

CHAPTER 15: SUMMARY OF PROPOSED MITIGATION AND RESIDUAL EFFECTS

15.1 MITIGATION AND RESIDUAL EFFECTS

- 15.1.1 This final chapter provides a summary of the mitigation measures that are proposed and an outline of the residual impacts that are predicted after taking these into account. This chapter does not provide a summary of the entire ES, a Non-Technical Summary is available separately.
- 15.1.2 The summary of mitigation measures is provided to assist the planning authority in formulating conditions and legal agreements to ensure that the measures considered in this ES are implemented, if it is decided that consent should be granted. The mitigation included in the scheme can be categorised into two types: 'inherent mitigation' and 'additional mitigation'.
- 15.1.3 Inherent mitigation is generally a core part of the scheme which is incorporated into the EIA parameter plans. If consent is granted, it is likely to include a condition ensuring that the development takes place in accordance with these parameters and therefore secures the implementation of the inherent mitigation.
- 15.1.4 Additional mitigation is not generally capable of being shown on the parameter plans. It is this additional mitigation that is detailed below.
- 15.1.5 The size of the scheme will result in its phased delivery. A planning condition will secure the submission of phasing plan prior to the commencement of development. The planning conditions and obligations securing the additional mitigation will be appropriately worded to allow their phased delivery in associated with the relevant development phase.

15.2 SOCIO-ECONOMICS

Mitigation

- 15.2.1 The Proposed Development includes the provision of open space and the opportunity to deliver community and retail uses on the Project Site. As identified above, this includes the potential for a health centre, including a Doctors Surgery and/or dentist practice, should a provider come forward.
- 15.2.2 SGC have implemented the Community Infrastructure Levy (CIL), and as such, the CIL receipts from the Proposed Development will be directed to a range of community infrastructure as identified on the Regulation 123 List. In accordance with the assessment in Chapter 6, this will include monies to provide additional primary and secondary school places within the relevant

catchment. It is noted that health and social care facilities are also identified on the Regulation 123 List, and as such, CIL monies could be directed to health provision.

15.2.3 The Green Infrastructure Parameter Plan sets out the extent of open space provided across the Project Site, with the detailed typologies set out in Chapter 6, and the Planning Statement, The s106 Agreement will secure a mechanism for the long term maintenance / management of the open space, and its delivery will come forward in accordance with the parameter plans within future reserved matter applications. Further discussions will take place with the Local Authority in regard to Active Open Space (Playing Pitch) Provision.

Residual Effects

15.2.4 A summary of the residual effects predicted is provided in the table below. The Moderate Beneficial Impacts on housing supply and passive open space are Significant.

Table 15.1: Summary of Socio-Economic Residual Effects

Type of Impact	Impact Assessment
Economy and Employment	Construction: Minor Beneficial Operation: Minor Beneficial
Housing Supply	Operation: Moderate Beneficial
Early Years and Primary Education	Operation: Negligible
Secondary Education	Operation: Negligible
Primary Health	Operation: Negligible
Passive Open Space	Operation: Moderate Beneficial
Active Open Space (Playing Pitches)	Operation: Negligible
Community Space	Operation: Negligible

Cumulative Effects

15.2.5 The assessment notes that employment in the construction sector in the wider South West region is still 5% lower than its 2008 peak (in 2015)¹ suggesting there remains significant latent capacity to meet higher output without creating wage or other inflationary effects. Therefore the availability of construction labour to work on the projects identified in Chapter 5 is not anticipated to be a constraint to the Proposed Development.

15.2.6 The projects listed in Chapter 5 are not anticipated to have cumulative adverse impact on the Proposed Development once operational. Each proposed development mitigates its own impact

¹ Industry Insights, Construction Skills Network, Forecasts 2017-2021 (Construction Industrial Training Board)

in accordance with Regulation 122 of the Community Infrastructure Regulations 2010, and with the exception of Park Farm, is subject to CIL.

15.2.7 Through a combination of on-site provision, CIL and s106 obligations, the cumulative effects are assessed as Not Significant, with the exception of a Significant Beneficial impact in regard to housing supply.

15.3 TRAFFIC & TRANSPORT

15.3.1 In regard to construction, it is anticipated that the Proposed Development will generate a total of 227 movements per day (including 27 HGVs) at its peak construction year; which will result in an increase of 1% or less from the 2028 Test Case at the majority of the links assessed. An increase of 4.8% and 3.6% is predicted at two links: Grovesend Road and Butt Lane.

15.3.2 With regard to operation, it is anticipated that the Proposed Development will generate an increase of 10% or less in forecasted flows (18hr AAWT) at 23 of the 28 links assessed. Of the remaining links, two relate to links at the Project Site entrance; and the remaining three (with projected increases of 11.6%, 20.6% and 10.8%) relate to links on Gloucester Road and Morton Way.

Mitigation

Construction

15.3.3 A Construction Environmental Management Plan (CEMP) will be produced, the content of which will be discussed and agreed with SGC to ensure that any adverse construction effects are minimised. This will include a Construction Traffic Management Plan (CTMP).

Operation

15.3.4 Junction Butt Lane / Morton Way / Gloucester Road staggered junction is predicted to operate above capacity in the 2028 Test Case scenario, and as such a mitigation scheme has been proposed for this junction; comprising a staggered signalised layout with arm widening on three arms, and with the provision of new pedestrian crossings.

15.3.5 The speed limit along Oldbury Lane will be reduced from the national speed limit, to 40mph in the vicinity of the site frontage.

15.3.6 It is agreed that a reasonable financial contribution will be provided towards a mitigation scheme at the A38/Church Road and A38/B4061 Thornbury Road junctions.

15.3.7 Whilst a Framework Travel Plan has been produced, full Travel Plans will be produced on a site-wide basis for the residential, education and occupier uses. These will set out site specific

initiatives aimed at improving the availability and choice of travel modes to and from the Proposed Development. The Travel Plans (TPs) will aim to be the mechanism by which overall travel demand will be managed and monitored. A number of measures should be implemented, including:

- Marketing and promotion to ensure sustainable travel opportunities are promoted;
- Measures to promote efficient car use such as car sharing and provision of electric vehicle charging points;
- Measures to promote public transport use such as provision of a new bus stop facilities and route information; and
- The TPs recognises the importance of promoting walking and cycling among employees / students /visitors to access the Proposed Development. The Travel Plan Coordinator (TPC) will maintain an up to date database of travel information promoting cycling and walking.

15.3.8 In addition to the pedestrian and cycle provision included as part of the development, the TPs are anticipated to reduce development traffic flows by encouraging sustainable travel behaviour, thus reducing traffic flows along the local highway network

15.3.9 Financial contributions will be secured via the s106 Agreement to support local bus services, with the delivery of the Sustainable Transport Corridor enabling bus services to be routed into the Project Site; and to improve bus waiting facilities and cycle parking in the centre of Thornbury.

Residual Effects

15.3.10 A summary of the residual effects predicted is provided in the table below. There are No Significant Impacts identified.

Table 15.2: Summary of Traffic and Transport Residual Effects

Impact	Impact Assessment
Construction Traffic	Neutral
Severance	Minor Adverse
Fear and Intimidation	Neutral
Pedestrian Amenity	Minor Beneficial
Driver Delay	Neutral
Accidents and Safety	Minor Beneficial
Hazardous Load	Neutral

Cumulative Effects

15.3.11 The traffic impact assessment work presented 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 been calculated using committed development and survey data agreed with SGC, and therefore includes growth associated with the relevant cumulative sites. On this basis, the cumulative effects of the Proposed Development in conjunction with other schemes is inherent within the assessment presented.

15.4 WATER ENVIRONMENT

Mitigation

15.4.1 The CEMP will include measures to address flood risk and drainage impacts during the construction period; including addressing best practice as set out in the SuDS Manual and Construction of SuDS guidance. In addition, an emergency activity plan will also be drafted.

15.4.2 The Flood Risk Assessment (FRA) includes a preliminary SUDs strategy, and it will be necessary to include a condition which secures the submission of a detailed strategy for the appropriate phase of development. This will meet the principles set out in this ES alongside the FRA; including compliance with the discharge rates, scale of attenuation, methods for improving the water quality discharged into the Pickedmoor Brook and the accompanying ecological enhancements. The strategy will also secure the future management regime of the drainage features. The detailed drainage for the individual plots and highway drainage will come forward in accordance with the FRA.

15.4.3 The detailed scheme design will also accord with the FRA's requirements in regard to Finished Floor Levels (FFLs): being a minimum of 600mm above ground level for properties bordering the edge of the Flood Zone 2, and a minimum FFL of 11m AOD on the western part of the Project Site (as identified on the plan in the FRA – Technical Appendix 8.1).

Residual Effects

15.4.4 A summary of the residual effects predicted is provided in the table below. There are No Significant Impacts identified.

Table 15.3: Summary of Flood Risk and Drainage Residual Effects

Impact	Effect	Impact Assessment
Construction		
Increase of Flood Risk	Due to construction activities	Neutral
	Increased surface water runoff rates and volumes	Neutral
Water Quality	Degradation of surface water quality due to pollutants	Neutral
	Degradation of groundwater quality due to pollutants	Neutral
Operation		
Increase in urban pollutants	Worsened water quality (surface water)	Neutral
	Worsened water quality (ground water)	Neutral
Increase in on site surface water flood risk by development	Increase flood risk on site	Neutral
Increase in surface water runoff and volume	Increase in flood risk offsite	Neutral

Cumulative Effects

15.4.5 The cumulative schemes have been granted planning consent, and as such, it is assumed will have secured appropriate mitigation, including a CEMP and a suitable SuDS strategy, and as such, the cumulative effects of the sites would be Neutral.

15.5 AIR QUALITY

Mitigation

15.5.1 The CEMP will include measures to address air quality impacts during the construction period.

Residual Effects

15.5.2 The Air Quality Chapter concludes that the impact of the Proposed Development on dust deposition and elevated PM₁₀ concentrations can be suitably mitigated through standard practice, secured through the CEMP, and that the residual effect is assessed as Not Significant.

15.5.3 In regard to operational effects, the air quality assessment confirmed that the Proposed Development will have a negligible effect on NO₂, PM₁₀ and PM_{2.5} concentrations, with predicted concentrations well below the relevant objectives.

15.5.4 The impact of NO_x concentrations on the Bluebell Wood Ancient Woodland has been assessed as Not Significant.

15.5.5 The suitability of the Project 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.

15.5.6 There are No Significant Impacts identified.

Cumulative Effects

15.5.7 It is expected that each cumulative development would employ appropriate mitigation measures for the construction phase, through a CEMP, and in addition the separation distance between the majority of the cumulative schemes and the Project Site is such that significant cumulative adverse dust effects are unlikely to occur.

15.5.8 The predicted concentrations at the operational stage are based upon the traffic flows within the Transport Assessment, and as such, inherently include traffic growth associated with the cumulative sites.

15.6 NOISE AND VIBRATION

Mitigation

15.6.1 The CEMP will include measures to address noise and vibration impacts during the construction period.

15.6.2 The approval of reserved matter applications would require consideration of the suitable relationships between operational noise sources (for example plant) and residential uses.

15.6.3 The reserved matters application will be required to address the impact of noise from Oldbury Lane on those properties fronting the road; by design, through the orientation of the dwellings fronting the road to screen amenity space, and through enhanced glazing and uprated acoustic trickle vents. A suitably worded planning condition will require a detailed noise assessment within future reserved matters applications where they relate to properties fronting Oldbury Lane.

Residual Effects

15.6.4 The Noise and Vibration Chapter concludes that there will be a Minor Adverse (noise) and Negligible (Vibration) effect during construction.

15.6.5 During operation, the noise effects will be Negligible across all identified effects.

15.6.6 There are No Significant Impacts identified.

Cumulative Effects

15.6.7 The traffic flows which underpin the noise and vibration assessment are based upon the Transport Assessment, and as such, inherently includes the projected traffic flows with the relevant cumulative sites within the modelling.

15.7 ECOLOGY

Mitigation

15.7.1 A Landscape and Ecological Management Strategy (LEMS) would be produced for the Proposed Development. This would detail the over-arching management strategy for all ecological avoidance, mitigation and enhancement measures. The LEMS would provide a framework for the delivery of the following documents to be produced for each development phase; which would be secured through planning condition:

- Construction Ecological Management Plans (CECoMPs).
- Post-construction Landscape and Ecological Management Plan (LEMPs).

15.7.2 The CECoMPs will be secured through the CEMP.

15.7.3 A Landscape and Ecological Management Plan (LEMP) 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.

15.7.4 The LEMP, approval of detailed reserved matter application and planning conditions will secure the delivery of the ecological mitigation and enhancement measures set out within this ES; including:

- Habitat Creation: 13.75ha of Parkland (comprising wildflower meadow, SuDS basins and amenity grassland); 0.83ha plantation broadleaved woodland; 0.78km of new and translocated hedgerow; new scattered broadleaved trees, and 0.03ha (three) ponds;
- SuDs design to include wetland habitat of biodiversity value;
- A minimum of 10 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;
- Project Site boundary management adjacent to the Park Mill Covert SNCI to include fencing and planting within the development site 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;
- Detailed design of public-realm lighting to minimise adverse effects on bats, otters and badgers.

Residual Effects

15.7.5 A summary of the residual effects predicted is provided in the table below. There are No Significant Impacts identified.

Table 15.4: Summary of Ecology Residual Effects

Impact	Effect	Impact Assessment
Construction		
Severn Estuary SAC, SPA , SSSI and Ramsar site	Pollution	Neutral
Park Mill Covert SNCI	Damage to habitat	Neutral
Improved grassland	Loss of habitat	Negligible to Minor Beneficial
Broadleaved woodland, broadleaved trees, hedgerows and water courses	Loss of habitat	Negligible to Minor Beneficial
	Damage to retained habitats within and adjacent to site	Neutral
Pickedmoor Brook and other watercourses	Pollution of water courses	Neutral
Invertebrates	Habitat Loss	Negligible to Minor Beneficial
Amphibians	Risk of killing/injury of amphibians	Neutral
	Habitat loss	Negligible to Minor Beneficial
Reptiles	Risk of killing/injury of reptiles	Neutral
	Habitat loss	Negligible to Minor Beneficial
Birds	Direct impacts on nesting birds	Neutral
	Construction noise and visual disturbance on nesting birds,	Negligible

	Loss of bird nesting and foraging habitat	Negligible
Bats	Loss of bat roost resource	Negligible to Minor Beneficial
	Habitat loss/ fragmentation for foraging / commuting bats	Negligible to Minor Beneficial
	Habitat fragmentation for foraging / commuting bats from construction lighting	Negligible
Badgers	Badger Sett damage or destruction and killing or injury of badgers	Negligible
	Habitat loss	Negligible
	Entrapment / injury of Badgers	Negligible
Hedgehog	Risk of killing/injury of hedgehogs	Negligible
	Habitat loss	Negligible
Brown hare	Habitat loss	Negligible
Operation		
Severn Estuary SAC, SPA , SSSI and Ramsar site	Recreational Damage	Neutral
	Air / Water Pollution	Neutral
Park Mill Covert SNCI	Recreational Damage	Neutral
Retained and created habitat – broadleaved woodland, broadleaved trees, hedgerows and water courses	Habitat loss/creation	Negligible to Minor Beneficial
	Damage from site users	Neutral
Amphibians	Killing/injury – drainage systems	Neutral
Birds	Cat Predation	Negligible
Bats	Habitat fragmentation (lighting)	Negligible
Otters	Habitat fragmentation (lighting)	Neutral
Badgers	Habitat fragmentation (roads, lighting)	Negligible
	Vehicle collisions/mortality	Negligible
Hedgehogs	Vehicle collisions/mortality	Negotiable

Cumulative Effects

15.7.6 The other proposals evaluated 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 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.

15.8 LANDSCAPE & VISUAL

Mitigation

- 15.8.1 The CEMP will include measures to address landscape and amenity impacts during the construction period.
- 15.8.2 A Landscape and Ecological Management Plan (LEMP) 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 green infrastructure.
- 15.8.3 The adoption of an approved Arboricultural Method Statement (AMS) at the detailed design stage, incorporating best practice guidance set out in British Standard 5837: '2012 Trees in Relation to Design, Demolition and Construction' which will ensure retained trees and other vegetation, including the Ancient Woodland and Veteran Trees, are not adversely affected during the construction process.
- 15.8.4 The approval of detailed reserved matter applications, and associated planting strategies, will comply with the principles set out in this outline planning application, and will deliver the range of through-design mitigation and enhancement measures identified through the landscape assessment process; for example the delivery of enhanced and new habitats, implementation of a sensitive lighting regime, planting of tree species in accordance with the growth rates identified in Technical Appendix 13.3 etc.

Residual Effects

- 15.8.5 A summary of the residual effects predicted is provided in the table below. The effect on LLCA1 and LLCA2, and Groups A, C, D and I at the construction stage are Significant. These impacts are reduced to Not Significant at Year 15; aside from a residual Significant impact at LLCA1, and Groups C, D and I.

Table 15.5: Summary of Landscape Residual Effects

Effect	Nature	Impact Assessment	
Construction			
Landscape Character	Gloucestershire LCA – Area 18 Severn Ridges	Temporary	Negligible
	LLCA1 (Edge of Settlement Floodplain Pasture)	Temporary	Substantial Adverse (Locally Significant)
	LLCA2 (Morton Way Agricultural Low Ridge)	Temporary	Moderate Adverse (Locally Significant)
	LLCA3 (Morton Duckhole Enclosed Village)	Temporary	Negligible
	LLCA4 (North Thornbury Settlement Post 1970s)	Temporary	Minor Adverse

	LLCA5 (Park Mills to Thornbury Castle)	Temporary	Minor Adverse
	LLCA6 (Open Agricultural Landscapes to the West)	Temporary	Negligible
Visual Receptors	Group A (Motorist and Cyclists along Oldbury Lane)	Temporary	Moderate Adverse (Locally Significant)
	Group B (Walkers on PRow to the South and West of site)	Temporary	Minor Adverse
	Group C (Walkers on ProW on the Site)	Temporary	Moderate Adverse (Locally Significant)
	Group D (Residents on NW Edge of Thornbury)	Temporary	Moderate Adverse (Locally Significant)
	Group E (Staff and Pupils in Schools to the south)	Temporary	Minor Adverse
	Group F (Walkers on PRow on high ground to the east)	Temporary	Negligible
	Group G (Residents in Lower Morton/Duckhole)	Temporary	Minor Adverse
	Group H (Walkers in PRow to the north)	Temporary	Minor Adverse
	Group I (Residents on Oldbury Lane)	Temporary	Substantial Adverse (Locally Significant)
	Group J (Walkers on PRow on high ground to the west)	Temporary	Negligible
	Operation		
Landscape Character	Gloucestershire LCA – Area 18 Severn Ridges	Permanent	Negligible
	LLCA1 (Edge of Settlement Floodplain Pasture)	Permanent	Substantial Adverse (Locally Significant)
	LLCA2 (Morton Way Agricultural Low Ridge)	Permanent	Minor Adverse
	LLCA3 (Morton Duckhole Enclosed Village)	Permanent	Negligible
	LLCA4 (North Thornbury Settlement Post 1970s)	Permanent	Minor Adverse
	LLCA5 (Park Mills to Thornbury Castle)	Permanent	Minor Adverse
	LLCA6 (Open Agricultural Landscapes to the West)	Permanent	Negligible
Visual Receptors	Group A (Motorist and Cyclists along Oldbury Lane)	Permanent	Minor Adverse
	Group B (Walkers on PRow to the South and West of site)	Permanent	Minor Adverse
	Group C (Walkers on ProW on the Site)	Permanent	Moderate Adverse (Locally Significant)
	Group D (Residents on NW Edge of Thornbury)	Permanent	Moderate Adverse (Locally Significant)

Group E (Staff and Pupils in Schools to the south)	Permanent	Negligible
Group F (Walkers on PRoW on high ground to the east)	Permanent	Negligible
Group G (Residents in Lower Morton/Duckhole)	Permanent	Minor Adverse
Group H (Walkers in PRoW to the north)	Permanent	Minor Adverse
Group I (Residents on Oldbury Lane)	Permanent	Moderate Adverse (Locally Significant)
Group J (Walkers on PRoW on high ground to the west)	Permanent	Negligible

Cumulative Effects

15.8.6 Taking into account the number and distribution of cumulative schemes within the vicinity of the Project Site, a number of the schemes can be discounted due to distance, topography and the intervening built form; which as a result means that there is no likelihood of sequential or combined landscape or visual effects.

15.8.7 The under-construction development at Park Farm has been considered as part of the landscape and visual baseline given the advanced construction stage, and as such, it is considered within the main assessment.

15.8.8 Three sites (Post Farm, Land West of Gloucester Road and Morton Way) are noted as having some potential for sequential views for motorists travelling along Butt Lane and then Oldbury Lane, but they are unlikely to give rise to in combination views. The cumulative effects do not change the assessment of effects set out for the site in isolation.

15.9 ARCHAEOLOGY AND BUILT HERITAGE

Mitigation

15.9.1 The potential for impacts on designated heritage assets has been mitigated through design, and as such, there are no additional mitigation measures identified.

15.9.2 A scheme of archaeology works will be agreed with SGC prior to commencement, and a watching brief will be drafted for the construction period.

Residual Effects

15.9.3 A summary of the residual effects predicted is provided in the table below. There are No Significant Impacts identified.

Table 15.6: Summary of Heritage Residual Effects

Effect	Impact Assessment
Construction	
Post Medieval Drainage Ditch	Neutral
Loss of hedgerow	Minor Adverse
Archaeological Remains (north-east area)	Neutral
Historical Landscape	Minor Adverse
Retained Features (including hedgerows, ditches, earthworks)	Neutral
Operation	
Impact on Grade I listed Thornbury Castle and listed walls; scheduled monument and Grade II Registered Park and Garden	Neutral
Impact on Grade II listed lodges	Neutral
Impact on Grade I listed Church of St Mary the Virgin	Neutral
Impact on Grade II listed Sheilings School (Thornbury Park)	Neutral
Impact on Thornbury Conservation Area	Neutral
Impact on potential historical canal feature	Neutral

Cumulative Effects

15.9.4 In relation to potential cumulative effects, most of the cumulative schemes (identified in Table 5.3) lie beyond areas of modern development and therefore have no relationship with any of the designated heritage assets identified as potentially affected by the Proposed Development. Permitted development at Park Farm, parts of which are completed and under construction and as such are considered in the baseline, are visible from locations close to the castle, church and listed house (Sheilings School), and the development at Land West of Pound Mill Business Park, to the north of Oldbury Lane has also been considered.

15.9.5 As with the relationship between the Project Site and the elevated designated assets to the south, distance and intervening vegetation limit any adverse effect. At present, the construction of the Park Farm development might be assessed as causing a minor adverse effect to the castle, but future establishment of soft landscaping may reduce this potential effect to neutral. As a neutral effect has already been assessed for the Proposed Development, no greater cumulative adverse effect is assessed.

15.10 AGRICULTURAL LAND

Mitigation

15.10.1 No additional mitigation measures have been identified.

Residual Effects

15.10.2 The loss of 24.7ha of best and most versatile agricultural land is assessed as a Moderate Adverse effect; which is Significant. The loss of agricultural land is an inevitable consequence of housing development due to the need for housing and the shortage of suitably located previously development available to meet the total housing need. This is a matter which therefore forms part of the planning balance.

Cumulative Effects

15.10.3 In relation to potential cumulative effects, the cumulative schemes include 64.6ha of best and most versatile land. This constitutes a Major Adverse impact; which remains Significant. The additional loss of 24.7ha of best and most versatile land as a result of the Proposed Development does not change this assessment.

15.11 MONITORING

15.11.1 Part 26, Paragraph 6(1)(d) requires that, when determining an application or appeal in relation to which an environmental statement has been submitted, the relevant LPA, the Secretary of State or inspector, as the case may be must, if planning permission is to be granted, consider whether it is appropriate to impose monitoring measures. Paragraph 6(3) expands on this requirement, stating that, when considering whether to impose a monitoring measure under paragraph (1)(d), the LPA, Secretary of State or inspector, as appropriate, must:

- a) If monitoring is considered to be appropriate, consider whether to make provision for potential remedial action;
- b) Take steps to ensure that the parameters to be monitored and the duration of the monitoring are proportionate to the nature, location and size of the proposed development and the significance of its effects on the environment; and
- c) Consider, in order to avoid duplication of monitoring, whether any existing monitoring arrangements carried out in accordance with an obligation under the law of any part of the UK, other than the Directive, are more appropriate than imposing a monitoring measure.

15.11.2 As clarified in NPPG (Paragraph:063 Reference ID: 4-063-20170728), monitoring should not be used as a general means of gathering environmental information; rather it is a means of

monitoring, where appropriate any mitigating measures identified through the EIA process. As defined in the Regulations, a 'monitoring measure' is a provision requiring the monitoring of any significant adverse effects on the environment of proposed development contained in (a) a condition imposed on the grant of planning permission or (b) a planning obligation.

It is therefore only those effects identified as Significant which are considered as part of the proposed monitoring, and as such, the table below identifies those effects identified as Significant either before or after Additional Mitigation.

Table 15.7: Additional Mitigation and Monitoring Measures

Environmental Effect	Effect	Additional Mitigation Measures (and how they are to be secured in <i>italics</i>)	Residual Effect	Residual Effect Significance	Monitoring Measures (if appropriate)
Construction Effects					
Increase in flood risk as a result of construction activities	Moderate Adverse	Implementation of best practice construction techniques and CEMP. Obtain Land Drainage Consent where required. <i>Planning Condition</i>	Negligible	Not Significant	There is no need for any additional monitoring measures.
Increase in flood risk as a result of increased surface water runoff rates and volumes as a result of construction activities	Moderate/Minor Adverse	Implementation of best practice construction techniques and CEMP. <i>Planning Condition</i>	Negligible	Not Significant	
Degradation of surface water quality due to pollutants as a result of construction activities	Major Adverse	Implementation of best practice construction techniques and CEMP. <i>Planning Condition</i>	Negligible	Not Significant	The CEMP will continue measures for removing suspended soils and potential contaminants. The CEMP will also require that all environmental incidents are to be monitored and recorded.
Degradation of groundwater quality due to pollutants as a result of construction activities	Major Adverse	Implementation of best practice construction techniques and CEMP. <i>Planning Condition</i>	Negligible	Not Significant	There is no need for any additional monitoring measures.
Noise from construction activities	Up to Major Adverse	Proposed CEMP <i>Planning Condition</i>	Minor Adverse	Not Significant	There is no need for any additional monitoring measures.
Construction Dust Effects	NA	CEMP <i>Planning Condition</i>	NA	Not Significant	The CEMP will include a Dust Management Plan which will record all dust and air quality complaints and carry out regular site inspections to monitor compliance with Dust Management Plan. Dust Monitoring locations will be agreed with the LPA and

					<p>monitoring will be instigated 3 months in advance of works commencing in the area.</p> <p>There is no need for any additional monitoring measures.</p>
Archaeological Remains (north-east area)	Moderate Adverse	Further investigation <i>Planning Condition</i>	Negligible	Not Significant	An appropriately worded condition will secure the necessary archaeological investigations, including the subsequent reporting.
Retained Features (including hedgerows, ditches, earthworks)	Moderate Adverse	CEMP	Negligible	Not Significant	The CEMP will include a Construction Ecological Management Plan (CECoMPs) and an Arboricultural Method Statement which combines will protect this features during the construction process. The Project Environmental Compliance Officer will undertake routine visual monitoring of key retained features and ensure appropriate protection measures are instigated and maintained. There is no need for any additional monitoring measures.
Impact on LLCA1 – Edge of Settlement Floodplain	Substantial adverse	Site selection, retention of notable trees and hedgerows where possible and protection of vegetation to be retained and the limited duration of works (AIA, CEMP) <i>Planning Condition</i>	N/A	Locally Significant	Not appropriate as effect is temporary.
Impact on LLCA2 – Morton Agricultural Low Ridge	Moderate adverse	Site selection, retention of notable trees and hedgerows where possible, protection of vegetation to be retained, retention of PRow route links and the limited duration of works (AIA, CEMP) <i>Planning Condition</i>	N/A	Locally Significant	
Visual Receptor – Group A – Motorists and Walkers on Oldbury Lane	Moderate adverse	Site selection, retention of notable trees and hedgerows where possible and protection of vegetation to be retained and the limited duration of works (AIA, CEMP)	N/A	Locally Significant	

		<i>Planning Condition</i>			
Visual Receptor – Group C – Walkers on PROW on site	Moderate adverse	Site selection, retention of notable trees and hedgerows where possible and protection of vegetation to be retained and the limited duration of works (AIA, CEMP) <i>Planning Condition</i>	N/A	Locally Significant	
Visual Receptor – Group D – Residents on NW edge of Thornbury	Moderate adverse	Site selection, retention of notable trees and hedgerows where possible and protection of vegetation to be retained and the limited duration of works (AIA, CEMP) <i>Planning Condition</i>	N/A	Locally Significant	
Visual Receptor – Group I – Residents on Oldbury Lane	Substantial adverse	Site selection, retention of notable trees and hedgerows where possible and protection of vegetation to be retained and the limited duration of works (AIA, CEMP) <i>Planning Condition</i>	N/A	Locally Significant	
Loss of BMV Agricultural Land	Moderate Adverse	NA			There is no need for any monitoring measures.
Operation Effects					
Housing Supply	Moderate Beneficial	None required	Moderate Beneficial	Significant	There is no need for any monitoring measures with the approval of future reserved matter applications securing the delivery of housing.
Pre-School	Moderate Adverse	Provision of land and CIL Payments <i>Planning Obligation</i>	Neutral	Not Significant	There is no need for any monitoring measures with the annual CIL reporting providing an appropriate monitoring mechanism.
Primary Education	Moderate Adverse	Provision of land and CIL Payments <i>Planning Obligation</i>	Neutral	Not Significant	

Secondary Education	Moderate Adverse	CIL Payments <i>Planning Obligation</i>	Neutral	Not Significant	
Passive Open Space	Moderate Beneficial	None required – inherent design <i>Planning Obligation</i>	Moderate Beneficial	Significant	The open space, and its future management and maintenance, will be secured as part of planning obligations, and delivered through the approval of reserved matter applications.
Active Open Space	Moderate Adverse	Section 106 Payments <i>Planning Obligation</i>	Neutral	Not Significant	There is no need for any monitoring measure.
Increase in flood risk as a result of increased surface water runoff rates and volumes	Moderate/Minor Adverse	Implementation of management and maintenance regime. <i>Planning Condition</i>	Negligible	Not Significant	The Management and Maintenance Plan secured by condition for the SuDS Strategy can include monitoring of attenuation basins if appropriate, and as such there is no need for any additional monitoring measures.
Degradation of surface water quality due to urban pollutants	Major Adverse	Surface water management strategy to incorporate appropriate SuDS to provide treatment of surface water prior to discharge. Implementation of management and maintenance regime. <i>Planning Condition</i>	Negligible	Not Significant	
Sound levels in external amenity areas – Road traffic	Up to Moderate Adverse	Gardens and external amenity area placed at the rear of the dwellings to provide shielding from road traffic noise. The layout of the buildings and the orientation should be considered as part of future reserved matter approvals in order to ensure gaps between dwellings are reduced such that no garden area has a line-of-sight/overlooks the roads. <i>Detailed Design</i>	Negligible	Not Significant	There is no need for any monitoring measure.
Internal sound levels	Up to Moderate Adverse	Enhanced acoustic glazing and uprated acoustic trickle vents are likely to be required for dwellings facing Oldbury Lane. This can be	Negligible	Not Significant	There is no need for any monitoring measure.

		controlled through planning condition/future reserved matter approvals. <i>Planning Condition</i>			
Plant Noise from proposed non-residential uses	Up to Major Adverse	Detailed design will minimise the impact from building services and fixed plant on receptors. <i>Detailed Design and Planning Condition (to control max noise levels)</i>	Negligible	Not Significant	There is no need for any monitoring measure.
Driver Delay	Moderate adverse	Signalisation scheme at Butt Lane / Morton Way / Gloucester Road junction <i>Planning Obligation</i> <i>Mitigation scheme at A38 Church Road and B4061 junctions</i> <i>Planning Obligation</i>	Low	Not Significant	There is no need for any monitoring measure.
Impact on LLCA1 – Edge of Settlement Floodplain	Substantial adverse	Proposed high quality green infrastructure would gradually mature to form a well vegetated attractive new environment with distinctive local characteristics reinforced (LEMP) <i>Planning Condition</i>	Substantial adverse (year 15)	Locally Significant	The LEMP can include monitoring measures so that all new planting is monitored to ensure that there is no loss / deterioration and to monitor the growth of shrub material and the establishment of trees (including remedial and replacement measures for failed growth).
Visual Receptor – Group A – Motorists and Walkers on Oldbury Lane	Moderate adverse	Proposed high quality green infrastructure would gradually mature to form a well vegetated attractive new environment woodland to the south and west (LEMP) protection of vegetation to be retained and the limited duration of works (AIA, CEMP) <i>Planning Condition</i>	Minor Adverse (year 15)	Not significant	There is no need for any additional monitoring measures.
Visual Receptor – Group C – Walkers on PROW on site	Moderate adverse	Proposed high quality green infrastructure would gradually mature to form a well vegetated attractive floodplain POS and well	Moderate adverse (year 15)	Locally Significant	

		vegetated edge of the new housing layout when viewed from the footpaths (LEMP) <i>Planning Condition</i>			
Visual Receptor – Group D – Residents on NW edge of Thornbury	Moderate adverse	Proposed high quality green infrastructure would gradually mature to form a well vegetated attractive floodplain POS and well vegetated edge of the new housing layout when viewed from properties along the town edge (LEMP) <i>Planning Condition</i>	Moderate adverse (year 15)	Locally Significant	
Visual Receptor – Group I – Residents on Oldbury Lane	Substantial adverse	Proposed high quality green infrastructure would gradually mature to form a well vegetated attractive new environment woodland to the south and west (LEMP) <i>Planning Condition</i>	Moderate adverse (year 15)	Locally Significant	