West Sussex County Council

A29 REALIGNMENT

Volume 3 - Non-Technical Summary

OCTOBER 2020

PUBLIC

West Sussex County Council

PHASE 1 OF THE A29 REALIGNMENT

Volume 3 - Non-Technical Summary

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1. West Sussex County Council (the 'Applicant'), in its capacity as Highway Authority, has submitted a full planning application to West Sussex County Council, as the Planning Authority, for Phase 1 of the realignment of the A29 at Eastergate in the planning boundary of Arun District Council (the 'Scheme'). The purpose of the A29 Realignment (Phases 1 and 2 together) is to support development, reduce congestion, reduce journey times, support the local economy and community, improve road safety and provide new facilities for pedestrians and cyclists.

1.1.2. Environmental Impact Assessment (EIA) is the assessment of the environmental consequences (both positive and negative) of a project prior to the determination of a planning application by a local planning authority. The undertaking of an Environmental Impact Assessment is a legal requirement for planning applications relating to schemes of a certain size/type or in an environmentally sensitive location.

1.1.3. WSP has undertaken an Environmental Impact Assessment of the Scheme (Phase 1) on behalf of the Applicant in support of the planning application. The detailed findings of the Environmental Impact Assessment are reported within the Environmental Statement which sets out a description of the development, the reasonable alternative options considered in the design development, the existing environmental conditions, the likely significant effects on the environment and local communities and the measures proposed to avoid, minimise or reduce these effects.

1.2 PURPOSE OF THIS DOCUMENT

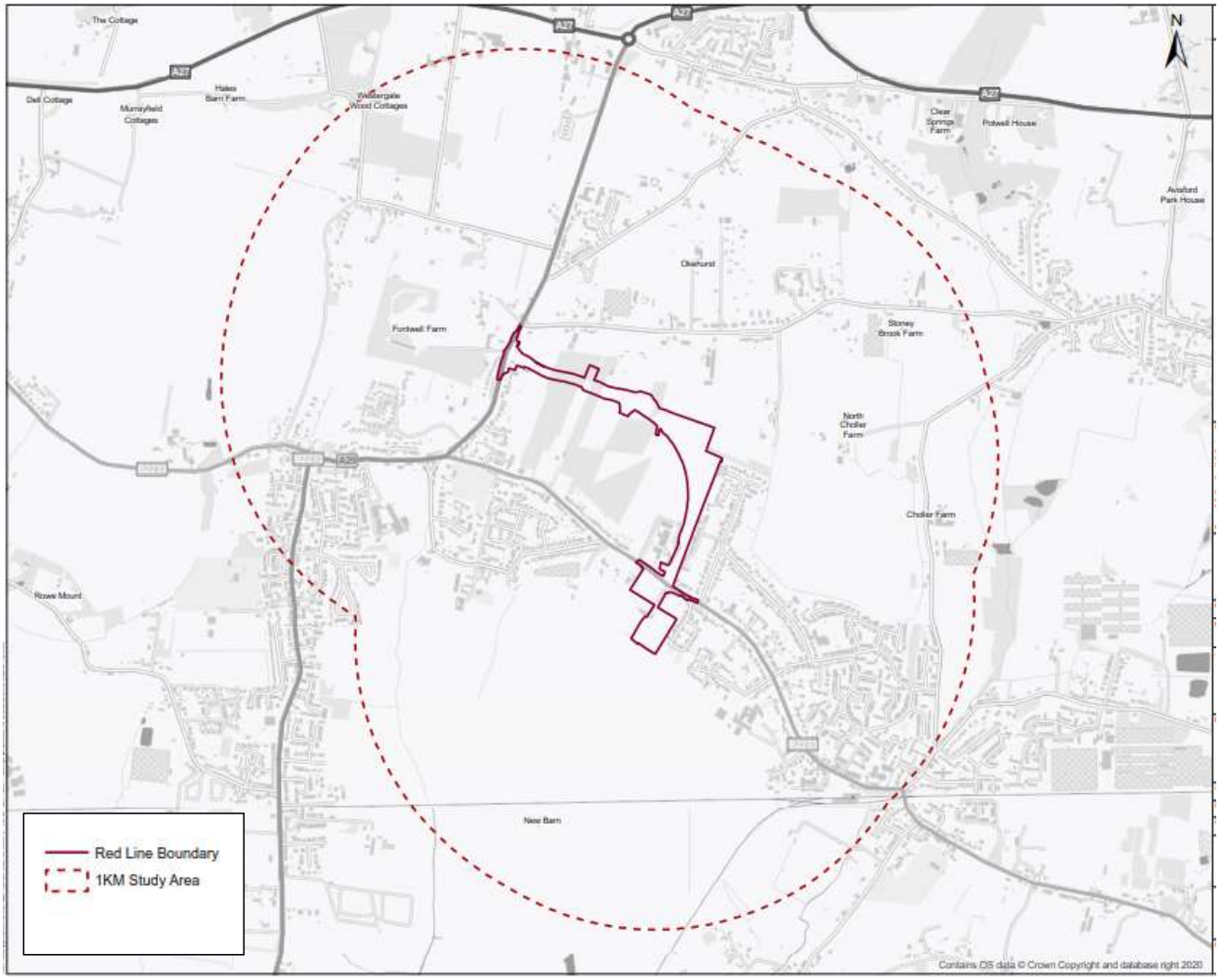
1.2.1. This document is the Non-Technical Summary of the Environmental Statement and has been prepared using non-technical language. The purpose of this Non-Technical Summary is to summarise the relevant content and findings of the Environmental Statement in a clear and concise manner. The Environmental Statement is divided into chapters that each deal with different environmental topics, and this Non-Technical Summary refers to the corresponding chapters of the Environmental Statement, where the full details of the assessments can be found, should the reader of the Non-Technical Summary want to understand a particular point in more detail.

2 WHAT IS CURRENTLY ON THE SITE?

2.1 INTRODUCTION

2.1.1. The following sections provide an overview of the Site and the Surrounding Area. In Volume 1 of the Environmental Statement, Chapter 2 - The Existing Site provides a full description of the existing site and surrounding area.

Figure 2-1 - Site Location



2.2 SITE LOCATION, ACCESS AND CURRENT USES

2.2.1. The Site is located within a rural/suburban area to the north of Eastergate and to the north-west of Barnham, north of Bognor Regis. The Site comprises an area of approximately 11.8 hectares (ha), including 9.2ha for the Scheme and 2.6ha of land for use temporarily for construction compounds and access.

2.2.2. Existing vehicular access to the Site is via private property, farm tracks, and through private land owned by local farms and businesses.

2.2.3. The Public Right of Way (PRoW) Footpath 318 runs in a north-to-south direction and crosses the Site between Eastergate Lane and the B2233 Barnham Road.

2.2.4. The Site compromises arable fields, woodland, an orchard and areas of managed grassland. The Site is bound by agricultural fields to the north, the B2233 (Barnham Road) to the south, the A29 to the west and the rear of residential properties on Murrell Gardens to the east. The Site is not currently used for agricultural purposes.

2.2.5. There are areas of vegetation along the eastern boundary of the Fordingbridge Industrial Estate and along the western boundary of the residential properties on Murrell Gardens.

2.3 SURROUNDING AREA

2.3.1. The area surrounding the Site contains a mix of residential and commercial uses both within the surrounding villages and along the local road network. The wider area is predominantly agricultural land.

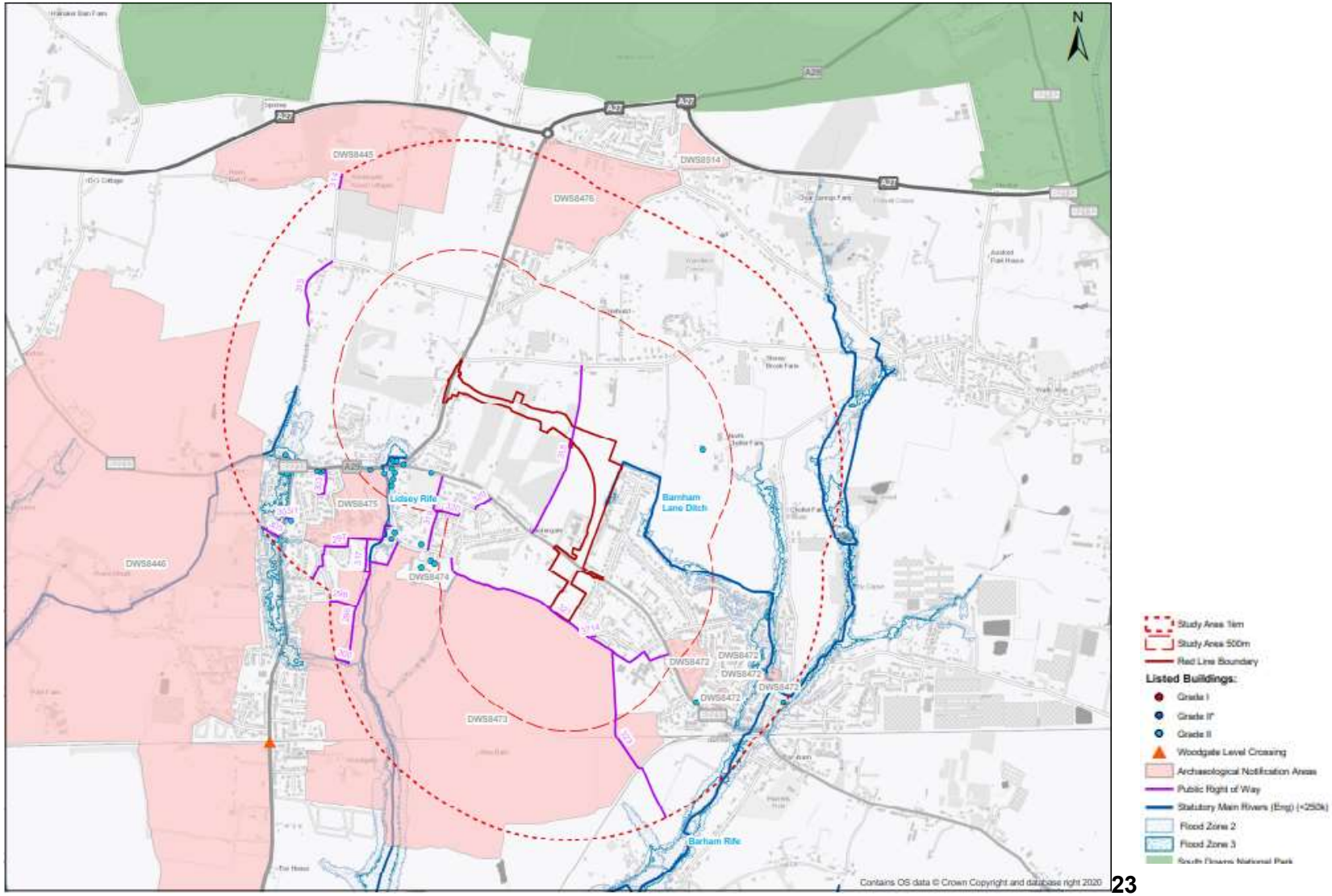
2.3.2. There are residential areas close to the Site, including along the B2233 Barnham Road, Downview Road, Ewens Gardens, Murrell Gardens, Cherry Tree Drive, Collins Close and A29 Fontwell Avenue.

2.3.3. The nearest railway station is Barnham Station which is located approximately 0.6km to the south-east of the Site.

2.4 EXISTING ENVIRONMENTAL CONDITIONS

2.4.1. The environmental constraints on and around the Site are shown on Figure 2-2 – Environmental Constraints and outlined in the following section.

Figure 2-2 - Environmental Constraints



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AIR QUALITY

2.4.2. According to Defra's Pollution Climate Mapping (PCM) model, local air quality is in compliance in with the EU limits.

2.4.3. Both the Arun District Council (ADC) NO2 concentration monitoring and the WSP baseline NO2 survey found that NO2 concentrations are within national air quality standards.

2.4.4. There are no Air Quality Monitoring Areas in ADC.

NOISE AND VIBRATION

2.4.5. Measurements of current noise levels have identified that road traffic is the main source of noise in the area, especially close to Barnham Road and Fontwell Avenue which are exposed to high levels of road traffic noise during the daytime.

TRANSPORT AND ACCESS

2.4.6. The main road traffic routes within the vicinity of the Scheme are as follows:

- Existing A29 Fontwell Avenue/ Nyton Road/ Westergate Street;
- B2233 Barnham Road; and
- Eastergate Lane.

2.4.7. There are six bus services within the vicinity of the Scheme.

2.4.8. The following footpaths are on and immediately adjacent to the Site:

- FP 318 (north to south from Eastergate Lane to the B2233 Barnham Road) – this path is crossed by the Scheme; and
- FP 321 (north west to south east from Church Lane to B2233 Barnham Road) – this path is located adjacent to the southern boundary of the Scheme.

2.4.9. At the location where the Scheme crosses the B2233 Barnham there is a footway on the northern side of the road. To the north of the Scheme, the villages of Fontwell and Walberton have bridleways leading onto the South Downs National Park, a popular place for horse-riding. Overall, there is a lack of cycle paths in the surrounding area of the Scheme, with limited connections between the Barnham, Eastergate, Westergate area and the surrounding villages. There is a permissive cycle path that follows the route of Footpath No 146 between the A259 at Flansham and Barnham.

ECOLOGY AND NATURE CONSERVATION

2.4.10. Surveys of the ecology across the Site have been undertaken to identify the different types of habitats present, and the potential for protected species to be using the Site. These surveys identified the following habitats within the Site which are of nature conservation value:

- Hedgerows; and
- Traditional orchards.

2.4.11. In addition, the surveys also identified the following protected species to be using the Site, which are of nature conservation value:

- Bats;
- Badgers;
- Birds;

- Reptiles; and
- Invertebrates.

LANDSCAPE AND VISUAL

2.4.12. The Scheme is located approximately 1.4km to the south of the South Downs National Park which is designated as an International Dark Sky Reserve.

2.4.13. To the east and north of the Scheme, located within the wider 2km study area, are a number of areas of Ancient Woodland[1]; none of which would be directly affected by the Scheme.

2.4.14. The main points with direct views into and across the Site are:

- Residential properties located on Fontwell Avenue, Eastergate Lane, Downview Road, Barnham Road, Collins Close, in Murrell Gardens, Chantry Mead, Upton Brooks, and at Field Place;
- Users of Public Rights of Way 318; and
- Users of the existing road network, including Fontwell Avenue, Eastergate Lane, and Barnham Road.

WATER ENVIRONMENT

2.4.15. There are a number of Environment Agency designated Main Rivers in the area, which are usually large rivers (and streams) that the Environment Agency carries out maintenance, improvement or construction work on to manage flood risk:

- Lidsey Rife, located approximately 0.5 km south-west of the Site. Due to the nature of the river it is considered to be highly sensitive to change;
- Barnham Lane Ditch located immediately adjacent to the eastern site boundary. The watercourse flows in an easterly direction along the northern periphery of West Barnham to confluence with Barnham Rife approximately 0.8km downstream of the Site. Due to the nature of the river, it is not considered to be sensitive to change; and
- Barnham Rife, located approximately 0.7km east of the Site. The watercourse flows in a south-westerly direction to confluence with the Lidsey Rife approximately 2.5km downstream of the watercourse's connection with the Barnham Lane Ditch. This waterbody is considered to have a medium sensitivity to change.

2.4.16. School Ditch, an Ordinary Watercourse (i.e. it is not maintained by the Environment Agency), is located adjacent to the south of the Scheme. The watercourse is thought to be culverted further to the south. This watercourse is considered to be of low sensitivity to change due to its local scale.

2.4.17. With regard to flood risk, the sensitivity of local residents / users of the surrounding areas is considered to be High as the surrounding land use is predominantly residential and relates to a "more vulnerable" use.

2.4.18. The Site is situated within an Environment Agency designated Source Protection Zone (SPZ) Outer Zone 2C – which means that it is likely only to be impacted by deep drilling works.

[1] Ancient Woodland are areas of woodland that have persisted since 1600 (or before).

2.4.19. The Groundwater Vulnerability Map for the area classifies the Site as having low vulnerability meaning that it is not vulnerable to pollutant discharges.

GEOLOGY AND SOILS

2.4.20. British Geological Survey (BGS) online mapping indicates that the Site is underlain by Head (gravel, sand, silt and clay) and River Terrace Deposits (sand, silt and clay). Available site investigation data indicate that the main lithology is sand and gravel. The bedrock geology which underlies the Head and River Terrace Deposits is the London Clay Formation which is classed as “Unproductive Strata” by the Environment Agency. Based on the BGS mapping the bedrock under the London Clay Formation is formed by the Lambeth Group which is then underlain by Chalk at the Site.

HISTORIC ENVIRONMENT

2.4.21. There are no nationally designated (protected) heritage features, such as scheduled monuments, listed buildings or registered parks or gardens on the Site, nor is the Site in a conservation area or an Archaeological Notification Area.

2.4.22. Some archaeological investigations have been undertaken across the Site which have identified some prehistoric and Roman remains. Remains found from the Iron Age included stone tools, pottery and cut features, such as pits and ditches.

2.4.23. In Roman times, the Site was likely to have been in agricultural use, to the south of the road from Chichester to Arundel. During archaeological surveys of the Site, a fragment of ceramic building material, thought to be of Roman date, was recorded in the western part of the Site. Cut features (such as pits and ditches) and pottery dating to the Roman period were also recorded in the study area.

3 WHAT IS BEING PROPOSED?

3.1 INTRODUCTION

3.1.1. The following sections provide an overview of the Scheme. Chapter 3 of Volume I of the Environmental Statement provides a full description of the Scheme and is accompanied by the detailed Scheme drawings.

3.2 SCHEME DETAILS

3.2.1. The Scheme shown in **Figure 3-1**, includes the proposal to create a new 1.3km, single carriageway road in an arc shape from north-west to south east, connecting with the eastern side of the A29, and the northern side of the B2233.

3.2.2. Key features of the Scheme would include the following:

- A three-arm roundabout at the western end at a new junction with the A29 Fontwell Avenue;
- A three-arm roundabout in the centre of the Scheme to provide future access to strategic allocation identified in the Arun Local Plan;
- A four-arm roundabout at the southern end, at a new junction with the B2233 Barnham Road;
- One uncontrolled pedestrian crossing to enable users of the PRoW to cross the carriageway;
- Crossing points at the junctions to allow access by foot into the housing from surrounding areas;
- A shared 3m wide footway and cycleway with landscaping on one side of the carriageway;
- New access to the Fordingbridge Industrial Estate (Halo) site;
- Noise mitigation in the form of a noise wall to protect dwellings at Murrell Gardens, Chantry Mead and Ewens Gardens;
- Street lighting at roundabout approaches;
- Road drainage including grassed swales and ponds; and
- Relocation of the existing substation on Fontwell Avenue.

3.2.3. The Scheme forms Phase 1 of a wider development as shown in **Figure 3-2**. Phase 2 connects Barnham Road to a new junction on the A29 south of Lidsey bends. Phase 2 consists of new road infrastructure and mixed use, residential led development.

Figure 3-1 - The Scheme

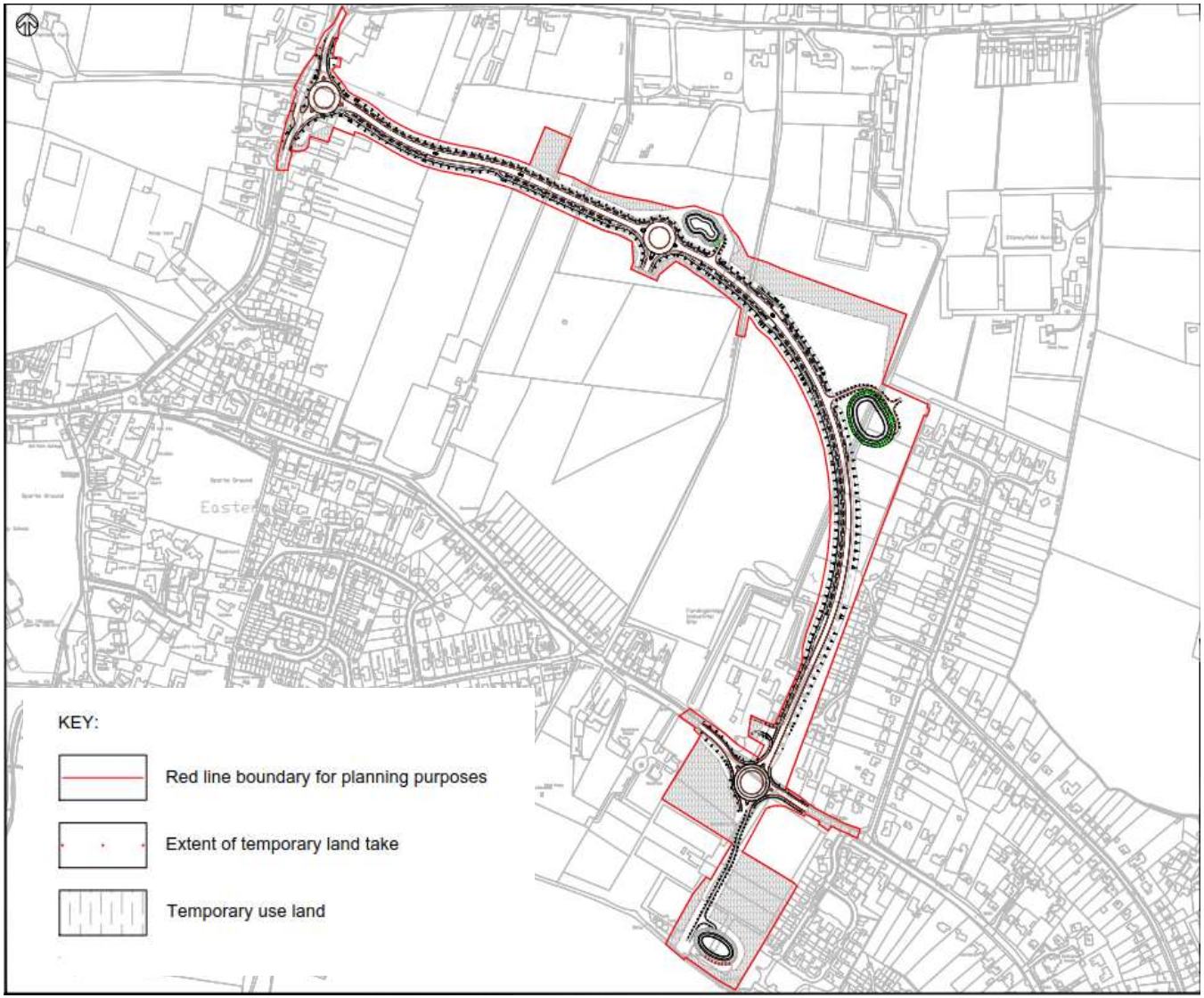
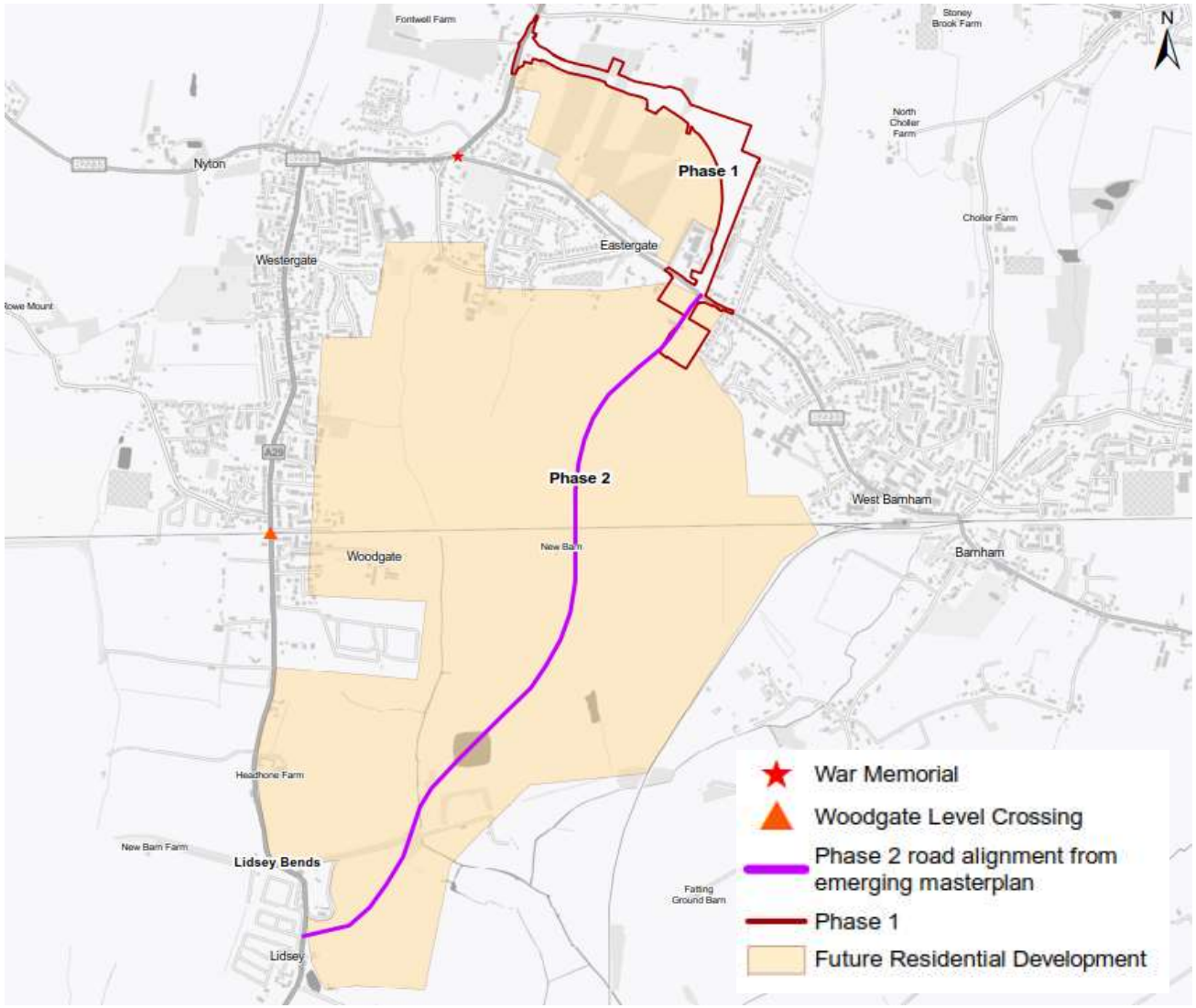


Figure 3-2 - Phase 1 and Phase 2



3.3 CONSTRUCTION INFORMATION

3.3.1. The main construction compound (used for the site offices and to store equipment and materials) would be located south of Barnham Road at the existing Fleurie Horticultural Nursery site and land at Fleurie Horticultural Nursery would be required for the construction of the roundabout on the southern B2233 Barnham Road.

3.3.2. One two-storey residential dwelling, which is currently occupied, a courtyard and the adjacent weatherboard structure, is proposed to be demolished.

3.3.3. During the construction phase, construction access would be via a temporary track from the B2233 between Fordingbridge Industrial Estate (Halo) and Murrell Gardens. Construction access may also be taken from the A29, 100m south of Eastergate Lane. The anticipated construction period is 12 months.

3.3.4. The key construction activities are outlined in Table 3-1, along with an estimated programme.

Table 3-1 – Construction Programme

Stage	Programme
Construction compound construction	Early to mid-2021
Site clearance (including demolition)	Early to mid-2021
Utilities Diversion	Early to late 2021
Construction of Road	Early to late 2021
Street Lighting	Mid to late 2021
Landscaping	Late 2021 to early 2022

3.4 ENVIRONMENTAL DESIGN

LANDSCAPING

3.4.1. In broad terms the aims of all proposed landscape mitigation measures are:

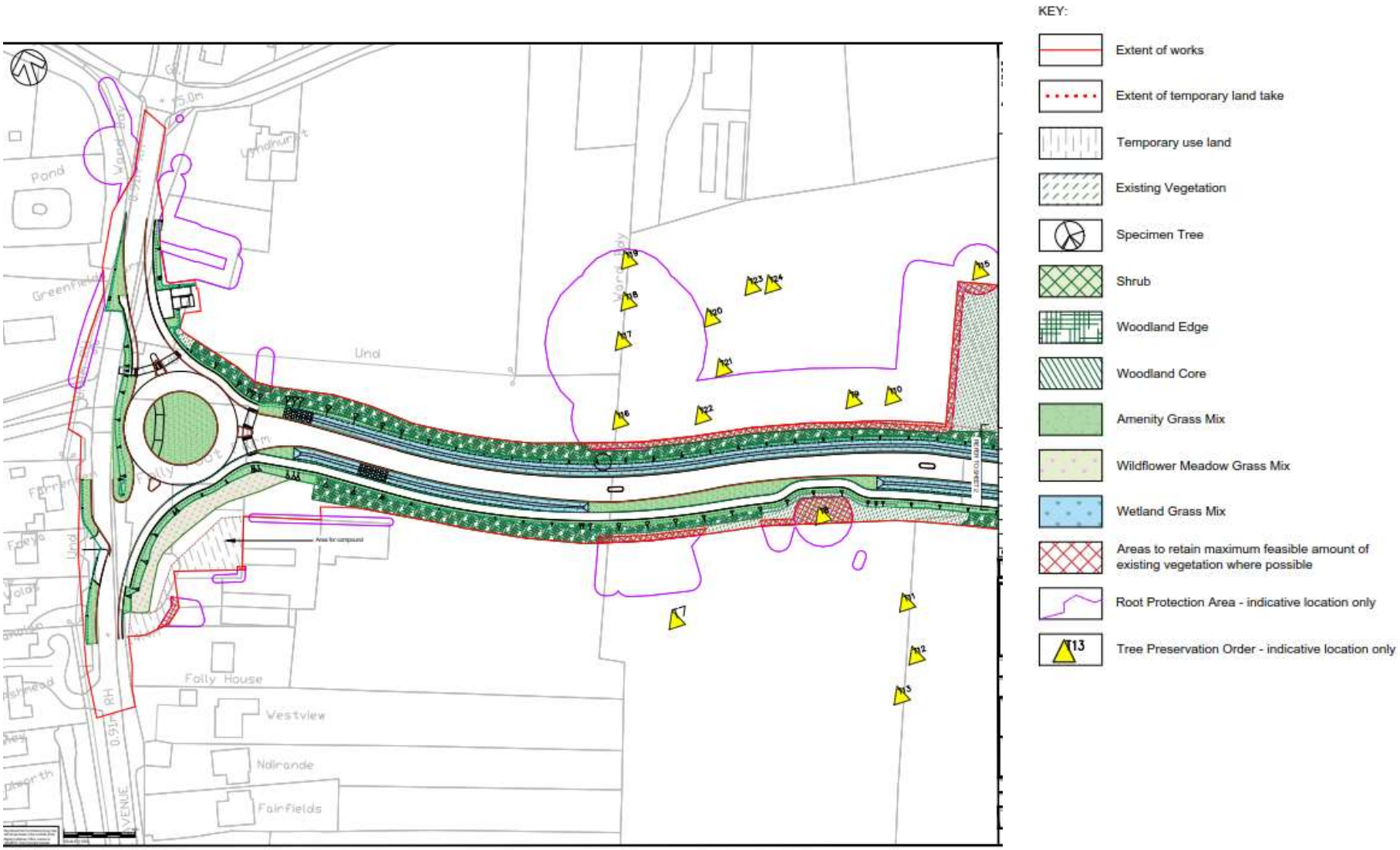
- To blend the Scheme into the surrounding landscape, minimising adverse effects on landscape character and visual amenity;
- To enhance and extend the existing landscape framework where this improves the quality and character of the local area and to provide habitat connectivity within the landscape, with reference to published landscape character assessments;
- To protect and incorporate the existing features of the landscape into the wider landscape framework, including the Arun Green Infrastructure Strategy, to assist in the assimilation of the new scheme into the local landscape setting; and
- To create an attractive setting for the Scheme.

3.4.2. The landscape plan (Figure 3-3) includes foraging habitat to replace that lost due to construction of the Scheme. The Scheme will have a severing effect on habitats within the Site, as such the proposed new landscaping and planting will replace habitat that will form a wildlife corridor parallel to the road.

NOISE MITIGATION

3.4.3. Following the noise assessment (Volume 1: Chapter 7 – Noise and Vibration) a noise barrier was added to the Scheme. This is located on the eastern side of the Scheme and runs between the new road alignment and the properties on Murrell Gardens. The barrier is 3m tall and approximately 440m in length and composed of absorptive materials (to prevent noise being reflected across the road).

Figure 3-3 - Landscape Plan




KEY:
Extent of works
Extent of temporary land take
Temporary use land
Existing Vegetation
Specimen Tree
Shrub
Woodland Edge
Woodland Core
Amenity Grass Mix
Wildflower Meadow Grass Mix
Wetland Grass Mix
Areas to retain maximum feasible amount of existing vegetation where possible
Root Protection Area - indicative location only
T13
Tree Preservation Order - indicative location only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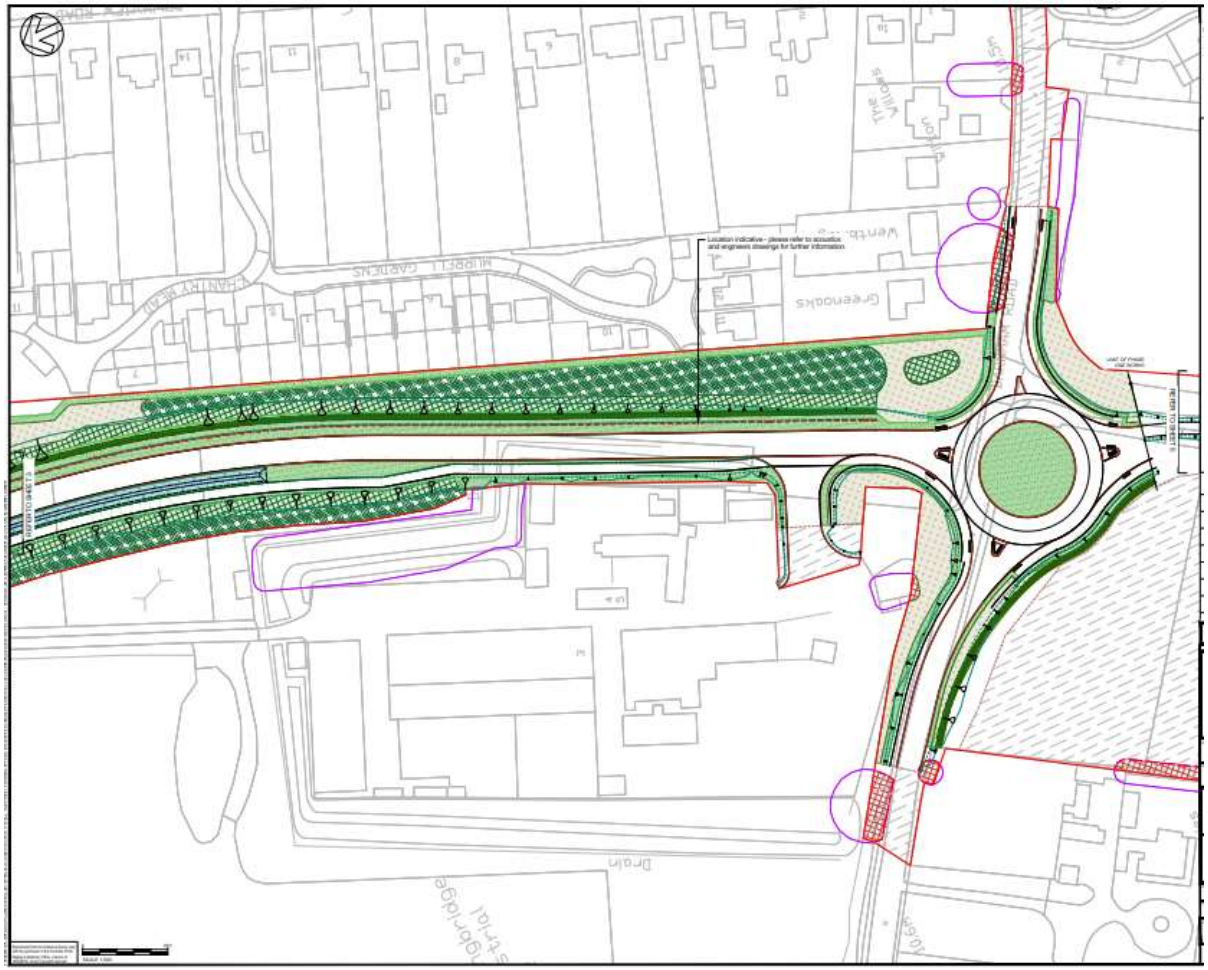
REFER TO SHEET 3
REFER TO SHEET 4
OWENS GARDENS



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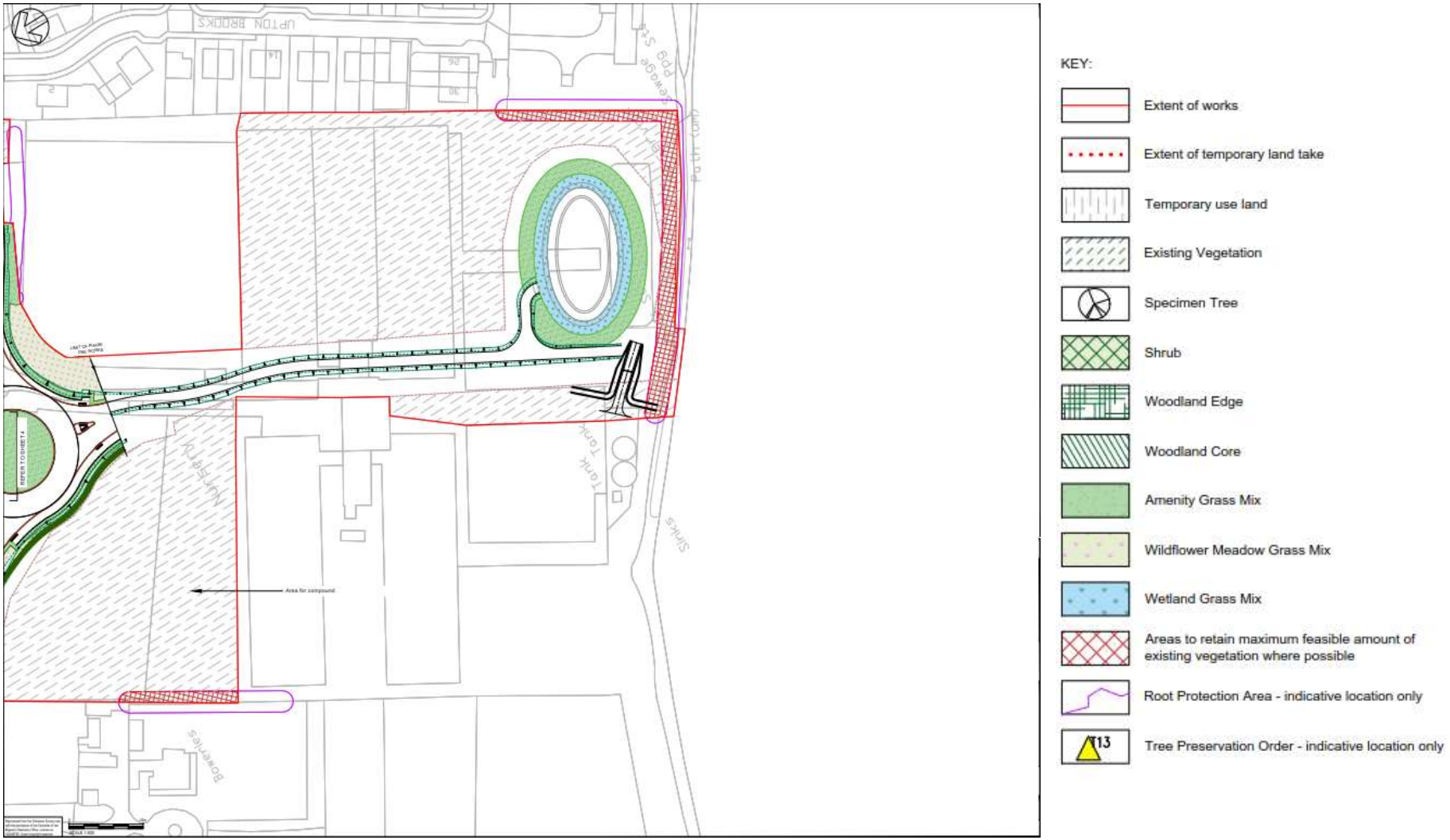
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4 HAVE ALTERNATIVES BEEN CONSIDERED?

4.1 INTRODUCTION

4.1.1. The following sections provide an overview of the alternatives considered prior to finalising the Scheme. Chapter 4 of Volume I of the ES provides a full description of all of the alternatives considered and the reason why the Scheme was chosen.

4.1.2. The alternatives include those considered initially for the overall A29 Realignment (Phase 1 and Phase 2 together) and those developed for the Scheme (Phase 1 only) during preliminary design.

4.2 DO NOTHING SCENARIO

4.2.1. The 'do-nothing' scenario would result in the A29 staying as it is today. The existing problems faced today include:

- Congestion;
- Journey time unreliability; and
- Road accidents.

4.2.2. Background traffic growth will make existing problems worse, but without mitigation, the level of traffic generated by the planned development in the area would exacerbate these issues. The A29 Realignment Scheme has been identified as a key component of the Strategic Infrastructure Package to support the Arun Local Plan and ensure that impacts of the Local Plan are satisfactorily mitigated. For these reasons, the do-nothing scenario has not been considered any further.

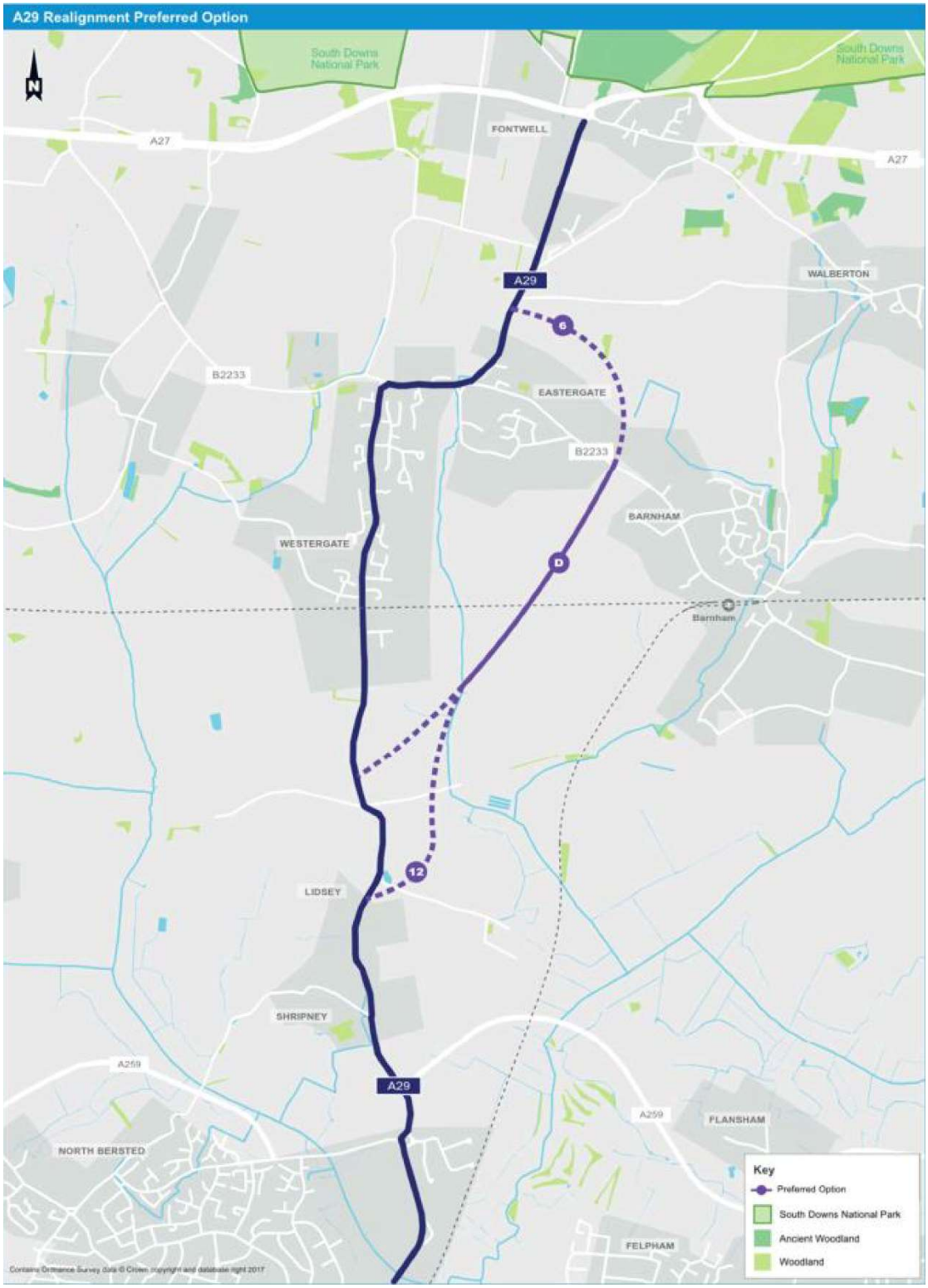
4.3 ALTERNATIVE LOCATIONS

4.3.1. Various different options for the route alignment and extent have been studied between 2012 and 2014. Since the last study in 2014, Arun District Council and West Sussex County Council have continued to work with developers to prepare a Masterplan vision for the surrounding area to allow the land to be opened up for housing, schools and other uses.

4.3.2. Taking into account the previous studies on various design options, looking at the pros and cons of each, an Option Summary Table was prepared and used for consultation with stakeholders (including Highways England, Environment Agency and Natural England).

4.3.3. It was determined that Phase 1 (Route 6) and Phase 2 (Part D and 12) was the best fit for this Scheme. Further analysis of traffic movements using computer modelling techniques also came to the same decision.

Figure 4-1 - Preferred Alignment



4.4 ALTERNATIVE DESIGNS

NOISE

4.4.1. Noise modelling confirmed that noise mitigation would be required to reduce noise levels at properties close to the road. The noise barrier needed to be 3m above the finished road level to provide the necessary noise protection on the south eastern end of the Scheme. A number of options were investigated including an earth bund, crib wall, green wall, timber fence and metal or plastic fence options. Residents in the vicinity of the proposed noise barrier were invited to a presentation to discuss the noise modelling results and options for noise mitigation.

5 HOW HAVE THE ENVIRONMENTAL EFFECTS OF THE SCHEME BEEN IDENTIFIED?

5.1 OVERVIEW

5.1.1. Under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, the Scheme is defined as the type and scale of development that requires an Environmental Impact Assessment. An Environmental Impact Assessment has been undertaken to meet the requirements of the relevant planning legislation and policy, and to assess the effects of the Scheme on the environment.

5.1.2. The Environmental Impact Assessment considers impacts during both construction and operation (once completed) of the Scheme. The construction stage assessment looks at temporary activities required for building the Scheme and their effects on the environment and local community. During construction, the majority of the Scheme's effects would be avoided or mitigated by industry standard practice and control measures which would be captured within a Construction Environmental Management Plan (CEMP). It is suggested that a CEMP will be a planning condition to West Sussex County Council approving the planning application or the Scheme. The operational stage assessment looks at the permanent presence of the Scheme on the environment and local community.

5.1.3. The Environmental Impact Assessment has been completed following consultation with West Sussex County Council, Arun District Council and other relevant stakeholders. In addition, members of the public were consulted on the A29 Realignment (Phase 1 and Phase 2) as well as the proposed housing development, over an 8 week period from the 26th February to the 26th April 2019 where comments and feedback were collated to inform the Scheme design.

5.1.4. All the findings of the EIA are reported in the Environmental Statement which has been submitted in support of the planning application for the Scheme.

5.2 APPROACH TO THE ASSESSMENT

5.2.1. Environmental effects have been assessed using available appropriate national and international standards or limits (e.g. European Union Quality Standards). In the absence of relevant standards, professional judgement by technical specialists has been used.

5.2.2. The significance level attributed to each effect is based on the magnitude of change due to the Scheme and the sensitivity of the affected environmental receptor receiving the change. Residual effects (the likely final effect of the Proposed Development when the extent to which mitigation and enhancement measures to reduce or reverse adverse effects or enhance beneficial effects have been taken into account) have also been assessed.

5.2.3. **Table 5-1** shows the matrix used to determine the significance of the effect in question.

Table 5-1 - Matrix for Classifying the Significance of Effects

		Magnitude of impact (degree of change)				
		No change	**Negligible**	**Small**	**Medium**	**Large**
Environmental value (sensitivity)	**High**	Negligible	Minor	**Moderate**	**Major**	**Major**
	Medium	Negligible	Minor	Minor or **Moderate**	**Moderate**	**Major**
	Low	Negligible	Negligible or Minor	Minor	**Moderate**	**Moderate**
	Negligible	Negligible	Negligible or Minor	Neutral or Slight	Slight	Minor or Moderate

5.2.4. The terms used within **Table 5-1** above have been defined as:

- **Major effect**: where the Scheme could be expected to have a substantial improvement or deterioration on receptors;
- **Moderate effect**: where the Scheme could be expected to have a noticeable improvement or deterioration on receptors;
- **Minor effect**: where the Scheme could be expected to result in a perceptible improvement or deterioration on receptors; and
- **Negligible**: where no discernible improvement or deterioration is expected as a result of the Scheme on receptors, including instances where no change is confirmed.

5.2.5. The Environmental Statement (and this Non-Technical Summary) refers to 'significant effects' when providing conclusions about the predicted effects on the environment as a result of the Scheme. The term 'significant' is used within the Environmental Statement to have the same meaning as it would in other contexts, i.e. something which is sufficiently great or important to be worthy of attention – and likely to be material in making a decision on the consent of a planning application. Each individual environmental topic assessment, which together form the Environmental Impact Assessment, sets out what constitutes a 'significant effect' for that topic.

5.2.6. For the majority of assessments, effects deemed as 'moderate' 'large' or 'very large' are considered to be significant and those deemed as 'minor' or 'negligible' are considered to be not significant.

5.2.7. Effects are described as:

- Beneficial or adverse;
- Permanent or temporary;
- Direct or indirect;
- Short, medium or long-term; and
- Significant or not significant.

5.2.8. In terms of the duration of an effect, generally the Environmental Impact Assessment considers that an effect that is short-term is considered as 1 year (or below), a medium-term effect is between 1 and 10 years in duration, and a long-term effect greater than 10 years in duration. Any variation of this approach is explained in the relevant chapter of the Environmental Statement.

5.2.9. Further information on the EIA methodology can be found in Volume 1: Chapter 5: Approach to EIA, in the Environmental Statement.

5.2.10. The following section provides a summary of the likely environmental effects arising from the Scheme during construction and operation.

6 WHAT ARE THE EFFECTS AND HOW WILL THEY BE REDUCED?

6.1 INTRODUCTION

6.1.1. The following sections provide a summary of the findings of the Environmental Impact Assessment. Chapters 6-13 of Volume I of the Environmental Statement provides the full details of each assessment.

6.1.2. An outline Construction Environmental Management Plan (CEMP) has been produced that sets out various measures to be implemented to reduce environmental effects during the construction phase by the Construction Contractor. The Outline CEMP will be further developed by the Construction Contractor during preparation of the detailed design, prior to construction works starting, to ensure it takes into account the construction methods and equipment that will be used.

6.2 AIR QUALITY

CONSTRUCTION

6.2.1. An assessment of potential effects of dust and emissions to air from construction activities has been carried out for the construction stage of the Scheme. Properties within 200m of the construction works may experience an increase in dust soiling[2] and there is likely to be a very small increase in particulate matter[3] concentrations. These impacts are caused by storage and movement of construction materials (such as sand and soil) around the Site, and emissions from construction equipment and vehicles.

6.2.2. To minimise the risk of adverse impacts during construction, industry best practice measures are to be employed with further control measures included in the CEMP.

6.2.3. These impacts will be temporary (during the construction works, up to 1 year) and are considered to be **negligible (not significant).**

OPERATION

6.2.4. An assessment of the effects of traffic emissions once the Scheme is complete and operational has been undertaken. The assessment found that effects on air quality at human receptors are **negligible (not significant)**.

6.3 NOISE AND VIBRATION

CONSTRUCTION

6.3.1. An assessment of potential effects of increases in noise and vibration levels has been carried out for the construction stage of the Scheme. The CEMP includes measures to reduce noise and vibration

[2] Dust Soiling: The accumulation of dust resulting in the build-up of material on surfaces.
[3] Particulate Matter: Solid and liquid particles suspended in the air, many of which can be hazardous.

levels as far as possible. The potential will remain for temporary **moderate adverse (significant)** increases in noise levels and **minor to moderate adverse (significant)** increases in vibration at nearby properties for some of the construction works.

OPERATION

6.3.2. Using computer software, noise levels from the operational Scheme at nearby properties have been predicted. As a result of the inclusion of the noise barrier within the Scheme, there is the potential for **minor (not significant)** impacts on dwellings and other sensitive receptors due to road traffic noise.

6.3.3. The relocated substation will not change noise levels at nearby residential dwellings.

6.4 TRANSPORT AND ACCESS

EFFECTS

CONSTRUCTION

6.4.1. Due to the nature of the Scheme being a new road link, there will be minimal impacts to the existing road network. A detailed Construction Traffic Management Plan (CTMP) will be prepared prior to the start of construction works to manage the impacts of construction traffic. This will minimise the effects of the construction works on road users.

6.4.2. During the construction phase, two Public Rights of Way (PRoW)/ footpaths which intersect with the Site will both have temporary diversions during construction activities. The two footpaths are FP 318 and the pavement on the northern side of Barnham Road. Temporary re-routing/ diversions of the PRoWs will be discussed and agreed with the West Sussex County Council Public Rights of Way Officer prior to the start of construction activities.

6.4.3. All footpath diversions will be publicised locally to ensure the local community are aware of what the changes will involve, how long they will be in place for and a map to show the new route. Heras fencing will be used along the boundary of the diverted PRoW during construction to ensure users do not stray onto the construction site. It is not expected that impacts to the wider PRoW network will occur due to the construction of the Scheme.

6.4.4. Following the implementation of mitigation measures, there will be a **minor adverse (not significant)** effect on severance as well as pedestrian and cycle amenity.

OPERATION

6.4.5. During the operational phase there will be **minor beneficial (not significant)** impacts on the traffic flow.

6.4.6. The Scheme will permanently modify a short section of Footpath 318. This modification is not considered to adversely affect users of the PRoW and there will be an overall benefit for non-motorised users due to the shared use footway/ cycleway.

6.5 ECOLOGY AND NATURE CONSERVATION

CONSTRUCTION

6.5.1. Measures required to manage impacts associated with vegetation clearance and construction will be in the form of an Ecological Management Plan attached to the CEMP, to enable compliance with relevant nature conservation legislation and planning policy and to avoid the killing/injury of notable and protected species. Protective measures include, but are not limited to, the following:

- All retained trees and hedgerows will be protected using robust protective fencing encompassing root protection areas.
- Where practicable Site clearance works will be undertaken outside of the bird nesting season (March to August inclusive). If this is not possible, site clearance will proceed under the supervision of a suitably qualified ecologist.
- Bat boxes will be installed on retained mature trees in suitable locations, either within the Site itself, or within nearby land under the ownership of the Applicant, prior to any trees being felled.

6.5.2. **Table 5-1** outlines the residual effects associated with the construction of the Scheme following appropriate implementation of secondary mitigation.

Table 5-1 – Residual effects as a result of the Scheme

Description of Effects	Receptor
Disturbance from construction activities including visual, noise, vibration and lighting.	Bats*
	Badgers
	Birds - breeding
Degradation of habitats through airborne pollution. Pollution caused by use of hazardous materials and incidental release of dust, chemicals, fuels or waste materials.	All receptors have negligible effects after secondary mitigation
Loss and permanent manipulation of habitats, such as landscaping and 'tidying-up' of areas not within the footprint, felling of trees for Health and Safety reasons.	On-site HPI (Traditional Orchard)
	On-site HPI (Hedgerows)
Temporary storage of construction materials within / adjacent to ecological resources with associated habitat contamination.	All receptors have negligible effects after secondary mitigation
Habitat loss and fragmentation disrupting species movement.	Badgers*
	Bats - roosting
	Bats – foraging and commuting
	Birds - wintering
	Birds - breeding
	Reptiles
	Other Species of Principle Importance
	Invertebrates
Direct mortality during site clearance and construction	Badgers
	Reptiles

	Birds - breeding

*Natural England licence required

6.5.3. Following the implementation of mitigation measures; **minor effects (not significant)** are expected with regard to disturbance to badgers and breeding birds, impacts on hedgerows and orchards and loss of habitat for roosting and foraging/ commuting bats, badgers, wintering birds, breeding birds, reptiles and invertebrates and direct mortality (risk of) for badgers and breeding birds. All other effects are expected to be negligible.

OPERATION

6.5.4. The landscape design for the Scheme was developed to include new foraging habitat and maintains some wildlife corridors. The Biodiversity Net Gain assessment, which calculates the value of habitats proposed within the landscape design, compared to the pre-development baseline, confirmed that whilst the area habitats proposed (including woodland and wildflower meadows) will result in a net gain of +44% replacement of habitats lost, the calculation for hedgerows resulted in a no net loss of +3%. As such the Scheme does not achieve a Scheme wide Biodiversity Net Gain. A further 50m of native species rich hedgerows would need to be included in the landscape designs to achieve an overall Biodiversity Net Gain of 10%.

6.5.5. There will be minimal impacts on ecology and nature conservation. Following the implementation of mitigation measures minor effects are expected with regard to disturbance to badgers (including direct mortality). **Minor beneficial effects** are expected with regard to hedgerow and orchard habitats. All other operational effects are expected to be negligible.

6.6 LANDSCAPE AND VISUAL

CONSTRUCTION

6.6.1. During the construction phase, the impacts on views and the landscape are likely to include:

- Construction traffic – large vehicles moving along roads and throughout the site;
- Removal of vegetation;
- Visual intrusion of construction compounds and temporary lighting;
- Presence of bare earth before seeding has established;
- Noise from machinery, workmen etc, affecting tranquillity which impacts on the user experience of the view;
- View of partially constructed infrastructure elements;
- Earth-moving – stripping of topsoil, installation of temporary topsoil stores and permanent embankments to proposed road alignment; and
- Installation of road drainage.

The following measures are included within the CEMP for the Scheme:

- Temporary construction lighting to be minimal in extent and use. The lighting is to be highly directional and seek to minimise light spill and glare into the surrounding landscape. Construction operations to be limited to daylight working hours where possible;
- Noise and dust to be kept to a minimum; and
- Construction working area to be as contained and constrained as possible to minimise land take, vegetation loss and reinstatement requirements.

6.6.2. **Large adverse effects** are anticipated during construction for visual receptors closest to the Scheme. **Moderate effects (significant)** are anticipated during construction on Fontwell Avenue for road users, nearby residents and users of the Public Right of Way. **Slight adverse effects (not significant)** are anticipated during construction at Eastergate Lane for road users.

OPERATION

6.6.3. The landscape design of the Scheme includes:

- New woodland planting to provide green visual containment in addition to creating habitat for wildlife and helping to replace habitat of principal importance (HPI), such as the traditional orchards and hedgerows. The landscape planting aims to reduce adverse impacts on visual amenity, landscape character and biodiversity and create an enhanced setting for the road;
- New specimen tree planting to enhance visual appeal and integrate the Scheme into the surrounding landscape;
- New hedgerow planting to enhance visual amenity of the Scheme, respond positively to the local character and screen the proposed noise barrier;
- Areas of wildflower meadow to enhance the biodiversity along with visual appeal; and
- Established areas of existing vegetation are proposed to be retained and enhanced where possible.

6.6.4. During the operational phase, visual impacts would include:

- Presence of hard-surfaced carriageway and pathway;
- Lighting columns at junctions;
- New site furniture;
- New ponds;
- Areas of new planting (immature at Year 1);
- Traffic including cars, buses and large vehicles moving along the road in what was a previously static site;
- Traffic headlights at night and movement of people and cyclists (where not screened by noise barrier) in a previously static and unlit landscape; and
- (Depending on detailed proposals) increased tree and shrub cover. Noise barrier and traffic movements would be visible in the short term until planting grows and establishes itself.

6.6.5. Following the establishment of the landscape planting (year 15), it is anticipated that **Large adverse effects (significant)** will occur for nearby residents. **Moderate adverse effects (significant)** are anticipated to occur for receptors including nearby residents and users of the Public Right of Way (318). **Negligible and minor effects (not significant)** are likely to occur for Eastergate Lane road users, receptors at Field Place, users of Path 318 and receptors on Collins Close.

6.7 WATER RESOURCES AND FLOOD RISK

CONSTRUCTION

6.7.1. The construction of the Scheme could temporarily increase the risk of flooding to residents, users to the surrounding areas or construction workers if construction materials are stored in locations at high risk of flooding or where surface water runoff is temporarily increased because of an increase in impermeable areas.

6.7.2. The construction of the Scheme has the potential to have an adverse effect on the water quality of water resources as a result of construction activities through accidental leaks and spillages or

release of harmful substances. Sensitive water resources receptors that could be impacted by pollution are surface water bodies (Barnham Lane Ditch, Barnham Rife, Lidsey Rife and School Ditch) and groundwater bodies (Superficial Deposits). During the construction phase, the risk is primarily posed by materials being stored on site, such as oils, fuels and other chemicals.

6.7.3. During the construction phase there would be a number of activities which could reduce surface water quality with respect to particulates and sediments. These include: site clearance; excavations; groundwater dewatering; localised ground remediation (if required); and materials handling, storage, stockpiling, spillage and disposal. In addition, during periods of heavy rainfall, vehicle movements associated with construction activities may result in damage to soil structure that may generate increased levels of sediments within surface water run-off.

6.7.4. The potential impacts on the flood risk and the water environment at the construction stage would be mitigated through the implementation of best practice construction methods and site operational management, as detailed in the CEMP. The CEMP also includes the provision of temporary flood attenuation features and runoff control to reduce the likelihood of increasing flood risk.

6.7.5. Following mitigation, it is expected that **negligible and minor effects (not significant)** will occur with regard to short term flood risk, physical contamination to surface waters and water quality due to construction activities.

OPERATION

6.7.6. The Scheme has the potential to increase flood risk within the Scheme area and within the vicinity of the Scheme. This is due to the introduction of new impermeable areas leading to increased rates and volumes of surface water runoff. The potential increase in flood risk associated with surface water run-off from new impermeable areas would be managed though the implementation of the drainage design[4] in consultation with West Sussex County Council, Arun District Council and the Environment Agency. The drainage proposals are designed to control runoff up to the 100-year event plus 40% increase due to climate change. In addition, the proposed discharge rate into the Barnham Lane Ditch is 1.8l/s which is a significant reduction of 14.6l/s in greenfield runoff over the existing situation for up to the 100 year plus 40% climate change event. The drainage designs prioritise the use of Sustainable Drainage Systems (SuDS) in accordance with local policy and guidance.

6.7.7. During the operational phase, untreated routine surface runoff from impermeable areas and accidental spillages could be mobilised into the surface water drainage system, and this contaminated surface water could be discharged to the surface water or groundwater receptors via the proposed drainage system. The quality of surface water run-off from new impermeable areas would be managed though the implementation of the drainage design developed in consultation with WSCC (LLFA), ADC and the EA. Treatment measures will include oil interceptors and a combination of SuDS features prior to its discharge. The proposed SuDS[5] features include:

[4] Undertaken by Capita/ Jackson Ref 11.28 in the Environment Statement
[5] https://www.susdrain.org/delivering-suds/index.html

- Swales which are shallow, broad and vegetated channels designed to store and/or convey runoff and remove pollutants. They would be used as conveyance structures to pass the runoff to the next stage of the treatment train (attenuation or infiltration ponds). They were also designed to promote infiltration where soil and groundwater conditions allow;
- An infiltration pond which is a vegetated depression designed to store runoff on the surface and infiltrate gradually into the ground. It would be dry except in periods of heavy rainfall; and
- Two lined attenuation ponds, which are surface storage basins or facilities that provide flow control through attenuation of stormwater runoff. They also facilitate some settling of particulate pollutants.

6.7.8. To mitigate any residual risk associated with the drainage strategy design, additional groundwater monitoring is recommended as well as the revision of the drainage proposals against new data prior to construction. This should be further consulted and agreed with the relevant authorities (including West Sussex County Council, Arun District Council and the Environment Agency) prior to construction.

6.7.9. Following mitigation, **Negligible effects (not significant)** will occur with regard to effects to water quality resources (including water courses and groundwater). **Minor effects (not significant)** in association with the increase in flood risk to due to increased impermeable surfaces.

6.8 GEOLOGY AND SOILS

CONSTRUCTION

6.8.1. At the southern end of the Site, Made Ground/ engineering fill associated with landfill, tanks and horticultural activities at Fleurie Horticultural Nursery, and activities at the Fordingbridge Industrial Estate (Halo) are all considered to have potential to cause contamination.

6.8.2. There is the potential for movement of any contamination present onto or off the Site via groundwater flow or preferential pathways (conditions which act as a pathway for contamination to travel through soils and groundwater at a faster rate than would be expected in naturally occurring or undisturbed soils and bedrock) to impact surface waters including Lidsey Rife.

6.8.3. Vertical migration of any contaminants present through Made Ground strata or via preferential pathways has the potential to impact groundwater.

6.8.4. To minimise the risk of adverse impacts during construction, industry best practice measures will be employed. Appropriate measures will be specified in the CEMP. Following the implementation of mitigation, construction phase effects are considered to be **Negligible (not significant)**.

6.8.5. As part of the Ground Investigations (geotechnical) to be undertaken as part of the detailed design, contamination testing will be undertaken to identify any contamination present and to ensure suitable mitigation is in place and if present, contaminated material will be removed and disposed of at authorised sites.

6.9 HISTORIC ENVIRONMENT

CONSTRUCTION

6.9.1. Removal of topsoil has the potential to impact archaeological remains if present, either by direct damage, the loss of any residual evidence the soil contains, or through exposure of archaeological remains that may be present immediately beneath the topsoil.

6.9.2. There could be impacts on prehistoric and Roman archaeological remains from site preparation, road construction, excavation for attenuation ponds, services/drainage, installation of lighting columns and landscape planting.

6.9.3. There are no known heritage assets within the site though an archaeological investigation will be required prior to construction, in order to clarify the nature, survival and significance of any archaeological assets that may be affected, in agreement with West Sussex County Council's archaeological advisor.

6.9.4. Mitigation normally comprises preservation by record: advancing understanding of asset significance through targeted archaeological excavation in advance of development. This might be combined with a watching brief during ground works for remains of lesser significance. In the unlikely event that nationally important remains are present, preservation in situ may be required (i.e. through redesign/avoidance).

6.9.5. Any archaeological work such as archaeological trial trenching, would need to be undertaken in consultation with the local authority's archaeological advisor, in accordance with an approved archaeological Written Scheme of Investigation (WSI). Alternatively, a site strip, in the form of Strip, Map and Sample, can be undertaken under archaeological direction during construction. This would be required for areas within the road footprint, drainage features and construction compounds. Regardless of the option a Post Excavation Report will be prepared.

6.9.6. Following the implementation of mitigation measures, construction effects will be **Negligible** and therefore not significant.

OPERATION

6.9.7. No operational effects on archaeology and heritage are expected.

7 HAVE EFFECTS FROM OTHER DEVELOPMENTS BEEN CONSIDERED?

7.1.1. The assessment of cumulative effects detailed in Chapter 14 of the Environmental Statement, has considered two forms of cumulative effects:

- Different environmental impacts interacting on common receptors (intra-project effects); and
- Impacts of the Scheme combined with impacts of other developments in the area (inter-project effects).

7.1.2. The list of committed developments[6] to be considered was agreed with WSCC and Arun District Council. Information on other developments in the study area was gathered to inform the in-combination (inter-project) assessment from online resources (including mapping and planning application information).

7.2 INTRA-PROJECT EFFECTS

7.2.1. The potential cumulative effects relate to the interaction of multiple environmental effects (from a number of developments) on one receptor, resulting in a significant effect interaction, or a development having impacts of a nature that it has a multiplying effect on a receptor or receptors when combined with the impacts of the Scheme.

7.2.2. The common receptors and environmental factors considered are outlined in **Table 7-1**.

Table 7-1 – Intra-Project Effect Interactions and Receptors.

Common Receptor	Environmental Factors
Residential Receptors	Air Quality (construction and operation) Noise and Vibration (construction and operation) Landscape and Visual (construction and operation) Flood Risk (construction and operation)
Non-Motorised Users	Transport and Access (construction and operation) Landscape and Visual (construction and operation) Flood Risk (operation)
Motorised Road Users	Transport and Access (construction and operation) Landscape ad Visual (construction and operation) Flood Risk (operation)
Community/Commercial Receptors	Noise and Vibration (operation)

[6] Developments that are very likely to be constructed at around the same time as the Scheme and will be operational at the same time.

Common Receptor	Environmental Factors
	Landscape and Visual (construction and operation)

7.2.3. Of the assessed common receptors, only residential receptors are anticipated to experience a residual effect interaction during construction. This effect interaction is anticipated to be Minor Adverse (not significant) and no further mitigation measures are required. Residential receptors, non-motorised users and community/commercial receptors are all anticipated to experience a residual effect interaction during operation. These effect interactions are all anticipated to be Minor Adverse (not significant) and no further mitigation measures are required.

7.3 INTER-PROJECT EFFECTS

7.3.1. The potential for inter-project effects was considered for the following topics:

- Ecology and Nature Conservation;
- Landscape and Visual;
- Water Resources and Flood Risk; and
- Archaeology and Heritage.

7.3.2. The other topics were scoped out as they either resulted in negligible effects or would result in an overall benefit.

7.3.3. Of the assessed committed developments, a significant cumulative construction effect is anticipated in relation to Landscape and Visual effects between:

- The Scheme;
- Land east of Tye Lane Walberton, and
- Arun Local Plan allocation – SD5 – Barnham/ Eastergate/ Westergate.

7.3.4. During operation, a significant cumulative effect is anticipated in relation to Landscape and Visual effects between:

- The Scheme;
- The Barratts development; and
- Land east of Fontwell Avenue.

This is due to the proximity and scale of the development, in-combination with the Scheme, resulting in a large development footprint, significantly altering the local Landscape Character Areas and adversely affecting visual receptors.

7.3.5. The nature of the in-combination effect does not warrant the implementation of additional mitigation however, as all appropriate and proportionate mitigation measures are assumed to be included in the design and construction plan of the Scheme and Land east of Fontwell Avenue.

7.3.6. The assessment of inter-project and intra-project effects has confirmed that no additional mitigation is required for the Scheme as a result of cumulative effects.

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