



West Sussex County Council

A29 REALIGNMENT PHASE 1

Environmental Statement - Chapter 3





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CONTENTS

3	DESCRIPTION OF SCHEME	1
3.1	INTRODUCTION	1
	AIMS OF THE SCHEME	1
	PLANNING CONTEXT	2
	West Sussex Transport Plan 2011-2026 (WSTP)	2
	Arun Local Plan 2011-2031 (ALP)	2
	OVERVIEW OF THE SCHEME	3
	PLANS AND DESIGN ASSUMPTIONS	6
	PLANNING APPLICATION BOUNDARY	8
	SCHEME LAYOUT / LAND USE	8
	CLIMATE CHANGE RESILIENCE	8
	OPERATIONAL ACCESS AND MOVEMENT	8
	PROPOSED LEVELS AND ELEVATIONS	9
	PROPOSED EXCAVATION EXTENTS	10
	PROPOSED DEMOLITION	10
	PROPOSED DRAINAGE	10
	EMISSIONS, WASTES AND EFFLUENTS	14
	PRIMARY MITIGATION	14
	Noise Barrier (Ref. 3.4)	14
	Landscaping and Habitat Replacement	14
	PREVENTION OF MAJOR ACCIDENTS / DISASTERS	15
	CONSTRUCTION PROPOSALS	15
	PROGRAMME	15
	PROPOSED KEY CONSTRUCTION ACTIVITIES	16
	SECURITY AND FENCING	16



CONSTRUCTION EMPLOYMENT	17
CONSTRUCTION ACCESS / HAULAGE ROUTES, PARKING AND TRAFFIC	17
CONSTRUCTION COMPOUNDS	18
ACCESS TO THE MAIN WORK SITE	19
TEMPORARY CONSTRUCTION LAND	19
TEMPORARY DRAINAGE SOLUTION	19
VEGETATION REMOVAL, WORKS AND RETENTION	20
EARTHWORKS AND SITE LEVELS	20
CONSTRUCTION OF BUILDINGS / HARDSTANDING AND INSTALLATION OF PLANT / EQUIPMENT	21
CONSTRUCTION WASTE	21
IMPLEMENTATION OF DESIGN PLANS AND STRATEGIES	21
KEY CONSTRUCTION PRACTICES	22
DEMOLITION/DECOMMISSIONING PROPOSALS	22
REFERENCES	22

TABLES

Table 3-1 – Planning Application Drawings	6
Table 3-2 - Construction Programme	16
Table 3-3 - Vehicle numbers	17
Table 3-4 - Cut/ Fill Balance	20
Table 3-5 - Estimated Plant use	21
Table 3-6 - Design Plans and Strategies	22

FIGURES

Figure 3-1 - Phase 1 and Phase 2	5
Figure 3-2 - Drainage Features	13

3 DESCRIPTION OF SCHEME

3.1 INTRODUCTION

3.1.1. This chapter provides a description of the Scheme, including a description of how the Scheme would be constructed, alongside the assumptions used for the basis of assessment where this information is subject to confirmation. This description aligns with what planning consent is sought for, and together with the supporting plans (as identified in Section 3.6 below), what the technical assessments are based upon (technical chapters 6 – 13).

AIMS OF THE SCHEME

3.1.2. The A29 Realignment Scheme will provide the infrastructure to improve the capacity for expected traffic growth for the planned and potential development of around 11,400 new dwellings and 104,000m² of commercial development on permitted or planned development sites in this part of Arun District.

3.1.3. The primary aim of the A29 Realignment Scheme (Phases 1 and 2 combined) is:

- To support delivery of the Strategic Economic Plan and the Local Plan by enabling the delivery of new homes and jobs.
- Improve journey times on the A29 by avoiding the Woodgate level crossing, Lidsey bends and the A29/B2233 War Memorial Junction.

3.1.4. The A29 Realignment Scheme aims to alleviate issues raised in the West Sussex Transport Plan 2011-2026 (WSTP) including transport issues being a deterrent to visitors and businesses located in the Arun District. This has contributed to poor economic performance in Bognor Regis relative to the rest of West Sussex and the wider region.

3.1.5. Significant new housing is planned in the area which is expected to increase demand on the A29 and B2233 roads. An application for up to 500 homes (Ref 3.1) on the land to the east of Fontwell Avenue is required to help deliver a proposed 2,300 homes at the Barnham, Eastergate, Westergate site during the Arun Local Plan period (2011-2031), with potential on the site for a further 700 dwellings to be delivered after 2031 (See **Figure 3.1** for location of future residential development). This allocation of housing could not be mitigated to comply with the provisions of the National Planning Policy Framework (NPPF) regarding “severe residual cumulative impact” without the delivery of the A29 Realignment Scheme, based on the Arun District Local Plan Transport Study 2017. This development will hereafter be referred to as the ‘Adjacent Proposed Scheme’ (APS).

3.1.6. In order to achieve the primary aim, and in response to the problems and opportunities identified, clear objectives have been established for the A29 Realignment Scheme by the Applicant. A distinction has been drawn between the desired high level or strategic outcomes, the specific or intermediate objectives, and the operational objectives.

3.1.7. High Level or Strategic Outcomes

The desired high level or strategic outcomes (Ref. 3.2) are:

- To enable delivery of new homes in Arun District supporting delivery of around 11,400 new dwellings and 104,000m² of commercial development on permitted or planned development sites in this part of Arun District;

- To ease congestion and reduce journey times;
- To support the local economy and community;
- To create a sense of place for the strategic allocation;
- To enable delivery of new jobs;
- To improve road safety;
- To protect the local environment such as improvements to air quality; and
- To support sustainable modes of transport.

3.1.8. Specific or Intermediate Objectives

The specific or intermediate objectives are:

- To improve connectivity between Bognor Regis and the wider road networks;
- To reduce congestion on the existing A29;
- To reduce journey times and delays;
- To improve journey time reliability and reduce unforeseen delays;
- To improve the resilience of the local transport network;
- To reduce the number of road collision casualties; and
- To improve conditions for pedestrians and cyclists.

3.1.9. Operational Objectives

The operational objectives are:

- New A29 Realignment / carriageway;
- To improve journey times;
- To provide new facilities for pedestrians and cyclists;
- To improve the capacity of junctions; and
- To accommodate new roads providing access to development.

PLANNING CONTEXT

- 3.1.10. The A29 Realignment Scheme was identified as a priority for investment in the WSCC's Strategic Transport Investment Programme (STIP) in June 2013 (HT07 (14-15)). This investment supports the Arun Growth Deal that identifies the A29 road improvements as a key infrastructure project for delivery as early as possible.

West Sussex Transport Plan 2011-2026 (WSTP)

- 3.1.11. The West Sussex Transport Plan 2011-2026 (WSTP) states that transport issues are a deterrent to visitors and businesses locating in Arun District. Bognor Regis currently suffers from relatively poor transport connectivity which has contributed to poor economic performance relative to the rest of West Sussex and the wider region. The aims for Arun include exploring opportunities through new development to improve access along the A29, including the potential to provide a bridge over the railway line avoiding the Woodgate level crossing.

Arun Local Plan 2011-2031 (ALP)

- 3.1.12. The adopted Arun Local Plan 2011-2031 (ALP) identifies Bognor Regis as a strategic location for regeneration during the lifetime of the Plan. The ALP also allocates land at Barnham, Eastergate and Westergate (BEW) for strategic housing, commercial development and associated community infrastructure.

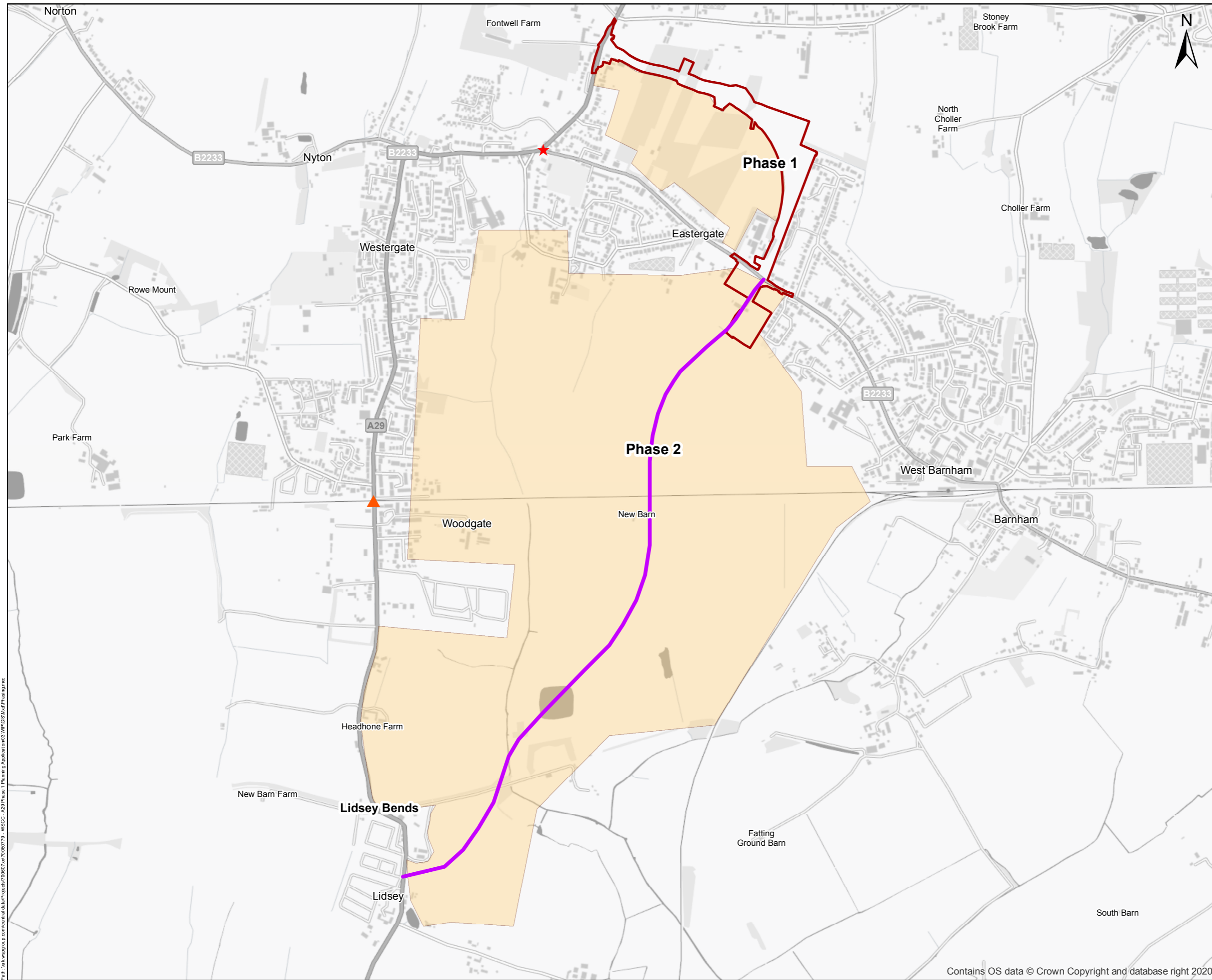
- 3.1.13. The site allocation also includes an indicative route for the A29 Realignment Scheme to provide access to the strategic infrastructure package to mitigate the cumulative impacts of development over the plan period.
- 3.1.14. There is also potential within the strategic site allocation for further development of additional housing units to be delivered beyond the end of the plan period, subject to all relevant planning decisions.

OVERVIEW OF THE SCHEME

- 3.1.15. The Transport Business Case submitted to the Coast to Capital Local Enterprise Partnership (LEP) was approved by its Investment Board on 17 October 2019. Subsequently £9.90 million of Local Growth Funding was awarded in February 2020 for the delivery of Phase 1. The LEP has also agreed that further funds totalling £2.40 million will be earmarked for the delivery of Phase 2 should additional Government funding become available to the LEP.
- 3.1.16. The A29 Realignment Scheme will be delivered in two phases as shown in **Figure 3.1**. Phase 1 is approximately 1.3km long from the A29 south of Eastergate Lane to a new junction with Barnham Road, Phase 2 from Barnham Road to a new junction on the A29 south of Lidsey bends. The Scheme relates to Phase 1 (North) only and is the primary focus of this Environmental Statement and Environmental Impact Assessment. Phase 2 (South) will be addressed through assessment of cumulative effects and will be subject to a subsequent planning application. Phases 1 and 2 combined is herein referred to as the A29 Realignment Scheme.
- 3.1.17. The Scheme shown in **Appendix 3-1**, includes the proposal to create a new approximately 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.
- 3.1.18. The Scheme will have a posted speed limit of 30mph, the same as the existing posted speed limits on the A29 in the vicinity of the proposed Fontwell Avenue roundabout and Barnham Road where the new link connects to the existing highway network. Traffic calming features have been included to encourage compliance with the posted speed limited as outlined below (refer to **Appendix 3.1 A29-CAP-HPN-00-DR-C-0180 S0-P07 to A29-CAP-HPN-00-DR-C-0182 S0-P07 for chainages):**
- Planting used throughout to limit forward visibility in critical areas;
 - 2.5m wide island at approximate ch 150m with local carriageway widening;
 - 2.5m wide island at approximate ch 250m with local carriageway widening;
 - Pedestrian crossing point at approximate ch 605m for the PRow;
 - Substitution of road centre line using edge of carriageway lines between ch 650m and ch 1050m; and
 - At ch 1140 a traffic feature comprising a change in surface colour and edge of carriageway markings to give the impression of a raised carriageway.
- 3.1.19. 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 housing;
 - 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 Public Rights of Way (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;
- A 30 mph (48 kph) speed limit on the Scheme;
- New access to the Fordingbridge Industrial Estate (Halo) site from the realigned A29; and
- Land at Fleurie Nursery would be permanently required for the construction of the roundabout on the southern B2233 Barnham Road.



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

- ★ War Memorial
- ▲ Woodgate Level Crossing
- Phase 2 road alignment from emerging masterplan
- Phase 1
- Future Residential Development



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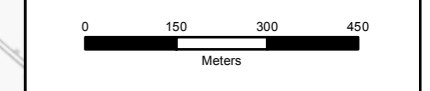
Drawing Status
FINAL

Job Title
**A29 Phase 1
Planning Application**

Drawing Title
**Figure 3.1 - Phase 1 and
Phase 2**

Scale at A3

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Stage 1 check	AS	Stage 2 check	DY
Originated	DY	Date	08/10/2020



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- 3.1.20. One occupied two-storey residential dwelling, courtyard and adjacent weatherboard structure located off the existing A29 to the south of Eastergate Lane are proposed to be demolished (see **Appendix 3.1 – Site Clearance Plan**).
- 3.1.21. The front access to Folly House off the existing A29 will be redesigned and landscaped but still allow access to Folly House.
- 3.1.22. Lighting has been minimised to include lighting to the roundabout and their approaches. The carriageways between each roundabout (except for the approach lighting which ranges between 50-80m from the roundabouts) are not directly lit and instead only the cycleways are provided with lighting, therefore reducing the lighting column heights from 10m to 6m and lighting levels in these sections. Further details of the lighting including examples of luminaires is provided in **Appendix 10.2 – Lighting Assessment Report**. Details of the measures required to minimise light impacts on bats using the PRow corridor and other nocturnal species is included in the Outline Lighting Management Scheme (attached to the Lighting Assessment Report).
- 3.1.23. The substation relocation would comprise one transformer placed on a reinforced concrete base, approximately 4m by 4.5m, with an adjoining cable area approximately 3m by 4m. ~~On the north side of the substation would be~~The substation will include a parking area approximately ~~3m~~4m by ~~8m~~10m. A grasscrete area is proposed in front of the substation to enable vehicles to reverse off ~~Fontwell Avenue~~off the road. Since submission the location of the substation has changed, further details are provided in the ES Addendum with cross sections provided in **Appendix 2.2 – Substation Cross Sections and Elevations** of the ES Addendum.
- 3.1.24. During the construction phase, site construction access would be via a temporary track from the B2233 between Fordingbridge Industrial Estate and Murrell Gardens. Construction access may also be taken from the A29, 100m south of Eastergate Lane. The main construction compound (A) will be located within Fleurie Nursery land, south of Barnham Road.

PLANS AND DESIGN ASSUMPTIONS

- 3.1.25. The Scheme is shown in **Figure 3.2** and details provided in **Appendix 3.1 – Site Plan**. The plans submitted in support of the revised planning application, are summarised in **Table 3-1** below:

Table 3-1 – Planning Application Drawings

<u>Name</u>	<u>Reference</u>
<u>The Scheme (site plan for planning with annotation including lighting and outline landscaping);</u>	<u>A29-CAP-HPN-00-DR-C-0132 S0-P07</u> <u>A29-CAP-HPN-00-DR-C-0133 S0-P08</u> <u>A29-CAP-HPN-00-DR-C-0134 S0-P07</u> <u>A29-CAP-HPN-00-DR-C-0135 S0-P08</u> <u>A29-CAP-HPN-00-DR-C-0136 S0-P07</u>
<u>Plan and profile plans</u>	<u>A29-CAP-HPN-00-DR-C-0175 S0-P05</u> <u>A29-CAP-HPN-00-DR-C-0176 S0-P04</u> <u>A29-CAP-HPN-00-DR-C-0177 S0-P04</u> <u>A29-CAP-HPN-00-DR-C-0178 S0-P05</u>
<u>Site clearance plans</u>	<u>A29-CAP-HPN-00-DR-C-0246 S0-P01</u> <u>A29-CAP-HPN-00-DR-C-0247 S0-P01</u> <u>A29-CAP-HPN-00-DR-C-0248 S0-P01</u> <u>A29-CAP-HPN-00-DR-C-0249 S0-P01</u> <u>A29-CAP-HPN-00-DR-C-0250 S0-P01</u>

<u>Name</u>	<u>Reference</u>
<u>Site boundary/site layout plan;</u>	<u>A29-CAP-HGN-00-DR-C-0174 S0-P05</u>
<u>Cross sections/long sections;</u>	<u>A29-CAP-HPN-00-DR-C-0180 S0-P07</u> <u>A29-CAP-HPN-00-DR-C-0181 S0-P07</u> <u>A29-CAP-HPN-00-DR-C-0182 S0-P07</u>
<u>Bus stop locations</u>	<u>A29-CAP-HGN-00-DR-C-0252 S0-P01</u>
<u>Pond access tracks</u>	<u>A29-CAP-HPN-00-DR-C-0243 S0-P02</u>
<u>Pond 2,3,4 plan and profile</u>	<u>A29-CAP-HPN-00-DR-D-0240 S0 P02</u> <u>A29-CAP-HPN-00-DR-D-0241 S0-P02</u> <u>A29-CAP-HPN-00-DR-D-0242 S0-P02</u>
<u>Proposed elevations (noise barrier)</u>	<u>A29-CAP-HPN-00-DR-C-0183 S0-P06</u> <u>A29-CAP-HPN-00-DR-C-0184 S0-P06</u>
<u>Fontwell Avenue and Barnham Road roundabout sections (new)</u>	<u>A29-CAP-HPN-00-DR-C-0236 S0-P02</u> <u>A29-CAP-HPN-00-DR-C-0237 S0-P02</u>
<u>Soft landscaping plans</u>	<u>A29-CAP-HPN-00-DR-C-0239 S0-P03</u>
<u>Drainage strategy</u>	<u>A29-CAP-HDG-00-DR-C-0047 S0-P11</u>
<u>Site compounds</u>	<u>A29-CAP-HPN-00-DR-C-0245 S0-P01</u>
<u>Planting schedule</u>	<u>A29-CAP-HPN-00-DR-L-0251 S0-P02</u>
<u>Substation cross sections</u>	<u>A29-CAP-HPN-00-DR-C-0235 S0-P02</u>
<u>Fencing drawings</u>	<u>A29-CAP-HPN-00-DR-C-0258-P01</u> <u>A29-CAP-HPN-00-DR-C-0259-P01</u> <u>A29-CAP-HPN-00-DR-C-0260-P01</u> <u>A29-CAP-HPN-00-DR-C-0261-P01</u> <u>A29-CAP-HPN-00-DR-C-0262-P01</u> H3 H15 H17 H46
<u>Fontwell Farm Access Vehicle Tracking (Swept path)</u>	<u>A29-CAP-HPN-00-SK-C-0244-P02</u>
<u>Red line and blue line boundaries</u>	<u>A29-CAP-HPN-00-DR-C-0174 S0-P05</u>

- ~~The Scheme (site plan for planning);~~
- ~~Scheme location plan;~~
- ~~Site clearance plans;~~
- ~~Site boundary/site layout plan;~~
- ~~Cross sections/long sections;~~
- ~~Proposed elevations (noise barrier); and~~

3.1.26. ~~Preliminary design plans (including drainage and lighting).~~ A list of the design standards for each component of the Scheme including departures from standard are included in **Appendix 3.7**.

PLANNING APPLICATION BOUNDARY

- 3.1.27. All temporary and permanent activities relating to the construction and operational activities of the Scheme would be contained within the planning application boundary as illustrated in **Figure 1.3: Site Boundary**. The EIA is based upon this planning application boundary.

SCHEME LAYOUT / LAND USE

- 3.1.28. The Scheme will involve the development of a linear road structure on a greenfield site in Eastergate. The Scheme will extend across agricultural land in an arc shape between the A29 to the west and the B2233 to the south.

CLIMATE CHANGE RESILIENCE

- 3.1.29. Each chapter within this ES includes consideration of Schedule 4(5) to the EIA Regulations relating to the likely significant effects of the Scheme on the environment and the vulnerability of the Scheme to climate change (Ref. 3.3).
- 3.1.30. The criteria used for the drainage design is based on WSCC's Adoptable Highway Drainage and Sustainable urban Drainage Systems (SuDS) Guidance Note for Developers (Version 3, March 2019). The principal criteria are listed below:
- Baseline discharge: QBAR for the receiving catchment (approximately a 1 in 2.3 year return period);
 - Highway drains design return period: 1 in 5 year return period (flood zone) + 40% allowance for climate change;
 - Exceedance check: No flooding in a 1 in 30 year return period; and
 - Flood flows: 1 in 100 year return period + 40% allowance for climate change.
- 3.1.31. Consideration of climate change for the drainage strategy is considered under 'Proposed Drainage'.

OPERATIONAL ACCESS AND MOVEMENT

- 3.1.32. There are two proposed access routes for the Site, both of these would be used for the Scheme. The access route at the western end will join Fontwell Avenue, which runs north-to-south along the western side of the Site. The other access route will join the B2233 Barnham Road which runs east-to-west along the southern side of the Site.
- 3.1.33. Traffic from the existing A29 route will use the A29 Realignment route, alleviating pressure on the surrounding transport network.
- 3.1.34. Access for large HGVs is required to the animal feed centre at the western end of the Scheme. The northern end of the access road would be terminated to give sufficient space for an articulated HGV to draw in, stop and reverse into the animal feed centre as per existing vehicle movements. Further details are provided in the swept path drawings in **Appendix 3.1c**.
- 3.1.35. Residents from the Adjacent Proposed Scheme (APS) will also utilise the A29 Realignment Scheme in the operational phase (there will also be access to the APS directly from Barnham Road).
- 3.1.36. The Scheme will include a new access to the Fordingbridge Industrial Estate (Halo) site, north of the roundabout on Barnham Road.
- 3.1.37. Non-motorised users will be able to use the Scheme via a 3m wide footpath/ cycleway (Shared Use Path) along the entire length of the Scheme. This has been designed to suit the needs of the cycle

traffic in accordance with LTN 1/20. An uncontrolled pedestrian crossing with a 2.5m wide central island is incorporated into the road design to enable users of the PRow to safely cross the carriageway. The Shared Use Path will connect to existing PRow adjacent to the Site. Road markings for pedestrians to look either left or right and timber staggered barriers have been incorporated into the design as shown in **Appendix 3.1 – Site Plan**.

- 3.1.38. Pedestrian crossings are provided at key locations as shown in **Appendix 3.1**. NMU traffic is considered to be low. The design team considered the different development scenario for 2023 and 2038 for Phase 1 and 2, with the pedestrian conflict threshold which would require further detail assessment for controlled crossing. The investigation indicated that adding a controlled crossing on the northern roundabout arm at Barnham Road Roundabout was the only location at which the pedestrian conflict threshold was met, and this was not justified until Phase 2 is brought into use. The design has been “future proofed” so to easily facilitate the potential need for the future inclusion of a controlled crossing at this location once the full Phase 2 scheme is brought into use. The unused limbs of the proposed central (developer) roundabout will be managed/closed until such time as future housing development comes forward. This will be achieved by utilising Temporary Vertical Concrete Barriers (TVCBs) alongside appropriate temporary traffic signage and temporary blanking out information on advanced direction signs. The use of TVCB’s will help direct traffic flows safely, prevent un-authorised access, and provide a safe working area for construction workers.
- 3.1.39. A separate application under S257 of the Town and Country Planning Act has been submitted to the Local Planning Authority, relating to the permanent diversion of the Public Right of Way (PRow) as shown in **Appendix 3.1 – Site Plan**.

PROPOSED LEVELS AND ELEVATIONS

- 3.1.40. The topography within the Site is relatively level, ranging from 6 to 8m Above Ordinance Datum (AOD). The existing ground profile in general falls from Fontwell Avenue towards Barnham Road.
- 3.1.41. Street lighting at the junctions will be the tallest feature associated with the Scheme. The tallest structures will be the lighting columns which will be 6-8m in height and therefore will not exceed 10m AOD (allowing for raised foundations). Further details are provided in **Appendix 10.2 - Lighting Assessment Report** and the attached Outline Lighting Management Scheme.
- 3.1.42. Bus stop details and location were determined by providing the 70m Stopping Sight Distance (SSD) sight line for the driver to see a pedestrian waiting to cross, as shown on drawing A29-CAP-HPN-00-DR-C-0252 S0-P01 in **Appendix 3.1 – Site Plan**.
- 3.1.43. Fencing and gates are shown in **Appendix 3.1 – Site Plan** and include:
- Gates across the entrances to Pond 2 and 3;
 - 200m of badger fencing either side of the wildlife crossing;
 - Post and three rail fencing with hedging in some sections along the northern red line boundary; and
 - No provision of fencing on the south side of the A29 re-alignment along the Adjacent Proposed Development (Barratt David Wilson site).
- 3.1.44. No other street furniture, such as benches are currently proposed as part of the Scheme. If required, these would be considered as part of the planning application for the neighbouring development.

PROPOSED EXCAVATION EXTENTS

- 3.1.45. The majority of the new carriageway will be built upon a small embankment to avoid road construction within areas of high ground water levels. This improves the long term durability of the Scheme and will eliminate the need for sub-surface drainage. The only area of new carriageway that will be in cutting (albeit a very small area) is at approximately Chainage 15m to 100m, before being on slight embankment for the remainder of the Scheme. Cutting depths are currently envisaged to be up to 2m. Highway gradients have been set to minimums (or just above minimum) to minimise fill above ground levels (see **Appendix 3.1 – Cross Sections**).
- 3.1.46. Drainage swales are proposed adjacent to the carriageway – in these areas the road surface runoff is “over the edge” into the swales and therefore the swales follow the same gradient of the road. Filter pipes are proposed to generally run under the swales to convey the higher critical design storm flows requiring excavation of up to 1.7m from the adjacent new road finished level.
- 3.1.47. Excavations for the reinforced concrete base for the relocated substation on ~~Fontwell Avenue~~ would be up to 1.5m.
- 3.1.48. Three new ponds are required (see **Figure 1.3** and see **Appendix 3.1 – Preliminary Designs Site Plan**):
- Pond 2 (at Ch 500) is an infiltration pond and is currently proposed to have a volume of some 500m³, approx. 1m deep below EGL);
 - Pond 3 (at Ch 800) is an attenuation pond and is currently proposed to have a volume of some 1500900m³, approx. 1m deep below EGL; and
 - Pond 4 (to the south of Barnham Road) is an attenuation pond and is currently proposed to have a volume of some 7900m³. The maximum water depth is approx. 1m deep with a 1m free-board below EGL.
- 3.1.49. Infiltration crates are proposed within and adjacent to the proposed Fontwell Avenue roundabout.

PROPOSED DEMOLITION

- 3.1.50. One two-storey residential dwelling, courtyard and adjacent weatherboard structure will be demolished. Please refer to **Appendix 3.1 – Site Clearance Plan**.

PROPOSED DRAINAGE

- 3.1.51. The Scheme crosses open land, and as a result will increase the impermeable area, resulting in the potential for a higher rate of surface water runoff, without appropriate mitigation.
- 3.1.52. To mitigate the potential increase in peak surface water run-off rates, a Surface Water Management Strategy has been developed for the Scheme, in accordance with the requirements of the NPPF.
- 3.1.53. Based on local and national guidance, the surface water generated by the Scheme will be restricted to greenfield run-off rate and designed for an increase in rainfall due to climate change (see Section 3.5).
- 3.1.54. The required surface water attenuation volumes can be achieved by a combination of swales and filter drains along both sides of the Scheme. A grass filter strip is also proposed between the future carriageway and the proposed swales.

- 3.1.55. The modelling undertaken for the drainage strategy is based on the following design parameters in accordance with West Sussex Lead Local Flood Authority (LLFA) Policy for the Management of Surface water (Ref 3.5):-
- Rainfall Data – Flood Estimation Handbook (FEH) 13
 - Coefficient for Volumetric Runoff (CV) – value 1.0
- 3.1.56. The Scheme does not cross any watercourses.
- 3.1.57. Infiltration and attenuation basins will be provided in four locations along the Scheme.
- 3.1.58. The Flood Risk Assessment (FRA) (**Appendix 11.1**) assesses the drainage within the Site. The location of the drainage features are shown in **Figure 3.2**. Drainage features include below ground cellular storage soakaway within and south of Fontwell Avenue roundabout (previously referred to as Pond 1) and three ponds. Pond 2 located east of the central roundabout is an infiltration pond, Pond 3 north of Halo and Pond 4 south of Barnham Road are both attenuation ponds with controlled discharge. Cross sections of Ponds 2, 3 and 4, are provided in **Appendix 3.1b – Section Drawings**, which include details of minimum and maximum water levels.
- Pond 2 – Dry pond, depth of water 0.93m to the max water level;
 - Pond 3 – Wet pond, minimum (permanent) water depth 0.17m and 0.94m to the maximum water level; and
 - Pond 4 – Wet pond, minimum (permanent) water depth 0.17m and 0.765m to the maximum water level.
- 3.1.59. Prior to installation of the proposed SuDS within the Adjacent Proposed Development (Barratts) (which will manage all drainage within their site to the south / west of the new carriageway), a French drain is proposed to allow any excess flows that cannot infiltrate to discharge to the south west side of the new road as land drainage. An overflow pipe crossing is provided beneath the embankment at chainage ch 840, which connects into the proposed drainage ditch to the existing Barnham Lane Ditch / Rife. This detail maintains the current overland flow paths in the temporary situation.
- 3.1.60. The water quality of the surface water discharge generated at the proposed A29 has been assessed using the HAWRAT method and it demonstrated that the proposed SuDS features will mitigate the potential contamination arising from the Scheme.
- 3.1.61. The new link road has a number of drainage catchments. Each catchment is to have a highway drainage system that is proposed to discharge, under gravity, to an underground storage structure or surface pond. The outflow from these storage areas is to either be to the ground (infiltration) or to a receiving watercourse. Where the flow is to a watercourse, the rate of discharge is to be restricted to the green field run-off rate.
- 3.1.62. Grassed swales are proposed along the side of the link road which, together with the surface ponds, enable contaminants to be removed from the highway surface water run-off prior to its discharge to the ground or to a receiving watercourse. At the roundabout junction areas, where it is impractical to use swales, the highway drainage system is to include conventional oil/petrol interceptor units that retain any polluting hydrocarbons upstream of the storage areas.
- 3.1.63. In summary, proposed discharge rates to watercourses are as follows:
- Barnham Lane Ditch: 1.8 l/sec; and

- School Watercourse Ditch: 5 l/sec.
- 3.1.64. The discharge rates have previously been agreed with WSCC, Arun District Council and The Environment Agency, all detailed in the Drainage Strategy Technical Note TN A29-CAP-HDG-00-AN-D-0052 included in **Appendix 11.1 – Flood Risk Assessment.**
- 3.1.65. Barnham Lane Ditch - The catchment area of Pond 3 is 1.135ha. Based on a greenfield runoff rate for the 1 in 2 year event of 2.1l/s/ha the maximum allowable discharge rate from Pond 3 to the ditch is 1.8l/s. However, the proposed alignment of the A29 will isolate 7.8ha of the existing catchment from the ditch resulting in a reduction in flows to the ditch from the existing catchment of 16.4l/s in the long term. In the short term some of this flow may continue to discharge to the ditch via the French drain described above. Consequently, the proposed discharge rate of 1.8l/s from Pond 3 would be less than the existing rates discharging to the Barnham Lane Ditch and would therefore represent a betterment.
- 3.1.66. School Watercourse – The section of the new roundabout and southern road section extending to the School Watercourse is approximately 423m³. The area is split between impermeable and permeable areas as it passes the existing Fleurie Nursery site.
- The impermeable area is 1,485m², based on Wallingford procedure, the 1 in 2 year flow rate is 4.5l/s;
 - The permeable area is 2,750m² with a greenfield runoff rate for the 1 in 2 year event of 2.1l/s/ha, the effective flow rate is 0.58l/s;
 - The total existing flow for a 1 in 2 year event is therefore 5.08l/s;
 - Therefore, providing the 5l/s from Pond 4 does not offer betterment but is no worse than the existing discharge to School Watercourse; and
 - Any betterment would have required a reduced flow with increase in the pond size and land requirement.
- 3.1.67. Liaison has occurred with the Southern Consortium responsible for delivering the A29 (Phase 2) and development south of Barnham Road, and Barratts David Wilson Homes (north of Barnham Road) throughout the design process. This has included specific meetings with drainage teams to discuss interaction of drainage across the schemes. Since submission of the Planning Application and ES in October 2020 further discussions with the Southern Consortium have occurred as their masterplan has progressed. This has resulted in the rotation of Pond 4 as described in Chapter 1 and detailed in Chapter 3 to better fit with their emerging designs. As such the drainage for Phase 1 has been updated to accommodate the latest Southern Consortium designs. Any further changes which arise as Southern Consortium design progresses will need to be considered separately through the developer's own application.

EMISSIONS, WASTES AND EFFLUENTS

- 3.1.68. Emissions will be limited to light and road drainage. Artificial light is considered in **Appendix 10.4** and assessed in **Chapter 10 – Landscape and Visual** while road drainage is explained in **Appendix 11.2** and assessed in **Chapter 11 – Water Resources and Flood Risk**.

PRIMARY MITIGATION

Noise Barrier (Ref. 3.4)

- 3.1.69. Following the noise assessment (**Chapter 7 – Noise and Vibration**) a noise barrier now forms part of the Scheme (see **Figure 7.2, 7.3, 7.5 and 7.6** and **Appendix 3.1 - Proposed Elevations Noise Barrier**). 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 will be 3m above the carriageway crown level and approximately 440m in length and composed of absorptive materials (to prevent noise reflecting across the road to the 'Adjacent Proposed Scheme' (see **Chapter 4 – Consideration of Alternatives**)).

Landscaping and Habitat Replacement

- 3.1.70. The Landscape Strategy (**Appendix 3.3**) has been prepared to mitigate effects on biodiversity (habitats), landscape and visual receptors and for Biodiversity Net Gain metrics. Following submission of the ES, further development of the Landscape Strategy has occurred as the detailed design has progressed. The changes following submission in October 2020 include: addition of a further 52m of hedgerow across the Scheme; inclusion of three trees within the central roundabout; further planting to the east of Pond 3; edits to the landscaping around the Halo entrance, including addition of vegetation alongside Greenacre. The latest design also replaces amenity grassland with wildflower meadow across the Scheme to further increase the BNG area calculations beyond those reported in the BNG assessment included in Appendix 9.10. The findings of these assessments are covered in Chapter 9: Ecology and Nature Conservation and Chapter 10: Landscape and Visual.
- 3.1.71. An annotated plan is provided in Appendix 3.6 – Wider Landscape Plan showing how the design and landscaping links to the wider environment and future development. Hedgerows totalling 880m have been incorporated into the revised Landscape Strategy to assist with creation of linear/navigational features for bats, to provide habitat and for visual screening. Whilst it is acknowledged that there will be some habitat fragmentation as a result of a linear scheme such as this, the landscape strategy has taken into consideration the retained habitat present immediately outside of the Site to ensure that there remains a continuity of habitat that will be used as commuting / foraging habitat by bats as well as providing value for other protected species. Where new hedgerows are proposed, they link to existing hedgerow / woodland habitat or to proposed woodland edge, woodland core or shrub landscaping which are also of importance to maintaining linear connectivity.
- 3.1.72. As set out in Appendix 14.2 – Integration Statement, whilst a landscape strategy has not been developed for the Adjacent Proposed Scheme, the developer has identified key landscape features, including the two wildlife corridors and are committed to aligning their landscape strategy and complementing that of the A29 Scheme. The eastern extent of the Scheme has been set aside as a biodiversity area, where extensive planting will take place. This is an area that currently comprises improved grassland and is therefore of low ecological value, with the proposed landscaping seeking to achieve an increase in the ecological value of this area. This is supported by the Biodiversity Net

Gain Assessment (Appendix 9.10) whereby the Scheme achieves a 44% net gain in area-based habitats and a +10% for linear based habitats, thus achieving a biodiversity net gain overall.

- 3.1.73. The priority in terms of planting and species selection at the tie-ins at Fontwell Avenue and Barnham is safety and maintaining line of sight on junction approaches. The design in these locations has considered the retained roadside features and integration of the relocated substation. The woodland edge planting which links the Scheme at the tie-ins, includes provision of native species to replace those to be removed for construction of Fontwell Avenue Roundabout, with the species selected developed in consultation with WSCC County Ecologist and Arboriculturist. The design and red line boundary at Fontwell Avenue has been developed in consultation with the Adjacent Proposed Development and affected landowners to minimise land take and to ensure early consideration of access requirements for the potential future care home. Wildflower planting has been incorporated within the three new roundabouts.
- 3.1.74. Planting around the new Halo entrance consists of replacing existing amenity grassland with wildflower meadow grassland within the new WSCC highway boundary to ensure visibility splays at this junction will be maintained. A new fence will be installed at the Halo entrance comprising post and rail along the eastern boundary and close board fencing along the southern boundary to Halo, matching existing.
- 3.1.75. Landscape planting has sought to provide screening of the proposed noise barrier. Planting on the eastern side has been developed with the purpose of maintaining wildlife corridors and screening for residents to the east. Along the west side of the noise barrier which is set back 3m from the carriageway, shrubs and trees have not been considered to ensure the maintenance access to the barrier is maintained. A 3m set back is required to maintain sightlines and for the traffic signs and drainage features, and as such the distance between the noise barrier and the road edge limits the opportunity for landscape planting. However, a soft landscape screen is proposed to the noise barrier surface comprising native climbers such as ivy, honeysuckle and clematis, with the final material selection for the noise barrier and associated landscape screen to be secured with a planning condition. Examples of soft landscaping proposed for the noise barrier is provided in Appendix 3.1.

PREVENTION OF MAJOR ACCIDENTS / DISASTERS

- 3.1.76. Although there are extensive potential major accidents/disasters that could occur because of the Scheme, the frequency of accidents/disasters are considered to be so low that the probability of potential risks is highly unlikely. The Scheme is also expected to reduce the risks of accidents from the current situation.
- 3.1.77. Effects related to the risk of major accidents and/or disasters are not considered to be significant. The Planning Application includes a Road Safety Audit (70060779-RSA1) which assesses the safety of the new infrastructure and sets out recommendations where required. The actions from the RSA 1 have been addressed in the detailed design.

CONSTRUCTION PROPOSALS

PROGRAMME

- 3.1.78. The construction programme to be procured, is expected to follow the approximate timing outlined in **Table 3-2**. The anticipated duration of the construction period is approximately 12 months.

Table 3-2 - Construction Programme

Stage	Programme
Construction compound construction	Early to mid 2021 2022
Site clearance (including demolition)	Early to mid 2021 2022
Utilities Diversion	Early Mid to late 2021
Construction of Road	Mid 2022 to mid 2023. late 2021
Street Lighting	Late 2022 Mid to late 2021
Landscaping	Early to mid 2023 Late 2021 to early 2022

PROPOSED KEY CONSTRUCTION ACTIVITIES

3.1.79. The locations and layouts of the proposed construction compounds are shown in **Appendix 3.8**. The key construction activities are summarised below (although there is likely to be some overlap between each stage / individual processes):

- Creation of a temporary construction compound at the Fleurie Nursery site;
- Clearance and creation of temporary construction access via a temporary track from the B2233 between Fordingbridge Industrial Estate and Murrell Gardens. Construction access may also be taken from the A29, 100m south of Eastergate Lane;
- Installation of temporary fencing and/or hoarding;
- Vegetation and tree removal and use of protective measures around retained features;
- Demolition of one two-storey residential dwelling, courtyard and adjacent weatherboard structure, both of which are occupied;
- Dewatering (if necessary) in trenches and excavations (potentially on-going activity throughout construction phase);
- Movement and use of static and mobile plant/construction vehicles;
- Diversion of applicable utilities, including the relocation of a substation located off the existing A29 Fontwell Avenue;
- Validation of ground conditions, earthworks and re-profiling to meet required levels/noise mitigation;
- Export of some material off-site (anticipated to be a limited volume and primarily associated with any vegetation/contaminated material which cannot be disposed of onsite);
- Materials handling, storage, stockpiling and disposal;
- Formation of drainage features;
- Construction of infrastructure associated with the Scheme including noise barriers;
- Construction of the Scheme; and
- Hard and soft landscaping including environmental/ecological mitigation if required.

3.1.80. A series of assumptions have been made in relation to the proposed Site preparation, earthworks and construction activities following discussions with the Project Team. Where assumptions have been made, it is stated.

SECURITY AND FENCING

3.1.81. Security and safety of all plant and equipment will be the responsibility of the Contractor.

- 3.1.82. All plant will be fenced off where the Contractor sees fit; during non-operational times.
- 3.1.83. It is not envisaged that separate security arrangements (such as security guards) will be required for the Site.
- 3.1.84. Temporary construction lighting would likely be installed for security and safety. This may include lighting around the Site perimeter and at accesses, working areas, temporary car parking areas, construction compounds, and at ancillary facilities.

CONSTRUCTION EMPLOYMENT

- 3.1.85. It is expected that up to 50 people will be employed on site per day at the peak at construction. This is not considered to have a significant effect on local employment numbers.

CONSTRUCTION ACCESS / HAULAGE ROUTES, PARKING AND TRAFFIC

- 3.1.86. It is anticipated that there will be no more than 50 persons working on site at any one time, and whilst car sharing/public transport/cycling to work will be encouraged, the proposed car parking arrangements cater for these expected vehicle numbers, with spare capacity within the three site compounds to increase this if necessary. Vehicle numbers/ movements are outlined in **Table 3-3**.

Table 3-3 - Vehicle numbers

Vehicle Type	Envisaged Maximum Daily Number to Site
Car / Delivery Van	40 Movements Daily
Heavy Earth Moving Vehicle (e.g excavator)	20 Movements Daily
Heavy Goods Vehicle	75 Movements (envisaged 25% to northern compound, 75% to main southern compound), but majority of time average of 20 movements daily.

- 3.1.87. Parking for road vehicles will be off site at the main compound south of Barnham Road. Large construction plant will be delivered direct to the work site, made safe and remain in the works area overnight (so to avoid additional vehicle movements to and from the main compound crossing Barnham Road). Deliveries will only be arranged for during operational hours and where possible will be delivered directly to the work face rather than to the main site compound, to avoid additional vehicle movements needing to cross Barnham Road. There would be no large deliveries of materials or plant made to the main site compound area. Outline details of construction routing are provided in the Outline Construction Environmental Management Plan (Appendix 3.5). The Outline Construction Environmental Management Plan provides details concerning the requirement for the Contractor to prepare a Construction Worker Travel Plan in an effort to reduce the amount of single occupancy private cars arriving at the work site.
- 3.1.88. ~~Normal~~ Typical site working (construction) hours are proposed to be the following which are in keeping with the WSCC guidelines:
 - Monday to Friday 7:00 to 18:00 (please note, Noise Generating Activities (as defined by BS 5228) will be limited to an 8:00 start); and
 - Saturdays 8:00 to 13:00.

- 3.1.89. Normal site operations are expected to be limited to the hours above. However, at times there will be a need to work during the night, work longer hours during the day, and work full weekend shifts, depending on the task being carried out.
- 3.1.90. Should works outside the hours specified above (including night-time working) be required then prior consent would need to be sought from WSCC under Section 61 of the Control of Pollution Act 1974.

CONSTRUCTION COMPOUNDS

- 3.1.91. It is likely that the following three site compounds will be used during the construction of the Scheme – A, B and C (see **Appendix 3.1 – Site Plan** and **Appendix 3.8 – Construction Compounds**).
- 3.1.92. Compound A (the main compound) will be located just south of Barnham Rd on the Fleurie Nursery site. The key benefit of this site is that it already has a dedicated access and egress point from Barnham Road.
- The purpose of this main site compound would be to house the main site offices, welfare, a small stores and car parking facilities only. There would be no large deliveries of materials or plant made to this site compound area.
 - This compound would be secured with perimeter heras fencing panels and a secure gated entrance, with security being present during non-working times.
 - Vehicular access into this site compound would be directly off Barnham Road using the existing nursery access during compound set up. Once the new roundabout is under construction an access will be provided through the works then ultimately along the southern leg of the new Barnham Road roundabout.
 - Suitable temporary signage will be displayed explaining traffic routing into the compound from Barnham Road, and once off Barnham Road where parking and office reception is located. This signage will be continually reviewed and updated throughout the works to match the evolving works and differing traffic management solutions/phases deployed on Barnham Road whilst constructing the new roundabout.
 - Construction vehicles travelling to and from the site compound will be directed away from Barnham village.
 - For large plant and material deliveries a dedicated well-signed works access shall be provided into the site on the northern side of Barnham Road where the proposed new road intersects it. Here a suitably sized on-site reception/stacking area shall be provided where deliveries pull into and are greeted by banksman/gatekeeper who will deal with and direct them along the site. Egress of vehicles will be via the same access.
- 3.1.93. Compound B, located just off Fontwell Avenue.
- The purpose of this satellite compound would be to house a small welfare unit, a small stores and office which would be secured using heras fence panels.
 - This will provide localised parking for site staff, welfare and storage for some small plant and materials.
- 3.1.94. Compound C will be located half-way along the Scheme adjacent to Pond 3, offline from the new carriageway alignment. It is envisaged this compound will be used for materials storage.
- 3.1.95. Each compound will be in-situ for the whole duration of the construction works (as indicated within the programme).

ACCESS TO THE MAIN WORK SITE

- 3.1.96. Management of construction traffic will be through the Construction Traffic Management Plan. Details of which, including access arrangements, monitoring and management of construction traffic is provided in Section 2.5 of **Appendix 3.5 – Outline Construction Environmental Management Plan.**

TEMPORARY CONSTRUCTION LAND

- 3.1.97. **Appendix 3.1 – Site Plans** identifies temporary land use required for construction. The areas shown are required predominantly for temporary storage of materials won during the works (topsoil and engineering fill), but also to allow for construction access and activities such as the demolition of the existing greenhouses in the Fleurie Nursery Site. This land will be returned to its original use following completion of construction. This will be achieved by replacing topsoil previously stripped from the area and stockpiled, seeding and planting where necessary, all achieved prior to the completion of the construction works. These temporary land use areas also include the compound areas. Construction compound C will be planted up as an area for biodiversity net gain. Including native trees, shrubs and wildflowers as shown in **Appendix 3.3 – Landscape Strategy.**
- 3.1.98. Compound A and B locations will ultimately be “handed over” to the Southern Consortium and Barratts Wilson David Homes respectively for development, so final reinstatement of these areas would be agreed with them prior to handover.

TEMPORARY DRAINAGE SOLUTION

- 3.1.99. Ground water levels on site have dictated the vertical alignment such that the majority of the new carriageway will be built on a (slight) embankment. Therefore the majority of the construction works are expected to be “above” ground water levels and are not expected to require excessive temporary drainage solutions.
- 3.1.100. The Contractor will programme the works to minimise excavations during winter in so far as reasonably practicable. However, in the event of requiring to de-water the excavations the Contractor will plan ahead by applying for temporary drainage discharge permits. Silt and other contaminants will be removed to an acceptable level before any discharge, and the Contractor will consult with the local Environment Agency land and water team to establish what levels are acceptable and what monitoring is required. The Contractor will use standard methods, such as silt busters and/or filter bags or socks, to remove silt to achieve the required water quality.
- 3.1.101. Site compound locations have been considered in relation to surface water flooding. For Compound A (the main compound), and Compound B (located just off Fontwell Avenue) ground levels will not be raised, and existing flow routes will be maintained. As such current run-off will not be affected/made any worse. For Compound C, where it is intended for materials to be stock-piled, as a temporary situation a French drain is proposed to allow any excess flows that cannot infiltrate to discharge to the south west side of the new road as land drainage. An overland pipe crossing is also proposed beneath the new embankment which connects into the proposed permanent drainage ditch to the existing Barnham Rife Ditch, which shall maintain the current overland flow paths in the temporary situation not only during temporary storage of materials in compound C but also until the site is developed with the Adjacent Proposed Scheme proposed SUDs (which will manage all drainage within their site).

VEGETATION REMOVAL, WORKS AND RETENTION

3.1.102. As outlined in the Site Clearance Plan (**Appendix 3.1**) the following vegetation will be removed as a result of the Scheme:

- Vegetation on the western end of the scheme for the visibility splay on Fontwell Avenue;
- Trees within the former orchard;
- Hedges on the boundaries of the former orchard;
- Hedge on the edges of the Public Right of Way (PRoW) Footpath 318; and
- Part of the hedgerows on the edges of the track north of the Halo site.

3.1.103. Retained trees and hedgerows are shown in the Landscape Strategy (**Appendix 3.3**).

3.1.104. **Appendix 3.1** shows the planned site clearance.

EARTHWORKS AND SITE LEVELS

3.1.105. **Table 3-4** outlines initial approximate cut and fill volumes based on the difference between the existing ground surface and proposed road surface only. It is assumed that 80% of all cutting material can be re-used within the works, with the remaining requiring disposal off-site. Disposal is likely to be to tip in Bordon, East Hampshire, which is approximately 40 miles northeast of the Site.

3.1.106. It is currently anticipated that an estimated total volume of imported engineering fill material required to facilitate the works will be in the region of 25,000m³ (this does not include road construction capping or Type 1). The earthworks specification prepared at detailed design stage has been developed to provide flexibility in the choice of use of engineering fill material, such that both a class 1 (granular material) and a class 2 (cohesive material) shall be acceptable.

Table 3-4 - Cut/ Fill Balance

Name	Cut Factor	Fill Factor	2d Area (m ²)	Cut (m3)	Fill (m3)	Net (m3)
Ch 0 – Ch 675	1.000	1.000	22000	3000	9850	6850
Ch 675 – Barnham	1.000	1.000	18000	3500	8200	4700
Pond 2				2000		-2000
Pond 3				3500		-3500
Pond 4				3000		-3000

CONSTRUCTION OF BUILDINGS / HARDSTANDING AND INSTALLATION OF PLANT / EQUIPMENT

3.1.107. **Table 3-5** provides an estimate for the plant used throughout the construction of the Scheme.

Table 3-5 - Estimated Plant use

Works	Small Excavator	Large Excavator	Trench Roller	Compact Roller	Wacker Plate	Road saw	Generator	Dozer - D6	Compressor & Breaker	8 Wheeler Lorry	Water Pump 100mm	Small Dumper 9t	Large Dumper ADT
Barnham Rd													
Barnham Compound (Compound A)		X		X			X			X		X	
Barnham Roundabout	X	X	X	X	X	X			X	X	X	X	
Southern Section - to Pond 4	X	X		X				X		X	X	X	X
Fontwell Avenue													
Fontwell Compound (Compound B)		X		X			X			X		X	
Fontwell Roundabout	X	X	X	X	X	X			X	X		X	
Demolition		X						X	X	X		X	
Northern Section - Road	X	X		X				X		X		X	X
Balancing ponds		X		X				X		X	X	X	X
Central Road section (including central roundabout and Compound C)	X	X		X				X		X	X	X	X

CONSTRUCTION WASTE

3.1.108. Specific design measures to avoid and mitigate adverse effects from material resource consumption and site arisings, and the generation and disposal of waste will be adopted, i.e. sustainable sourcing of materials, resource optimisation, maximise the use of pre-fabricated structures and components and minimise the import and export of materials and waste. Given the nature of the Scheme and following the implementation of these measures and other mitigation processes, it is anticipated that the minimal quantity of material will be used and minimal waste will be proposed. As such, a materials and waste chapter has been scoped out of this Environmental Statement.

IMPLEMENTATION OF DESIGN PLANS AND STRATEGIES

3.1.109. **Table 3-6** outlines the design strategies that will be implemented as part of the Scheme.

Table 3-6 - Design Plans and Strategies

Plan/ Strategy	Appendix Number
Green Infrastructure Strategy	Appendix 3.2
Landscape Strategy	Appendix 3.3
Landscape Maintenance and Management Plan	Appendix 10.4
Lighting Assessment (including strategy)	Appendix 10.2
Surface Water Drainage Strategy (attached to the Flood Risk Assessment)	Appendix 11.1

KEY CONSTRUCTION PRACTICES

- 3.1.110. The works on Site would be undertaken in accordance with the UK’s ‘Considerate Constructors Scheme’ to help ensure that contractors carry out their operations in a safe and considerate manner, and actively minimise environmental risks.
- 3.1.111. All construction works would be undertaken with suitable temporary drainage and pollution prevention measures in place, in accordance with the Environment Agency’s Pollution Prevention Guidance Notes.
- 3.1.112. A Construction Environmental Management Plan (CEMP) will detail the environmental controls / protection measures and safety procedures that would be adopted during construction. An outline CEMP is included as **Appendix 3.4**.

DEMOLITION/DECOMMISSIONING PROPOSALS

- 3.1.113. One residential property and adjacent weatherboard structure within the Site boundary is proposed to be demolished as part of this Scheme. This property is identified in **Appendix 3.1** on the Site Clearance Plan. A short section of stone wall alongside the existing road will require removal. This will be subject to photographic recording prior to demolition as detailed in **Appendix 13.3 – Archaeological Mitigation Strategy**.
- 3.1.114. Details on demolition and Site preparation can be set out in a Construction Method Statement (CMS) and incorporated within the Contractor’s CEMP, which can be secured with a planning condition.
- 3.1.115. Based on the type of scheme and the likely operational timeline, decommissioning has not been considered as part of this EIA. It is anticipated that the Scheme will remain operational for at least 60 years.

REFERENCES

- Reference 3.1: Wyg, 2019. Barnham Road, Eastergate Environmental Impact Assessment, Scoping Report BDW, November 2019
- Reference 3.2: WSP, 2019, A29 Realignment -Transport Business Case
- Reference 3.3: IEMA Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation. [Online] accessed via

[https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20\(1\).pdf](https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20(1).pdf), 29 November 2018

- Reference 3.4: BS 5228-1:2009+A1:2014, Code of practice for noise and vibration control on construction and open sites. Noise
- Reference 3.5: West Sussex LLFA Policy for the Management of Surface Water [online]
accessed via
https://www.westsussex.gov.uk/media/12230/ws_llfa_policy_for_management_of_surface_water.pdf, November 2018



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