

A417 Missing Link  
TR010056

6.2 Environmental Statement  
Chapter 16 Summary

Planning Act 2008

APFP Regulation 5(2)(a)  
Infrastructure Planning (Applications: Prescribed Forms and  
Procedure) Regulations 2009

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Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning  
(Applications: Prescribed Forms  
and Procedure) Regulations 2009**

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Development Consent Order 202[x]

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**6.2 Environmental Statement  
Chapter 16 Summary**

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## 16 Summary

### 16.1 Summary of effects

- 16.1.1 The previous technical chapters of this Environmental Statement (ES), ES Chapters 5 to 15 (Document Reference 6.2) present the assessments for the individual Environmental Impact Assessment (EIA) topics. Each assessment provides a conclusion of the likely significant effects (with the implementation of mitigation measures i.e. residual effects) that are considered to represent significant adverse or beneficial effects. Table 16-1 provides a high-level summary of these effects.
- 16.1.2 A summary of the assessment set out in this ES can be found in the ES Non-Technical Summary (Document Reference 6.1).

**Table 16-1 Summary of assessment of likely significant environmental effects**

| Factor               | Assessment of likely significant environmental effects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|                      | Construction stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Operation stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Air quality          | <ul style="list-style-type: none"> <li>No likely significant effects</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>No likely significant effects</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Cultural heritage    | <ul style="list-style-type: none"> <li>Permanent adverse significant effect on Shab Hill Barn Grade II Listed Building resulting from the scheme altering the setting of the resource.</li> <li>Permanent adverse significant effect on Emma’s Grove scheduled monument resulting from the scheme altering the setting of the resource.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>Permanent adverse significant effect on Shab Hill Barn Grade II Listed Building due to increased traffic noise compared to the existing situation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Landscape and visual | <ul style="list-style-type: none"> <li>Temporary adverse significant effects on landscape character types (LCT) that would be directly affected by the scheme, including: LCT 2 Escarpment; LCT 7 High Wold; and LCT 8 High Wold Valleys due to presence of construction activities, personnel and compounds, large volume of earthwork operations and disturbed ground over a wide area, loss of vegetation and changes to field pattern and land cover, and reduced levels of tranquillity.</li> <li>Temporary adverse significant effects experienced by residents of Nettleton Bottom, Shab Hill, Stockwell, visitors to Crickley Hill Country Park, Barrow Wake, Emma’s Grove, Great Witcombe Roman Villa, Leckhampton Hill and users of the Public Rights of Way (PRoW) network, including the Cotswold Way National Trail, Gloucestershire Way long distance footpath and local footpaths, bridleways and byways due to visual change as a result of the presence of construction activities, personnel and compounds, large volume of earthwork operations and disturbed ground over a wide area, loss of vegetation and changes to field pattern and land cover, and increased visual disturbance.</li> </ul> | <ul style="list-style-type: none"> <li>Permanent adverse significant effects on LCT that would be directly affected by the scheme, including: LCT 2 Escarpment (year 1 and year 15); LCT 7 High Wold (year 1 and year 15); and LCT 8 High wold Valleys (year 1) due to the presence of new road infrastructure (additional carriageway lanes, overbridges and underpasses), cuttings, embankments and drainage basins, and changes to field pattern, field boundaries and land cover with new area of calcareous grassland and woodland.</li> <li>Combination of permanent adverse and neutral effects experienced by residents of Shab Hill (adverse at year 1), Stockwell (adverse at year 1), visitors to Crickley Hill Country Park (adverse at year 1 and year 15), Barrow Wake (adverse at year 1 and neutral at year 15), Great Witcombe Roman Villa (adverse at year 1) and users of the PRoW network, including the Cotswold Way National Trail (adverse at year 1 and year 15), Gloucestershire Way long distance footpath (adverse at year 1) and local footpaths, bridleway and byways (adverse at year 1) due to visual change as a result of the presence of new road infrastructure (additional carriageway lanes, overbridges and underpasses), cuttings, embankments and drainage basins, and changes to field pattern and land cover with new area of calcareous grassland and woodland.</li> </ul> |

| Factor       | Assessment of likely significant environmental effects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|              | Construction stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Operation stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Biodiversity | <ul style="list-style-type: none"> <li>• Adverse significant effect on the Barrow Wake unit of the Crickley Hill and Barrow Wake Site of Special Scientific Interest (SSSI) due to losses of 1,400m<sup>2</sup> (0.14ha) calcareous grassland and wooded habitat.</li> <li>• Beneficial significant effect on the Barrow Wake unit of the Crickley Hill and Barrow Wake SSSI due to the conversion of hardstanding of the Existing A417 within the SSSI to calcareous grassland.</li> <li>• Adverse significant effect on veteran trees due to the loss of three veteran trees.</li> <li>• Adverse significant effect on semi-natural broadleaved woodland priority habitat and scattered trees through loss of 17.21 ha of woodland along verges and embankments and loss and severance of woodland at Emma's Grove and Shab Hill.</li> <li>• Beneficial significant effect on semi-natural broadleaved woodland priority habitat due to planting approximately 24.65ha of new woodland resulting in a gain of 7.44 ha of woodland once established.</li> <li>• Adverse significant effect on important and species-rich hedgerow priority habitat through habitat loss of approximately 3.5km of hedgerow.</li> <li>• Beneficial significant effect on species-rich hedgerow habitat due to planting approximately 9km of new native species-rich hedgerow resulting in a gain of 5.5km of hedgerow habitat once established.</li> <li>• Adverse significant effect on species-rich neutral grassland priority habitat due to habitat loss.</li> <li>• Beneficial significant effect on calcareous grassland priority habitat across the scheme due to approximately 75ha of habitat creation, a gain of approximately 72.5ha of calcareous grassland habitat.</li> </ul> | <ul style="list-style-type: none"> <li>• Adverse significant effect on Ullen Wood Local Wildlife Site and ancient woodland due to increase in nitrogen deposition from vehicle emissions.</li> <li>• Adverse significant effect on a veteran beech tree due to increase in nitrogen deposition from vehicle emissions.</li> <li>• Adverse significant effect on barn owl through increased risk of mortality and injury through traffic collisions due to severance of habitat.</li> </ul> |

| Factor                    | Assessment of likely significant environmental effects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | Construction stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Operation stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | <ul style="list-style-type: none"> <li>Adverse significant effect on a petrifying spring with tufa formation through loss of Annex 1 habitat at the tributary of Norman's Brook.</li> <li>Beneficial significant effect on petrifying spring with tufa formation through restoration of other existing Annex 1 habitat.</li> <li>Adverse significant effect on bat assemblages, which include Annex II species, due to temporary impacts of loss and fragmentation of foraging and commuting features.</li> <li>Adverse significant effect on barn owl through loss and fragmentation of foraging habitat.</li> </ul>                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Geology and soils         | <ul style="list-style-type: none"> <li>Permanent adverse significant effect on Agricultural Land Classification (ALC) Grade 3a best and most versatile agricultural land.</li> <li>Permanent adverse significant effect on ALC Grade 3b agricultural land.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>No likely significant effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Material assets and waste | <ul style="list-style-type: none"> <li>No likely significant effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>No likely significant effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Noise and vibration       | <p><b>Residential:</b></p> <ul style="list-style-type: none"> <li>Temporary adverse significant noise effects from construction activities for 45 residential properties:                             <ul style="list-style-type: none"> <li>R1 Holly Brae (6).</li> <li>R2 Crickley Court (17).</li> <li>R3 Fernbank (16).</li> <li>R5 Crickley Ridge.</li> <li>R7 Air Balloon Cottages (2).</li> <li>R13 Rushwood Kennels.</li> <li>R14 Shab Hill Farm (2).</li> </ul> </li> </ul> <p><b>Non-residential:</b></p> <ul style="list-style-type: none"> <li>Temporary adverse significant noise effects from construction activities at non-residential locations:</li> </ul> | <p><b>Residential:</b></p> <ul style="list-style-type: none"> <li>Direct permanent beneficial significant noise effects have been identified at 19 residential properties currently exceeding the significant observed adverse effect level (SOAEL).</li> <li>Direct permanent beneficial significant noise effects have been identified at 31 residential properties between the lowest observed adverse effect level (LOAEL) and SOAEL.</li> <li>Indirect permanent beneficial significant noise effects have been identified at 15 residential properties exceeding the SOAEL.</li> <li>Indirect permanent beneficial significant noise effects have been identified at six residential properties between the LOAEL and SOAEL.</li> </ul> |

| Factor                      | Assessment of likely significant environmental effects                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|                             | Construction stage                                                                                                                                                                                                                                                                                                                                                                       | Operation stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                             | <ul style="list-style-type: none"> <li>- R1 St Peter's Church.</li> <li>- R4 Crickley Hill Visitor Centre.</li> <li>- R12 Birdlip Radio Station.</li> <li>- R13 Rushwood Kennels and Cattery.</li> <li>- PRoW within approximately 400 metres of major excavation works.</li> </ul>                                                                                                      | <ul style="list-style-type: none"> <li>• Direct permanent adverse significant noise effects have been identified at 21 residential properties between the LOAEL and SOAEL.</li> <li>• Indirect permanent beneficial significant noise effects have been identified 600m or more beyond new or altered road links at 83 residential properties between the LOAEL and SOAEL.</li> <li>• Indirect permanent adverse significant noise effects have been identified 600m or more beyond new or altered road links at 17 residential properties exceeding the SOAEL.</li> </ul> <p><b>Non-residential:</b></p> <ul style="list-style-type: none"> <li>• Direct permanent beneficial significant effects at several non-residential receptors in Birdlip, including the Primary School and the Village Hall.</li> <li>• Direct permanent beneficial significant effects on part of the Cotswold Way National Trail, along the re-purposed section of the A417 running between Emma's Grove and Barrow Wake viewpoint.</li> <li>• Direct permanent significant adverse effects on part of the Gloucestershire Way long distance footpath between the Air Balloon roundabout and Coberley to the east.</li> <li>• Direct permanent significant adverse effects on footpath links running for approximately one kilometre to the east from Stockwell.</li> </ul> |
| Population and human health | <ul style="list-style-type: none"> <li>• Permanent adverse significant effects on two businesses (Air Balloon Public House and Crickley Hill Tractors) and three residential properties on Crickley Hill (Woodside House, Pinewood and Crickley Ridge).</li> <li>• Temporary adverse significant effects at National Star College and on users of Crickley Hill Country Park.</li> </ul> | <ul style="list-style-type: none"> <li>• Permanent beneficial significant effect on the Cotswold Way National Trail.</li> <li>• Permanent beneficial significant effect on walking, cycling and horse riding / PRoW.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



| Factor                                  | Assessment of likely significant environmental effects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|                                         | Construction stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Operation stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                         | <ul style="list-style-type: none"> <li>• Permanent adverse significant effect on one Agricultural Holding, Shab Hill Farm.</li> <li>• All health outcomes are neutral across both Ermin and Badgeworth wards for all health determinants: <ul style="list-style-type: none"> <li>– Community, recreational and educational facilities.</li> <li>– Green/open space.</li> <li>– Healthcare facilities.</li> <li>– Transport and connectivity</li> <li>– Safety of the existing affected road network</li> <li>– Ambient air quality.</li> <li>– Ambient noise environment.</li> <li>– Sources and pathways of potential pollution.</li> <li>– Landscape amenity</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Positive health outcomes across both Ermin and Badgeworth wards for the following health determinants: <ul style="list-style-type: none"> <li>– Community, recreational and educational facilities.</li> <li>– Green/open space.</li> <li>– Healthcare facilities.</li> <li>– Transport and connectivity.</li> </ul> </li> <li>• Neutral health outcomes across both Ermin and Badgeworth wards for the following health determinants: <ul style="list-style-type: none"> <li>– Safety of the existing affected road network.</li> <li>– Ambient air quality.</li> <li>– Ambient noise environment.</li> <li>– Sources and pathways of potential pollution.</li> <li>– Landscape amenity.</li> </ul> </li> </ul> |
| Road drainage and the water environment | <ul style="list-style-type: none"> <li>• Temporary adverse significant effect on hydromorphology due to the realignment of the tributary of Norman's Brook during the construction phase.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• No likely significant effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Climate                                 | <ul style="list-style-type: none"> <li>• No likely significant effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• No likely significant effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Cumulative                              | <ul style="list-style-type: none"> <li>• No likely significant effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• No likely significant effects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |