18 Summary of mitigation, residual and interaction effects

18.1 Introduction

18.1.1 This chapter (alongside its appendices) provides a summary of the proposed mitigation and the residual effects predicted following their implementation. It should be read in conjunction with Appendix 18.1 Summary of Effects and Appendix 18.2 Summary of Mitigation Measures. This chapter does not provide a full summary of the ES. A Non-Technical Summary is provided separately.

18.1.2 The summary of proposed mitigation measures is provided to assist the planning authority in formulating the conditions and clauses of the legal agreement, to ensure that the measures contained and assessed in this ES are implemented.

18.1.3 A summary of the identified effects is tabulated within Appendix 18.1. A summary of proposed mitigation measures is set out in Appendix 18.2. These measures demonstrate the applicants' intention to commit to the implementation of all necessary mitigation measures in agreement with the local planning authority.

18.2 Additional mitigation and residual effects

Air Quality

Construction Phase

18.2.1 During the construction phase, the assessment identified a medium to high risk of dust impacts from earthworks, construction, and trackout activities. To address this, mitigation measures, aligned with IAQM guidance, will be implemented through a Dust Management Plan (DMP) and Construction Environmental Management Plan (CEMP). With these measures in place, the residual effects on human health, property, and ecological receptors are assessed as negligible and not significant.

Operational Phase

18.2.2 For the operational phase, detailed dispersion modelling of traffic-related emissions (NO_2, PM_{10}, and $PM_{2.5}$) was undertaken for both the Proposed Development and the cumulative Loddon Valley Garden Village proposals. Predicted pollutant concentrations at both existing and proposed sensitive receptors were well below relevant Air Quality Standards (AQS) objectives. The magnitude of change in pollutant concentrations was classified as negligible, and no additional mitigation was deemed necessary. Consequently, the residual operational effects on air quality are considered not significant. Cumulative effects from other developments were also assessed and found to be negligible.

Archaeology

Construction Phase

18.2.3 The assessment identified a number of archaeological receptors (AR1–AR8) within the Site, primarily of low or negligible sensitivity, including locations of previous finds such as Roman coins, pottery, and prehistoric flints, as well as geophysical anomalies. The Proposed Development will result in the physical loss of these receptors during construction, either through groundworks or tree planting. To mitigate this, a programme of archaeological evaluation, excavation, recording, analysis, and reporting will be undertaken in accordance with a planning condition and in consultation with the Local Planning Authority's archaeological advisor. This approach is designed to offset the loss of archaeological information and ensure preservation by record.

18.2.4 Following implementation of the mitigation measures, the residual effects on all archaeological receptors are assessed as negligible and therefore not significant in EIA terms.

Operational Phase

18.2.5 No operational phase effects are anticipated, as all archaeological remains will have been removed and recorded during construction. Cumulatively, the Proposed Development is not expected to result in significant archaeological effects when considered alongside other nearby schemes. However, the combined archaeological investigations may contribute positively to the understanding of the local historic environment, representing a minor beneficial outcome.

Built Heritage

Construction Phase

18.2.6 The assessment identified several designated and non-designated built heritage receptors within 1km of the Site, including Grade II listed buildings and a Grade II* Registered Park and Garden. The Proposed Development will not result in any physical impacts to these assets, and changes to their settings are limited due to the retention of vegetation, new planting, and the set-back of development from site boundaries. As such, no additional mitigation beyond embedded design measures is required. The only receptor to experience more than a negligible effect is Mole Bridge Farmhouse (LB2), which is assessed as experiencing a Minor Adverse effect due to a slight change in its setting. All other receptors are assessed as experiencing Negligible effects. These effects are not significant in EIA terms.

Operational Phase

18.2.7 No operational phase effects beyond those identified for construction are anticipated.

Climate Change and Greenhouse Gases

Construction Phase

18.2.8 The Climate Change assessment identifies potential significant adverse effects from greenhouse gas (GHG) emissions and climate risks during both construction and operation. Construction-related emissions, primarily from embodied carbon and on-site activities, are initially assessed as minor adverse but not significant. However, risks to workforce health and safety from climate hazards (e.g. heat stress) are considered moderate and significant. These are reduced to not significant through good-practice measures embedded in the Construction Environmental Management Plan (CEMP).

Operational Phase

18.2.9 Operational emissions from energy use and transport are initially assessed as moderate adverse and significant. Embedded mitigation measures, such as high-performance building fabric, heat pumps, solar PV, electric vehicle infrastructure, and a Travel Plan, are expected to reduce these to minor adverse and not significant. Climate risks to buildings and residents (e.g. overheating, storm damage, subsidence) are also considered moderate and significant but can be mitigated through appropriate design, compliance with Building Regulations, and future climate modelling, resulting in low residual risk.

18.2.10 Overall, with full implementation of recommended mitigation measures, the Proposed Development is expected to align with national and local climate policy objectives, and residual effects on climate change and GHG emissions are not considered significant.

Ecology

Construction Phase

18.2.11 Likely significant effects arising during the construction phase include disturbance, degradation and damage to habitats and species, direct harm to species, loss/fragmentation of habitats, dust generation and contamination of soil/waterbodies.

18.2.12 Mitigation measures to address significant negative effects during the construction phase include the implementation of the CEMP and suitable buffer zones. Where relevant, suitable licences, including European Protected Species Mitigation Licences, will be obtained and appropriate working method statements will be implemented to protect species against direct harm and prevent damage to sensitive flora.

18.2.13 Following the implementation of mitigation and compensation, no residual impacts are predicted.

Operational Phase

18.2.14 Likely significant effects during the operational phase include an increase in recreational pressure, urban edge effects, disturbance, predation, increased risk of mortality and the implementation of habitat management plans.

18.2.15 Mitigation measures to address significant negative effects include the implementation of lighting strategies, as well as implementation of habitat creation and management plans.

18.2.16 Provision of greenspaces onsite and contribution to the Suitable Alternative Natural Greenspace strategy of the wider Loddon Valley Garden Village development will provide recreational opportunities for new and existing residents, mitigating the impact of recreational pressure both on and off-site.

18.2.17 With mitigation, it is concluded that no residual negative effects remain for the identified important ecological features.

18.2.18 Following the implementation of habitat creation and management plans, significant positive effects are anticipated for veteran trees, hedgerows and bats.

Human Health

Construction Phase

18.2.19 The Human Health assessment identifies that the Proposed Development is located in an area of low health sensitivity, with low levels of deprivation and a relatively healthy population. During construction, potential impacts on air quality, noise, and active travel are assessed as negligible or minor adverse, and not significant in EIA terms. Temporary employment generation is considered to have a minor beneficial effect on health. These effects are managed through inherent mitigation measures, including a Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP).

Operational Phase

18.2.20 During operation, the provision of new housing is expected to have a minor beneficial effect on health, while impacts on air quality, noise, and transport are negligible. Although there is a slight deficit in local GP provision, financial contributions secured through the Infrastructure Delivery Plan (IDP) are expected to mitigate this, resulting in a neutral residual effect. No additional mitigation beyond the IDP is required, and no significant adverse residual effects on human health are anticipated.

Hydrology

Construction Phase

18.2.21 During the construction phase, potential impacts on flood risk, drainage, and water quality are mitigated through a combination of inherent design measures and additional mitigation. Embedded mitigation includes a sequential approach to site layout, avoidance of known flood risk areas, and implementation of a surface water drainage strategy incorporating SuDS. Additional mitigation includes a Construction Environmental Management Plan (CEMP) and a Flood Management Plan (FMP), which will manage pollution risks, sediment mobilisation, and temporary changes to surface water flow. Specific measures to protect watercourses include sediment fences, spill kits, and controlled storage of materials. For Water Framework Directive (WFD) receptors, mitigation includes sediment and turbidity controls during in-channel works. With these measures in place, residual construction effects are assessed as negligible to minor adverse, and not significant in EIA terms.

Operational Phase

18.2.22 During operation, the Proposed Development will incorporate attenuation basins, swales, and filter drains designed to maintain greenfield runoff rates and protect water quality. The drainage strategy ensures no adverse impact on downstream flood risk or WFD status. Thames Water is engaged to address potable and foul water infrastructure needs, with capacity studies and network upgrades planned as required. Water efficiency measures and potential rainwater harvesting will further reduce demand. Residual operational effects on flood risk, drainage, water quality, and water resources are assessed as negligible, and not significant. Cumulative effects are also considered not significant, given regulatory requirements and mitigation commitments across the wider Loddon Valley Garden Village development.

Landscape and Visual

18.2.23 The Proposed Development incorporates inherent mitigation landscaping incorporated into the design, retaining all ancient woodland, TPO trees, and most mature trees, while integrating existing hedgerows wherever possible. Wide green corridors and open spaces are included to soften built form and provide multifunctional green infrastructure. Additional mitigation will be

secured at Reserved Matters stage, primarily through strategic planting of trees, hedgerows, and scrub within open spaces and along site boundaries to screen and filter views of new housing. These measures aim to reduce visual impacts on sensitive receptors and enhance biodiversity and recreational value. SuDS features will be designed as naturalistic landscape elements, and new public rights of way will improve connectivity.

18.2.24 Following mitigation the Proposed Development will result in a moderate adverse residual effect on the Wokingham Landscape Character Area J2 (Arborfield & Barkham Settled and Farmed Clay) due to the permanent change from arable/pastoral fields to residential development. Loss of arable land remains significant, but there will be major beneficial residual effects for trees and moderate beneficial effects for grassland, with extensive new planting, orchards, and neutral grassland replacing temporary pasture. Hedgerow loss will be offset by compensatory planting, resulting in a minor beneficial effect by Year 15. Visual impacts will be largely contained within 1 km of the Site; significant residual effects will persist for users of ARB03 byway and Church Lane, and some nearby properties, though these may reduce to neutral with sensitive design and planting. Overall, the scheme delivers substantial green infrastructure and improved public access, creating long-term landscape and recreational benefits alongside unavoidable localised adverse effects.

Noise and Vibration

Construction Phase

18.2.25 During construction, potential noise and vibration impacts on nearby noise-sensitive receptors (NSRs) will be managed through a Construction Environmental Management Plan (CEMP), which includes best practice measures such as equipment selection, working hours restrictions, and monitoring protocols. With these measures in place, construction noise and vibration effects are assessed as Negligible to Minor Adverse, and not significant. Construction traffic noise impacts are also assessed as Negligible, with no additional mitigation required.

Operational Phase

18.2.26 During operation, the only relevant source of noise is from traffic associated with the development. The predicted changes in road traffic noise levels are minimal (generally less than 1 dB), and all impacts are assessed as Negligible Adverse. No operational noise mitigation is required, and residual effects are considered not significant. Cumulative effects, including those from the Loddon Valley Strategic Development Location, are also assessed as not significant.

Socio-economics

Construction Phase

18.2.27 The Proposed Development is expected to generate approximately 106 net additional construction jobs, of which 43 jobs are anticipated to benefit the Wokingham labour force. These include direct, indirect, and induced employment across various skill levels. No additional mitigation is required. The residual effect is assessed as minor beneficial and not significant.

Operational Phase

18.2.28 The Proposed Development will deliver up to 430 new homes, contributing to Wokingham's housing need. This is considered a moderate beneficial effect and significant in EIA terms.

18.2.29 For social infrastructure, the following effects are identified:

- Early Years Education: Demand for ~20 places; existing provision and financial contributions ensure a neutral effect (not significant).
- Primary Education: Demand for ~134 places; existing spare capacity and contributions result in a neutral effect (not significant).
- Secondary Education: Demand for ~61 places; existing capacity and contributions result in a neutral effect (not significant).
- Community Halls: Existing provision is sufficient; neutral effect (not significant).
- Public Open Space: Provision of ~10.3ha of green infrastructure exceeds local standards; minor beneficial effect (not significant).

18.2.30 No additional mitigation is identified as being required beyond the Infrastructure Delivery Plan (IDP) and common infrastructure approach agreed in the Statement of Common Ground for the Loddon Valley Garden Village (LVGV).

Transport & Access

Construction Phase

18.2.31 During the construction phase, potential transport impacts include temporary driver delay and reduced non-motorised user amenity associated with the formation of the access junction and crossing on Mole Road, as well as increased HGV movements. These are mitigated through a Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP), secured via planning condition. These plans will manage routing, delivery times, and highway cleanliness. With these measures in place, residual construction effects are assessed as minor to moderate adverse, and not significant.

Operational Phase

18.2.32 During operation, the Proposed Development incorporates inherent mitigation including a new access junction, internal spine road with traffic calming, active travel infrastructure, and public transport enhancements. These are supported by a Framework Travel Plan and contributions to the Infrastructure Delivery Plan (IDP), which includes signalisation of the Nirvana Spa roundabout, traffic calming on Sindlesham Road, and footway/cycleway improvements on Arborfield Road. With these measures, residual operational effects across all assessed receptors—including severance, delay, amenity, fear and intimidation, and road safety—are assessed as negligible to minor adverse, and not significant. A moderate beneficial effect is identified for non-motorised user amenity and fear/intimidation on Arborfield Road due to proposed footway/cycleway improvements.

18.3 Interaction effects

18.3.1 As discussed in Chapter 5, interactive effects relate to multiple effects from a single development, which may, when experienced together, give rise to a potentially significant impact upon a receptor.

18.3.2 Analysis has been undertaken into specific receptors, or receptor groups, to identify any predicted residual effects common to a receptor across more than one assessment within the preceding chapters of this ES. Where one receptor, or group of receptors, are predicted to experience multiple effects, consideration has been given to the interaction of these effects and whether significant interactive effects are likely to arise as a result. An example would be where

a local resident is affected by dust, noise and a loss of visual amenity during the construction of a scheme, with the result being a greater impact than each individual effect alone.

18.3.3 For some environmental effects, no interactions with other impacts can occur and therefore no interactive effects are considered likely to arise. For example, visual impacts do not interact with impacts on sub-surface land contamination. For other environmental effects it is apparent that interactions could occur and impact in different ways upon an individual receptor. Interactive effects are more likely to arise when the receptor or receptor group is more sensitive to change. Typical examples include ecological and human receptors.

18.3.4 The assessment of interactive effects has been undertaken in two stages.

- The identification and collation of any receptors within the technical assessments predicted to experience a residual effect (significant or otherwise) as a result of the Proposed Development.
- Consideration of the potential interactive effects on the identified receptors from multiple effects.

Receptor collation

18.3.5 The identified residual effects, as set out within the individual technical chapters of the ES, have been reviewed against the receptors they affect. Where there is more than one effect on a particular receptor, there is a requirement to determine whether there is the potential for interactions. If there is the potential for effect interactions then consideration has been given as to whether this is likely to result in a combined significant effect.

18.3.6 Where possible, to assist the consideration of possible interactive effects, receptors which share the same characteristics, sensitivities or qualifying features, have been grouped together into a single receptor type. For example the 'Population' receptor group incorporate occupiers of existing properties in proximity to the Site as well as public amenity areas, uses or local roads and local population in respect of local services, schools, employment opportunities.

Potential for Interactive effects

18.3.7 There is no established EIA methodology for assessing and quantifying the combined effects of individual impacts arising from a proposed development on sensitive receptors. The assessment of potential interactive effects has therefore been based upon qualitative professional judgement, taking into account receptor sensitivity and the defined residual effects identified within each technical assessment.

18.3.8 For the purposes of the interactive effects assessment, only residual effects which are classified as being of minor, moderate, or major (or equivalent terminology) significance have been considered. Residual effects of negligible significance have been excluded from the assessment as, by virtue of their definition, they are considered to be imperceptible to an environmental resource or receptor.

18.3.9 Where a receptor group is predicted to experience a of range effects varying in magnitude, the worst case (i.e. greatest adverse impact) has been considered.

Construction Phase

18.3.10 As shown in Table 18.1, during the construction phase, interaction effects are primarily associated with population receptors, particularly those residing near the site or using public rights of way. These receptors may experience a combination of visual intrusion, noise, and

transport disruption. While each of these effects is individually assessed as minor to moderate adverse, their combined experience could amplify perceived impacts. However, these effects are temporary and are mitigated through the implementation of a Construction Environmental Management Plan (CEMP), which includes best practice measures to manage noise, dust, and traffic. Other receptor groups, such as ecological and water environment receptors, may experience adverse effects (e.g. disturbance to habitats or floodplain features), but these do not interact significantly with human-related impacts. Beneficial socio-economic effects, such as job creation, also occur during this phase, helping to offset potential adverse interactions. Overall, no significant interactive effects are predicted during construction.

Operational Phase

18.3.11 As shown in Table 18.2, during the operational phase of the Proposed Development, interaction effects have been considered across several receptor groups, including the local population, heritage assets, and the water environment. While individual residual effects have been identified—such as minor adverse impacts on built heritage settings and low risks associated with climate change—these are spatially and thematically distinct, and do not combine to produce significant interactive effects.

18.3.12 For population receptors, multiple beneficial effects are anticipated, including improved access, enhanced public transport infrastructure, and socio-economic uplift through housing delivery and employment opportunities. Although isolated adverse effects such as minor noise impacts from mechanical plant and slight increases in pollutant concentrations have been identified, these affect distinct receptor locations and are not expected to interact. Furthermore, ecological receptors are predicted to benefit significantly from habitat creation and management, contributing positively to biodiversity. Overall, the combination of residual effects during operation does not result in significant adverse interactive impacts.

Table 18.1 Interaction effects during construction

CONSTRUCTION PHASE	Receptor/Receptor Group					
Environmental Topic	**Population**	**Ecological Receptors**	**Landscape Character/ Features**	**Water Environment**	**Heritage receptors**	**Climate**
Air Quality	-	-	-	-	-	-
Archaeology	-	-	-	-	-	-
Built heritage	-	-	-	-	**Minor Adverse**	-
Climate Change & Greenhouse Gases	**Low Risk** (Risks to the construction workforce health and safety, and to the constriction programme)	-	-	-	-	**Minor Adverse**

Ecology	-	-	-	-	-	-
Human Health	**Moderate Adverse to Minor Beneficial**	-	-	-	-	-
Hydrology (including Flood Risk & Drainage)	**Minor to Moderate Adverse** (Construction workers within an area of potential flood risk).	-	-	**Minor Adverse**	-	-
Landscape & Visual Impact	**Minor to Major Adverse**	-	**Moderate - Major Adverse**	-	-	-
Noise & Vibration	**Minor Adverse**	-	-	-	-	-
Socio-economics	**Minor Beneficial**	-	-	-	-	-
Transport & Access	**Minor to Moderate Adverse**	-	-	-	-	-

Table 18.2 Interaction effects during operation

OPERATION PHASE	Receptor/Receptor Group					
Environmental Topic	**Population**	**Ecological Receptors**	**Landscape Character/ Features**	**Water Environment**	**Heritage receptors**	**Climate**
Air Quality	-	-	-	-	-	-
Archaeology	-	-	-	-	-	-
Built heritage	-	-	-	-	**Minor Adverse**	-
Climate Change & Greenhouse Gases	**Low Risk** (Risks to the construction workforce health and safety, and to the constriction programme)	-	-	-	-	**Minor Adverse**
Ecology	-	**Beneficial (Significant)**	-		-	-

Human Health	**Moderate Beneficial**	-	-	-	-	-
Hydrology (including Flood Risk & Drainage)	-	-	-	-	-	-
Landscape & Visual Impact	**Moderate Adverse**	-	**Moderate Adverse to Major Beneficial**	-	-	-
Noise & Vibration	-	-	-	-	-	-
Socio-economics	**Minor to Moderate Beneficial**	-	-	-	-	-
Transport & Access	**Moderate Beneficial to Minor Adverse**	-	-	-	-	-

18.4 Conclusion and Next Steps

18.4.1 A tabulation of the summary of effects is provided in Appendix 18.1 and a summary of mitigation measures is provided in Appendix 18.2.

18.4.2 The ES has considered how the environment and the local community would be affected by the Proposed Development.

18.4.3 A range of likely effects have been predicted to occur as a result of the Proposed Development, both beneficial and adverse, and mitigation measures have been identified either within the scheme design or additionally to minimise or offset identified adverse effects where possible.

18.4.4 The ES has been submitted alongside other documents in a planning application to the Council. Prior to making a decision, the Council will consult with relevant statutory and non-statutory bodies for advice on the proposals. Members of the general public are also welcome to make comments on the application during this time. The feedback from these consultations will be taken into account by the Council in reaching their decision.

18.4.5 The Environmental Statement and other planning application documents can be viewed on the Council's planning applications website:

https://www.wokingham.gov.uk/planning/existing-planning-applications

18.4.6 Should interested parties wish to make representations on the content of this ES, they should be made in writing by post or by email at:

planning.enquiries@wokingham.gov.uk

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18.4.7 Alternatively, representations can be made online by following instructions at:

https://www.wokingham.gov.uk/planning/existing-planning-applications/comment-planning-application

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