vehicle trips and the assessment of air quality impacts are therefore robust.](#)

The construction phase assessment has identified appropriate mitigation to employ against construction dust impacts. Construction phase effects are judged to be not significant when the identified mitigation measures are applied through a Construction Environmental Management Plan.

For the operational phase, concentrations of NO₂, PM₁₀ and PM_{2.5} have been predicted at a number of worst case locations representing existing properties adjacent to the local road network. The development is not predicted to

have a significant effect on local air quality and concentrations of NO₂, PM₁₀ and PM_{2.5} are expected to be below the National Air Quality Strategy Objectives.

In relation to air quality within the site for future residents, road traffic emissions from Oldbury Lane have been modelled at the worst case receptor (PR1) which have confirmed that air quality within the site will be acceptable for future residents.

The suitability of the site for residential uses in regard to the nearby Thornbury Waste Water Treatment Works has been assessed, with the risk of odour exposure considered Low by virtue of the distance from the source and the prevailing wind direction.

The impact of increased traffic flows on the Ancient Woodland at Bluebell Wood has been considered in regard to NO_x levels, and is assessed as not significant.

Noise and Vibration

The noise and vibration effects associated with the construction and operation of the site have been assessed. The chapter describes the existing noise environment in the area surrounding the site, considers the suitability of the site for the proposed development, and assesses the impact of the construction and operation of the proposed development on nearby receptors.

Noise and vibration impacts associated with the construction phase could impact on nearby properties, and properties on the site occupied within the initial phases. Therefore, mitigation measures will be incorporated through the Construction Environmental Management Plan to minimise the impacts, and will include use of best practicable measures.

Traffic flows, including the relevant committed developments, have been assessed to determine the impact on the existing road network and the potential increase of noise on existing receptors. [The transport assessment confirms that the revised development proposals will result in fewer vehicle trips and the assessment of noise and vibration are therefore robust.](#) The level of impact that development traffic is likely to have on existing receptors is deemed to be not significant.

Predicted noise levels at the proposed dwellings has been assessed. The chapter confirms that proposed properties along Oldbury Lane should be designed with gardens to the rear, enabling the dwellings to provide shielding from road traffic noise. In addition, enhanced acoustic glazing and uprated acoustic trickle vents are

likely to be required for dwellings facing Oldbury Lane. These measures will be delivered as part of future reserved matter applications, and will be accompanied by a detailed noise assessment.

The assessment has demonstrated that with the use of appropriate mitigation measures, the site is suitable for development and would not result in any significant noise or vibration effects.

Ecology and Nature Conservation

EAD Ecology has assessed the potential significant effects of the proposed development on the important ecological features in accordance Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines (2018). The assessment included a review of the baseline conditions at the site and surroundings, the potential significant ecological effects, the mitigation measures required to prevent, reduce or offset any significant adverse effects and the likely residual effects after these measures have been employed. Information regarding the baseline conditions was obtained through a desk study and Extended Phase 1 Habitat survey together with detailed surveys for white clawed crayfish, amphibians, reptiles, breeding birds, bats, dormouse, otter, water vole and badgers.

There are no statutory designated sites within or immediately adjacent to the Project Site. There are six European designated sites within 10km of the Project Site and four national statutory designated sites (Sites of Special Scientific Interest (SSSI) within the 5km. Park Mill Covert Site of Nature Conservation Interest (SNCI), designated for Ancient Woodland lies immediately adjacent to the western boundary of the Project Site.

Whilst being dominated by improved grassland in agricultural use, the site contains a number of locally important ecological features, in particular the semi-natural broadleaved woodland, mature and Veteran trees and hedgerows (some of which are species-rich), two ponds and the Pickedmoor Brook. Lowland mixed deciduous woodland is a Priority Habitat; broadleaved woodland is also a South Gloucestershire Biodiversity Action Plan Habitat. Hedgerow is a Priority Habitat and South Gloucestershire BAP Habitat. These habitats have been confirmed as supporting bats (foraging and commuting, no bat roosts were identified within the Project Site, badgers, otter, hedgehogs, slowworm and a typical range of farmland birds. A small population of great crested newt (GCN) was recorded in a ponds approximately 110m east [and 150m west](#) of the Project Site

The proposals seek to avoid impacts through retention and protection of the most valuable existing habitats through design. However, in the absence of further avoidance and mitigation, direct habitat loss and indirect disturbance of retained habitats during either construction or operation could potentially result in the

damage/degradation of habitats, severance/fragmentation of habitat networks, and direct and/or indirect effects on notable and protected species.

Mitigation

The ecological mitigation strategy is designed to avoid or mitigate effects, compensate for any unavoidable effects and deliver ecological enhancement/biodiversity net gains. A number of mitigation and enhancement measures are identified for the site:

- Habitat and protected species mitigation measures during construction to include fencing of retained habitats and sensitive construction practices, under Natural England Mitigation Licences where necessary.
- Habitat Creation: including 9.15ha of wildflower meadow; ~~SuDS basins; 0.8395ha~~ plantation broadleaved woodland; 0.782km of new and translocated hedgerow; 125 no. new scattered broadleaved trees, and 0.023ha (~~twethree~~) ponds;
- SuDs design to include wetland habitat of biodiversity value;
- A minimum of 10 reptile and amphibian hibernaculae created in suitable locations;
- A range of nest boxes, including a minimum of 100 boxes on buildings and 50 boxes on retained trees/woodland;
- Additional bat roosting habitat, including a minimum of 100 boxes on buildings and 50 boxes on retained trees/woodland;
- Inclusion of hedgehog pass in each boundary fence, and a gap under close board fencing;
- Boundary management at the Park Mill Covert SNCI to include use of fencing, gates (where appropriate) and thorn planting to prevent direct access;
- Ecological information provided in Homeowner Packs which will include information on key ecological features, and the proposed mitigation and enhancement measures;
- Where residential gardens abut hedgerows, fencing will be post and wire mesh only;
- Inclusion of inset kerb stones around gully pots within highway and drainage strategy; and
- Detailed design of public-realm lighting to minimise adverse effects on bats, otters and badgers.

These measures will be secured through the detailed design process, and through the following mechanisms:

- Ecological Construction Management Plans – This would set out in detail the measures which will require implementation with respect to protecting important ecological features during the construction phase, and will be secured through the CEMP;
- Construction Environmental Management Plan – This would set out in detail the more general environmental control measures during construction (e.g. controlling air, water, noise and light pollution); and
- Landscape and Ecology Management Plan (LEMP) – This would set out the measures for the ongoing management, maintenance and monitoring of the existing, and newly created, habitats to maximise opportunities for biodiversity enhancement and gain.

These measures are capable of being secured by way of a suitably worded planning conditions attached to a planning consent.

Residual Effects

Negative effects would be avoided or reduced through inherent mitigation incorporated into the EIA Parameter Plans and delivered through industry standard methodologies employed during the construction and operation phases via the mechanisms identified above secured through appropriately worded planning conditions. There would be no risk or probability of a Likely Significant Effect on European Sites as a result of the Project alone or in combination with other developments. The post-development landscaping will deliver significant positive effects for a range of habitats and species, in particular woodland, hedgerows, bats, amphibians and reptiles. The proposed development in its operational phase would deliver a net gain for biodiversity, which would be beneficial to the local area.

Landscape and Visual Impacts

The Richards Partnership has assessed the potential significant effects of the proposed development on the landscape and visual receptors. The assessment included a review of the baseline conditions at the site and surroundings, the likely significant landscape and visual effects, the mitigation measures required to prevent, reduce or offset any significant adverse effects and the likely residual effects after these measures have been employed.

The site's topographic context, presence of established vegetation and the existing (and under-construction) built edge of Thornbury serve to contain and limit inter-visibility with the wider area; as a result the initial visual envelope of the site is focussed on the immediate surrounding fields, the existing urban edge and the approach to the town on the adjacent Oldbury Lane.

The assessment considers the impact on Landscape Character Area (at the South Gloucestershire-level) and on local landscape character (defined by six local landscape character areas). The visual impacts of the proposals are considered by way of 10 identified 'Groups' constituting a broad location for visual effects.

In line with industry guidance, the assessment considers the impact at occupation (year 1) and at year 15; when mitigation planting will be established and matured, and building materials are weathered.

Mitigation

A CEMP will include measures to address landscape and amenity impacts during the construction period.

A Landscape and Ecological Management Plan will be produced, the content of which will also be discussed and agreed with SGC to ensure that any adverse construction and operation effects are minimised; and to secure the long-term management of the proposed green infrastructure.

An Arboricultural Method Statement at the detailed design stage, incorporating best practice guidance set out in British Standard 5837: '2012 Trees in Relation to Design, Demolition and Construction', will ensure retained trees and other vegetation are not adversely affected during the construction process.

The approval of detailed reserved matter applications, and associated planting strategies, will comply with the principles set out in the outline planning application, and will deliver the range of mitigation and enhancement measures; for example the delivery of enhanced and new habitats, implementation of a sensitive lighting regime, detailed planting plans.

Residual Effects

In terms of likely effects on landscape character, the assessment finds that while the character of the site itself would inevitably change as a result of change of use from agricultural land to residential (and associated uses), the significant effects predicted would be relatively contained. This is primarily due to the extensive visual containment of the site, and that, where the site is visible, it is already seen in the context of existing residential areas.

With regards to likely effects on views and visual amenity, the assessment finds that there are significant effects at three locations: walkers along the Public Right of Way (PRoW) within the site and dwellings directly bordering the site to the east and along Oldbury Lane. The remainder of identified receptors will experience either a minor adverse or negligible effect.

With regards to residual effects on landscape character, the assessment finds a significant effect upon the site itself (LLCA1); whilst effects on the wider landscape character would remain not significant. This is primarily due to the extensive visual containment of the site described above and the maturation of the landscaping proposals.

Any greenfield of this scale would be anticipated to give rise to some predicted 'significant' visual effects. Receptors predicted to experience a significant effect are located either adjacent or close to the site boundary. It is notable that receptors beyond the immediate site boundary to the north, west and south do not experience significant change. This is due primarily to the screening effect of development, the rolling topography, and vegetation across the site context, which increases with distance; and the fact that the proposals will be seen, nestled within the existing well vegetated landscape of where built form is a regular and expected visual component.

Archaeology and Built Heritage

BSA Heritage Ltd has assessed the potential significant effects of the proposed development on archaeology and cultural heritage receptors. The assessment included a review of the baseline conditions at the site and surroundings, the likely archaeology and cultural heritage effects, the mitigation measures required to prevent, reduce or offset any adverse effects and the likely residual effects after these measures have been employed.

A baseline assessment, in the form of a desk-based assessment and a programme of investigative fieldwork has identified the potentially sensitive archaeological and cultural heritage receptors (heritage assets) within the site and its wider zone of influence.

The assessment established that the site contains no designated heritage assets. The Thornbury Castle complex of designated heritage assets sits circa 400m south of the site, and includes the Grade I listed main building itself, the walls enclosing the main house and its curtilage (Grade I), two lodges to the south (Grade II listed), a scheduled monument and Grade II Registered Park and Garden. Immediately south of the Thornbury Castle complex lies the Grade I listed medieval Church of St Mary the Virgin.

The northern edge of Thornbury Conservation Area lies to the south of the site; at a distance of approximately eighty metres at its closest point. A Grade II listed early 19th century main building at Shieling School, lies east of Thornbury Castle and church.

The investigative fieldwork has established that the site does not contain any known non-designated assets or archaeological deposits of high significance. The historic landscape character of the site is identified as of negligible importance.

Mitigation has been incorporated into the design to reduce the identified potential adverse impacts of the proposed development on the listed assets wherever possible, through the maintenance of a buffer of undeveloped land in the south of the site, and the retention, wherever possible, of the hedgerows and extant woodland within the site that form part of the historic landscape character. The retention of the historic hedgerows and extant woodland wherever possible, has similarly limited the effects of the development on the historic landscape, [including Thornbury Conservation Area](#).

The investigative fieldwork identified an area of archaeological interest in the north-east of the site; comprising Romano-British and Iron Age pits and ditches. A scheme of archaeology mitigation works will be agreed with SGC prior to commencement, and further investigation ahead of and during construction will ensure that these remains are dealt with appropriately.

The proposed development is predicted to result in a Minor Adverse impact on the historic landscape and hedgerows. In terms of impacts on designated and undesignated heritage assets, the impact is assessed as Neutral. In policy terms, the identified minor adverse and neutral effects equate to very limited harm and at the low end of 'less than substantial'.

Agricultural Land

An agricultural land classification survey has been undertaken for the site, and identified that 24.7 hectares of the site constitutes 'best and most versatile agricultural land'.

No mitigation is proposed in regard to the impact of the proposed development on agricultural land.

The loss of the 24.7 hectares of best and most versatile agricultural land constitutes a Moderate Adverse impact, which is Significant for the purposes of this ES.

Cumulative Impacts

The EIA considers the combined effects of the proposed development with other development in the local area, notably the consented Park Farm scheme immediately bordering the site to the east, and currently under construction. In addition, a number of other schemes consented within Thornbury have been identified, and are considered as part of the cumulative site assessment.

The Socio-Economics assessment confirms that the cumulative effects of the schemes on the housing supply in South Gloucestershire will constitute a Significant Beneficial Impact. In regard to wider socio-economic effects, through a combination of onsite provision, CIL and s106 Obligations, the cumulative effects are assessed as Not Significant.

The Traffic and Transport assessment is based on the analysis undertaken to inform the modelling work set out in the TA. The future operation of the links within the study area has therefore been calculated using growth factors and survey data agreed with SGC, which includes the relevant cumulative schemes identified for this assessment. On this basis, the cumulative effects of the proposed development in conjunction with other schemes is inherent within the assessment presented.

The traffic modelling with future growth informed the air quality, and noise and vibration assessments, and as such, the cumulative effects of the proposed development in conjunction with other schemes is also inherent within their assessments. The cumulative sites will also be subject to their respective CEMPs, which will ensure that the potential for cumulative effects during construction on traffic, noise and vibration and air quality are suitably mitigated.

In regard to the Water Environment, the cumulative schemes have been granted planning consent, and as such, will have secured appropriate mitigation, including a CEMP and a suitable SuDS strategy, and as such, the cumulative effects of the sites on offsite flood risk would be neutral.

In terms of ecological impacts, the other schemes have been approved and as such will be designed to accommodate and mitigate ecological interests to fulfil planning policy requirements and thereby inherently protect ecological interests across the wider landscape from cumulative development effects. Owing to the limited ecological interests on the project site and the absence of significant effects predicted, cumulative effects in combination with the other projects evaluated are considered therefore to be restricted to a potential negligible cumulative effect on bats, badgers, brown hare and hedgehogs; and on hedgerows, improved grassland and broadleaved trees.

There would be an increase in built development in the local area with associated consequences for the character of the landscape, which would become more urbanised than is currently experienced. However, the extent to which this is perceived in the visual context is limited due to the distance, topography and intervening built form. The potential for sequential views along Butt Lane and Oldbury Lane have been noted, but these are unlikely to give rise to in combination views. The cumulative effects on landscape and visual are not considered significant.

The majority of the cumulative schemes lie beyond areas of modern development, and as such have no relationship with any of the designated heritage assets identified as potentially affected by the proposed development. The potential for cumulative effects as a result of the proposed development alongside the consented, and under construction, Park Farm development has been considered. However, by virtue of the distance and intervening vegetation, and the landscaping proposals, the cumulative effects are considered to be neutral.

In regard to agricultural land, through the committed schemes, 64.6ha of best and most versatile agricultural land has been consented. This constitutes a Major Adverse Impact, and the additional loss of 24.7ha of best and most versatile agricultural land as a result of the proposed development does not change this effect.

The assessment concludes that there are no significant cumulative effects relating to air quality, noise and vibration, ground conditions, ecology or cultural heritage.