



# Carlisle Southern Link Road

## Environmental Report Non-Technical Summary

June 2018



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# Purpose of the Non-Technical Summary

This document is the Non-Technical Summary (NTS) of the DMRB Stage 2 Environmental Report for the Carlisle Southern Link Road (CSLR) (*the 'Scheme'*).

Its purpose is to summarise the main findings of the Environmental Impact Assessment (EIA) process, in non-technical language. It enables anyone with an interest in the Scheme, including the general public, to understand how proposals could affect them and the environment in which they live.

This NTS provides an overview of the findings reported in the Environmental Report. It does not, and is not intended to, convey all of the information relating to the Scheme and its potential effects on the environment. For detailed information pertaining to any part of this NTS, please refer to the Environmental Report.

## This document covers:

- A description of the Scheme, including details of the site location, why the project is needed and what is being proposed.
- A summary of the different options considered at this stage of the route development and assessment process.
- An overview of the EIA process, its objectives and the scope of assessment.
- A summary of the residual effects identified through the EIA process and reported under topic headings covering different aspects of the environment.
- A summary of the preferred route, as identified through the EIA.

A digital copy of this NTS can be obtained via the CSLR website

Digital and hard copies of the Environmental Report can be obtained upon request from Cumbria County Council via the following methods:



CSLR website  
[www.cumbria.gov.uk/cslr](http://www.cumbria.gov.uk/cslr)



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**0300 303 2992 (select option 3)**

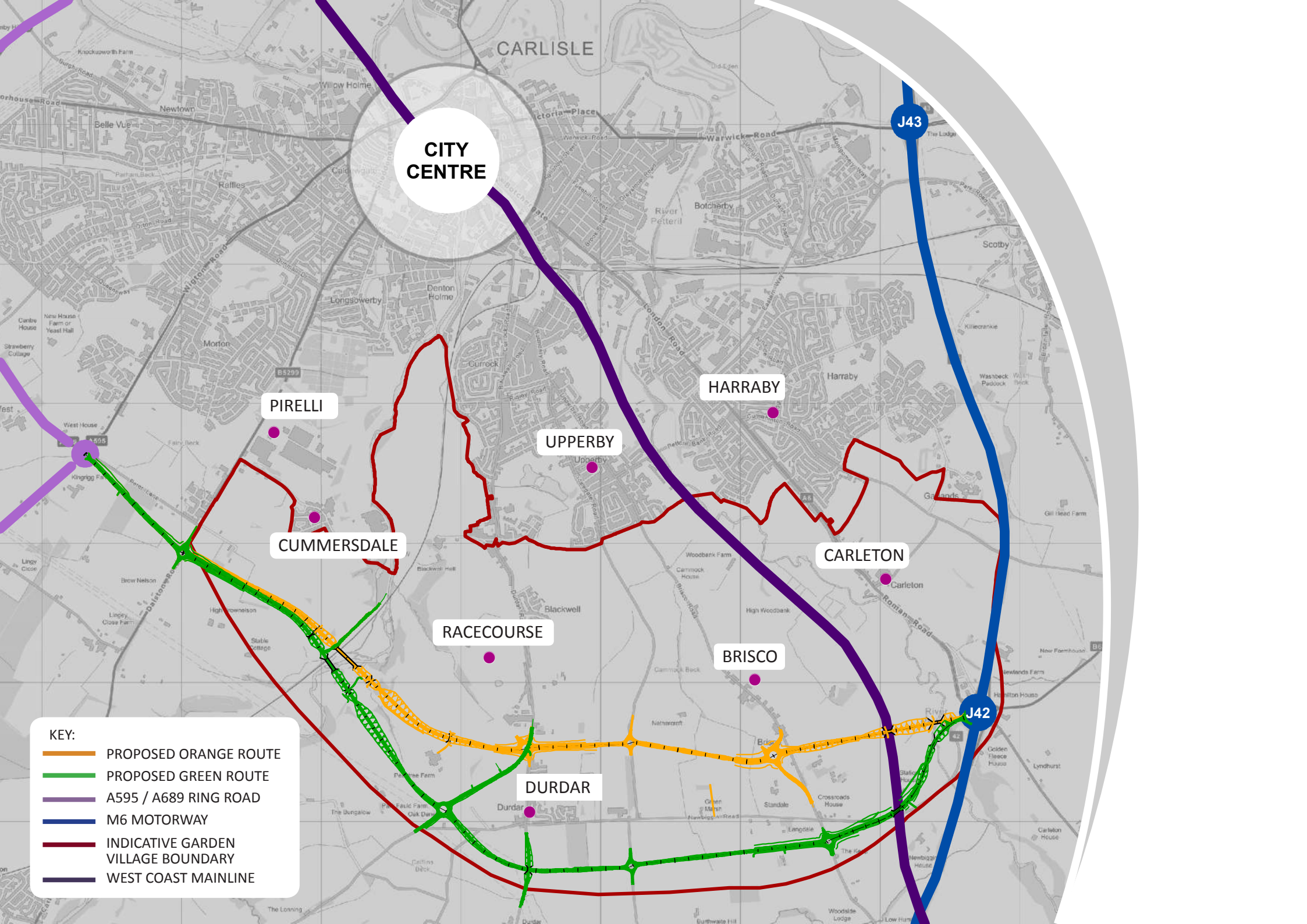


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CITY CENTRE

PIRELLI

CUMMERSDALE

RACECOURSE

UPPERBY

HARRABY

BRISCO

DURDAR

CARLETON

J43

J42

**KEY:**

- PROPOSED ORANGE ROUTE
- PROPOSED GREEN ROUTE
- A595 / A689 RING ROAD
- M6 MOTORWAY
- INDICATIVE GARDEN VILLAGE BOUNDARY
- WEST COAST MAINLINE



# The Carlisle Southern Link Road

Cumbria County Council is progressing two route option designs for a Carlisle Southern Link Road (*the 'Scheme'*). The road, if constructed, would provide a high quality link to the south of Carlisle, connecting the A595 at Peter Lane to Junction 42 of the M6.

Route options pass the villages of Cummersdale, Durdar and Brisco and sit to the south of Carlisle Racecourse.

For both options, crossing points would need to be provided for two railways: the West Coast Main Line and the Cumbrian Coast Line; and two rivers, the River Petteril and River Caldew.

## The Benefits

Initial work shows that a Carlisle Southern Link Road would bring significant benefits. In particular, it would directly support the delivery of the St Cuthbert's Garden Village; a broad area of growth identified to the south of Carlisle with aspirations for up to 10,000 homes, together with community, employment, retail, educational and greenspace infrastructure.

A new link road would also reduce congestion in the city centre, improving travel within and around Carlisle, and enhancing links to west Cumbria.

These benefits would help underpin the future growth of Carlisle and increase opportunities for residents and businesses.

## The Need

There are strong arguments in favour of the development of a Carlisle Southern Link Road

### **Supporting the development of St Cuthbert's Garden Village**

Development of the scale proposed for St Cuthbert's Garden Village would require improved transport infrastructure. Initial assessments demonstrate that a Carlisle Southern Link Road would provide the increase in road capacity critical to unlocking and accelerating large scale housing growth. The route would also support opportunities for walking, cycling and public transport within the wider development which are important aspects of the Garden Villages vision.

### **Improving access to west Cumbria and the north east**

A good quality link between the east and west is especially important given the scale of the strategic energy and employment proposals planned along the west coast of Cumbria. A Carlisle Southern Link Road would significantly improve access to and from west Cumbria for businesses and employees and would facilitate wider connections to the north east.

### **Improving resilience and local journeys**

There are a number of issues with the southern approaches to the city; for example, London Road (A6) faces congestion at busy times of the day. Future growth of the city, including the Garden Village development could make congestion worse and increase journey times unless improvements to infrastructure to the south of the city are made.

In addition, the city only has two crossings of the River Caldew. Any disruption to these routes can create severe problems. By creating a new southern link and a third crossing over the River Caldew, the network





# Options for the Carlisle Southern Link

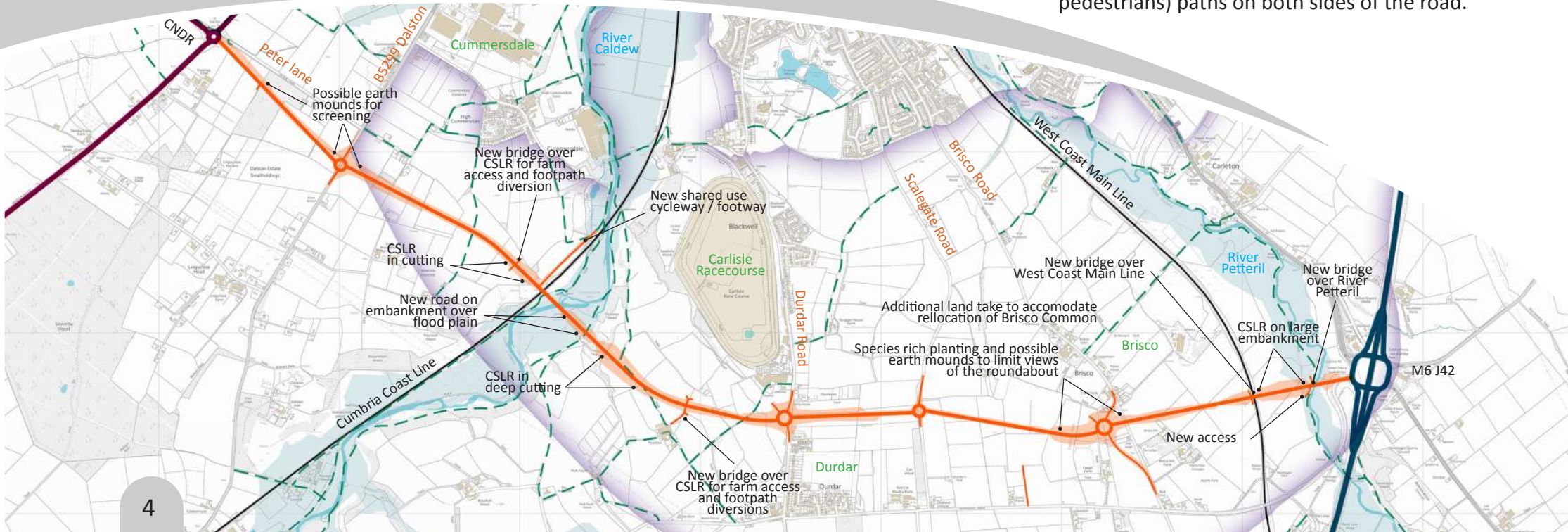
## The 'Orange' Route

The Orange Route is 7.1km (4.4miles) in length and provides a link from the A595 (Newby West) to Junction 42 of the M6 .

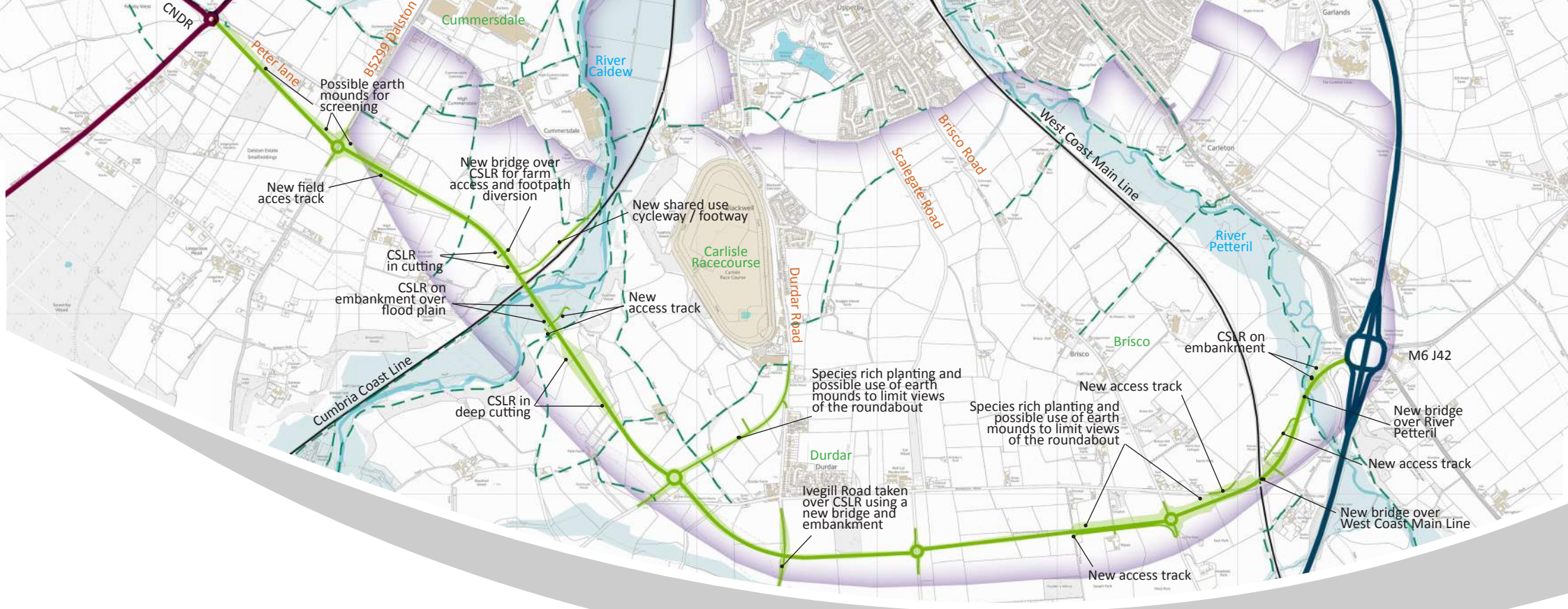
This option provides the most direct route west to east and could facilitate future development on land both to the north and to the south of its alignment.

### Key features:

- Single carriageway, 7.1km (4.4miles) in length with 0.4km (0.2miles) of additional linking roads.
- Two accommodation bridges for farm access and diverted Public Rights of Way (PRoW).
- One underpass for diverted PRoW.
- Four roundabouts providing access to existing roads namely, Dalston Road, Durdar Road, Scalegate Road and Brisco Road.
- Segregated multiuser (cyclists and pedestrians) paths on both sides of the road.







## The 'Green' Route

The Green Route is 8.0km (5.0miles) in length and provides a link from the A595 (Newby West) to Junction 42 of the M6.

This option is the most southerly of those shortlisted and could facilitate future development on land to the north of its alignment.

### Key features:

- Single carriageway, 8.0km (5.0miles) in length with 1.2km (0.7miles) of additional linking roads.
- Four single span bridges crossing the River Caldew, River Petteril, West Coast Main Line and Cumbrian Coast Line.
- One overbridge for Ivegill Road
- One accommodation bridge for farm access and diverted Public Rights of Way (PRoW).
- One underpass for diverted PRoW.
- Four roundabouts providing access to existing roads namely, Dalston Road, C1014 Dalston to Durdar, Scalegate Road and Brisco Road.
- Segregated multiuser (cyclists and pedestrians) path on the city side of the road.



# The Environmental Impact Assessment

The Environmental Impact Assessment (EIA) is a technical process carried out in accordance with relevant legislation and government guidance.

At this stage, the EIA is a comparative study of potential impacts on the environment in relation to separate route options. It is undertaken to identify the advantages, disadvantages and constraints associated with each option which in turn is used to inform the selection of a favourable option to take forward for further assessment.

The main objectives of the EIA process are to:

- ensure that consideration and reporting of the likely significant effects is undertaken so that planning and design decisions can be fully informed;

- ensure that the relative importance of the likely impacts and their effects are properly evaluated;
- aid the identification of measures that could reduce the magnitude of potentially negative effects and the scope for such mitigation; and,
- to provide opportunities for stakeholders, including the public and statutory environmental bodies, to comment on proposals.

The process of EIA is iterative alongside scheme design. As the environmental effects of the developing design are recognised, the design can be adjusted to mitigate against these effects. Similarly, as the design evolves the scope of the assessment may change.

The technical findings of the EIA are presented in the form of an Environmental Report, consisting of three volumes:

- **Volume 1 Environmental Report:** contains the introduction, detailed assessments for individual topic chapters and a summary of key findings.

- **Volume 2 Plans:** contains a series of plans illustrating the location of environmental constraints, sensitive features and mitigation proposals.
- **Volume 3 Appendices:** comprising all supporting documents.

As the Environmental Report is a lengthy technical document, a Non-Technical Summary (NTS) (*this document*) has been produced to describe the findings of the EIA process in a manner that is both appealing to read and easily understood by the general public.

Findings are summarised in this document under separate topic chapters, as scoped into the assessment. These topics are:

- Air Quality
- Cultural Heritage
- Nature Conservation
- Landscape Character
- Visual Impact
- Effects on Development Land
- Effects on Agricultural Soils
- Noise and Vibration
- Outdoor Access and Recreation
- Vehicle Travellers
- Water Environment
- Geology and Soils



Where potential impacts and their effects have been identified, the EIA makes an assessment of the significance of these effects on the environment. The significance of an effect is typically assigned to one of five categories (very large, large, moderate, slight or neutral).

Whilst the process of assigning significance into one of these categories may vary between topic chapters, by placing all identified issues on the same scale, the decision making process can be informed appropriately by being comparable across all topics.

In general the greater the value (or sensitivity) of an environmental feature, and the greater the magnitude (or extent) of the impact, then the more significant the effect on the environment will be. Effects can be adverse (negative) and beneficial (positive) in nature. They can be both temporary or permanent.

Where potentially significant adverse environmental effects have been identified, appropriate mitigation has been selected following a hierarchy of: avoidance, reduction, remediation and compensation.

Significance category	Typical descriptors of effect
<b>Very Large</b>	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
<b>Large</b>	These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
<b>Moderate</b>	These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
<b>Slight</b>	These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.
<b>Neutral</b>	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

The two routes under consideration for a Carlisle Southern Link Road have been compared through a consideration of the number and severity of significant effects identified.

Under each topic, a preferred route option has been chosen based on the results of the comparison.



# Air Quality

The assessment considers potential effects on local air quality as a result of changes to vehicle emissions and construction activities.

It focuses on a number of existing sensitive environmental receptors within proximity to the Scheme (such as residential properties, sites of ecological importance) and predicts the change to local air quality with and without the Scheme in place for both the anticipated opening year and a future year.

Key indicators of air quality assessed include likely concentrations of the air pollutant Nitrogen Dioxide (NO<sub>2</sub>) and atmospheric particulate matter (PM<sub>10</sub>).

The predicted concentrations of these air pollutants have been compared against National Air Quality Objectives (NAQOs) to determine the extent to which the effects identified are significant.

## Mitigation

No specific mitigation has been identified at this stage other than typical best practice applied to construction activities.

Effects identified are for the most part beneficial.

## Environmental Effects

### The Orange Route

- During construction 101 properties (within 200m of the route) are at risk of exposure to poor air quality.
- During operation, of the nine receptors assessed, four (located on Dalston Road and Newbiggin Road) are likely to observe **moderate beneficial** effects in relation to NO<sub>2</sub> and one (on Newbiggin Road) is likely to observe **moderate beneficial** effects in relation to PM<sub>10</sub> concentrations.
- One receptor (on Durdar Road) is expected to experience **moderate adverse** effects in relation to NO<sub>2</sub> concentrations.
- All predicted concentrations of considered pollutants in all assessment scenarios are well below the relevant National Air Quality Objectives.

### The Green Route

- During construction 147 properties (within 200m of the route) are at risk of exposure to poor air quality.
- During operation, of the nine receptors assessed, three (located on Dalston Road and Newbiggin Road) are likely to observe

**moderate beneficial** effects in relation to predicted NO<sub>2</sub> concentrations and one (on Newbiggin Road) is likely to observe **moderate beneficial** effects in relation to PM<sub>10</sub> concentrations.

- All predicted concentrations of considered pollutants in all assessment scenarios are well below the relevant National Air Quality Objectives.

## Comparison of Options

- More properties are at risk of experiencing an impact to air quality during construction of the proposed scheme under the Green Route when compared to the Orange Route.
- The Orange Route will result in the most **moderate beneficial** impacts during operation, however, it may also result in one **moderate adverse** impact. The concentrations of NO<sub>2</sub> at the receptor experiencing an adverse impact are likely to remain well below the NAQO and will be comparable to concentrations already experienced at other receptors.

**The preferred option in terms of air quality is the Orange Route.**



# Cultural Heritage

A cultural heritage asset is an individual archaeological site or historic building, a monument or group of monuments, or a landscape area which together with its setting can be considered as a unit for assessment.

## \* Mitigation

- Locate the roundabout further away from the village of Brisco. Increase the depth of the cutting (Orange Route).
- Use earth mounds and planting to screen the junction.
- Undertake surveys to identify unknown archaeological remains ahead of construction.

## \* Environmental Effects

### The Orange Route

- A direct impact on a known archaeological remain with severance of a 'possible former Green Lane' to the east of Brisco. Effects are of **moderate adverse** significance.
- Impacts on the setting of listed buildings in Brisco, particularly Brisco Hill (Grade II). The historical setting of the building would be severed (albeit the building is isolated from the village) and it would cause some limited

visual impact. Effects are likely to be of **moderate adverse** significance.

- There is potential for unknown archaeological remains to be destroyed or disturbed during construction. A precautionary assessment of the significance of these effects is **large/very large adverse**, although impacts will be reduced by conducting further surveys.

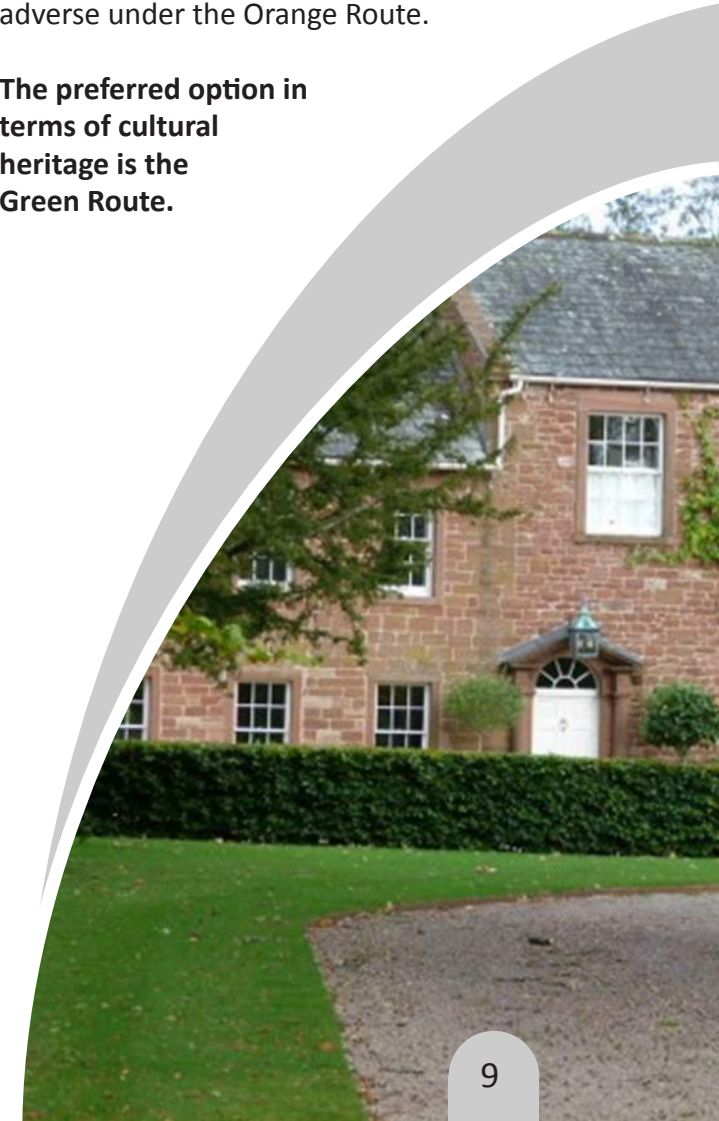
### The Green Route

- This option is unlikely to have any effects of more than slight significance on known archaeological remains.
- Minor acoustic and visual disturbance through construction and operation activities (i.e. increases to traffic) has the potential to impact on the setting of several listed structures at Newbiggin Hall (Grade II\* listed). With mitigation effects are assessed as **slight adverse**.
- There is potential for unknown archaeological remains to be destroyed or disturbed during construction works. A precautionary assessment of the significance of these effects is **large to very large adverse**, although impacts will be reduced by conducting further surveys.

## \* Comparison of Options

Effects on both archaeological remains and historic buildings are anticipated to be more adverse under the Orange Route.

**The preferred option in terms of cultural heritage is the Green Route.**







# Nature Conservation

The assessment for Nature Conservation considers impacts on sites and species recognised for their ecological value.

It considers both 'designated' sites afforded protection under law or local authority planning controls and 'non designated' sites which may not be protected but nevertheless have some wildlife value.

## Mitigation

- For each mature tree removed three new trees will be replanted. Hedgerows will be planted alongside the road where visibility allows.
- Appropriate fencing and/or species crossing points to be provided to reduce impacts of severance or road mortality.
- Bird and bat boxes to be installed to compensate for short term habitat loss.
- Use of Sustainable Urban Drainage Systems (SUDs) to prevent pollution of watercourses. Ponds will be planted to allow new habitat to form.
- Further species specific surveys are required to inform additional mitigation and compensation measures.

## Environmental Effects

### The Orange Route

- Loss of habitat and disruption to the structure and function of habitats protected by law, namely: the River Eden and Tributaries Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). Effects are of **very large adverse** significance.
- Loss of terrestrial habitat for amphibians, possible mortality and population isolation with effects of **slight/moderate adverse** significance.
- Loss of roost sites and foraging habitats for bats with effects of **moderate/large adverse** significance.
- Loss of habitat used by Red Squirrel, possible traffic mortality and population isolation. Effects are of **slight/moderate adverse** significance.
- Possible disturbance of otter with effects of **moderate/large adverse** significance.

### The Green Route

At this stage, the effects identified for the Orange Route also apply to the Green Route.

## Comparison of Options

- Both options will involve the removal of vegetation used by wildlife.
- Whilst the Green Route will require the most land take, hence more habitat will be lost, its alignment is more in keeping with the existing alignment of Newbiggin Road and arrangement of habitat types. Fragmentation and the resultant effects on the behaviour of species is therefore anticipated to be less for the Green Route.

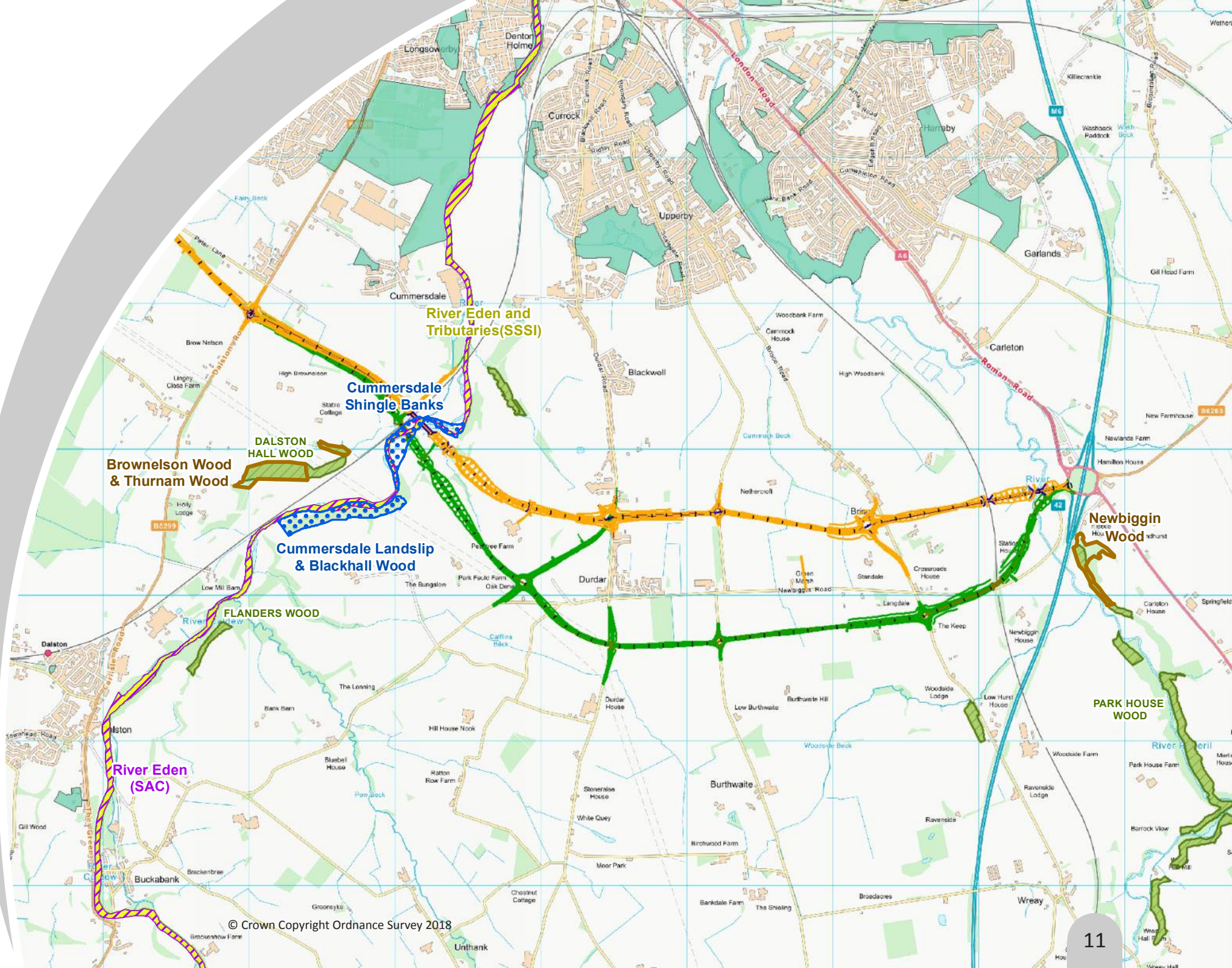
**The preferred option in terms of nature conservation is the Green Route.**

### Designated Sites

#### Key:

-  Special Areas of Conservation (SAC)
-  Sites of Special Scientific Interest (SSSI)
-  Ancient Woodlands \*
-  County Wildlife Site
-  Site of Invertebrate Significance
-  Amenity Open Space (Local Plan)

*\*An area marked as Ancient Woodland during the previous public consultation has since been removed from Natural England's Ancient Woodland Inventory.*







# Landscape Character

The landscape is an important natural resource with its character widely appreciated for the aesthetic beauty and contribution to regional identity and sense of place.

Any impacts of the scheme on features in a landscape, for instance landforms, vegetation or settlement patterns, may affect the overall character of that landscape.

## Mitigation

- Species rich hedgerow planting to replace those lost and restore field patterns.
- Use of hard and soft materials reflecting local character, to allow engineered structures to recede into the landscape.

- Native broadleaf mature tree planting to replace lost vegetation and reduce the urban influence of the road.
- Bridges designed to be locally distinct, reinforcing a sense of place.

## Environmental Effects

### The Orange Route

- During operation, of the six Landscape Character Areas (LCAs) assessed, four will have significant adverse effects in the winter of the opening year. Effects will be **large adverse** for the Caldew Valley, Brisco and Petteril Valley and **moderate adverse** for Cummersdale. The effects relate to a change in character to a more urban feel, the dissection and fragmentation of field patterns and the introduction of prominent engineered features into the landscape.
- Once mitigation planting has established, in the summer 15 years after opening, significant adverse effects are anticipated in three of the LCAs assessed. Effects for the Caldew Valley, Brisco and Petteril Valley will reduce to **moderate adverse**.

### The Green Route

- During operation, of the six LCAs assessed, three will have significant adverse effects in the winter of the opening year. Effects will be **large adverse** for the Caldew Valley and Petteril Valley and **moderate adverse** for Cummersdale. The effects relate to a change in character to a more urban feel, the dissection and fragmentation of field patterns and the introduction of large engineered features into the landscape.
- Once mitigation planting has established, significant adverse effects are anticipated in two of the LCAs assessed. Effects for the Caldew Valley and Petteril Valley will reduce to **moderate adverse**.

## Comparison of Options


- The effects on landscape character will be less significant for the Green Route.

**The preferred option in terms of landscape character is the Green Route.**





Landscape Character Area 5 –  
River Petteril Valley

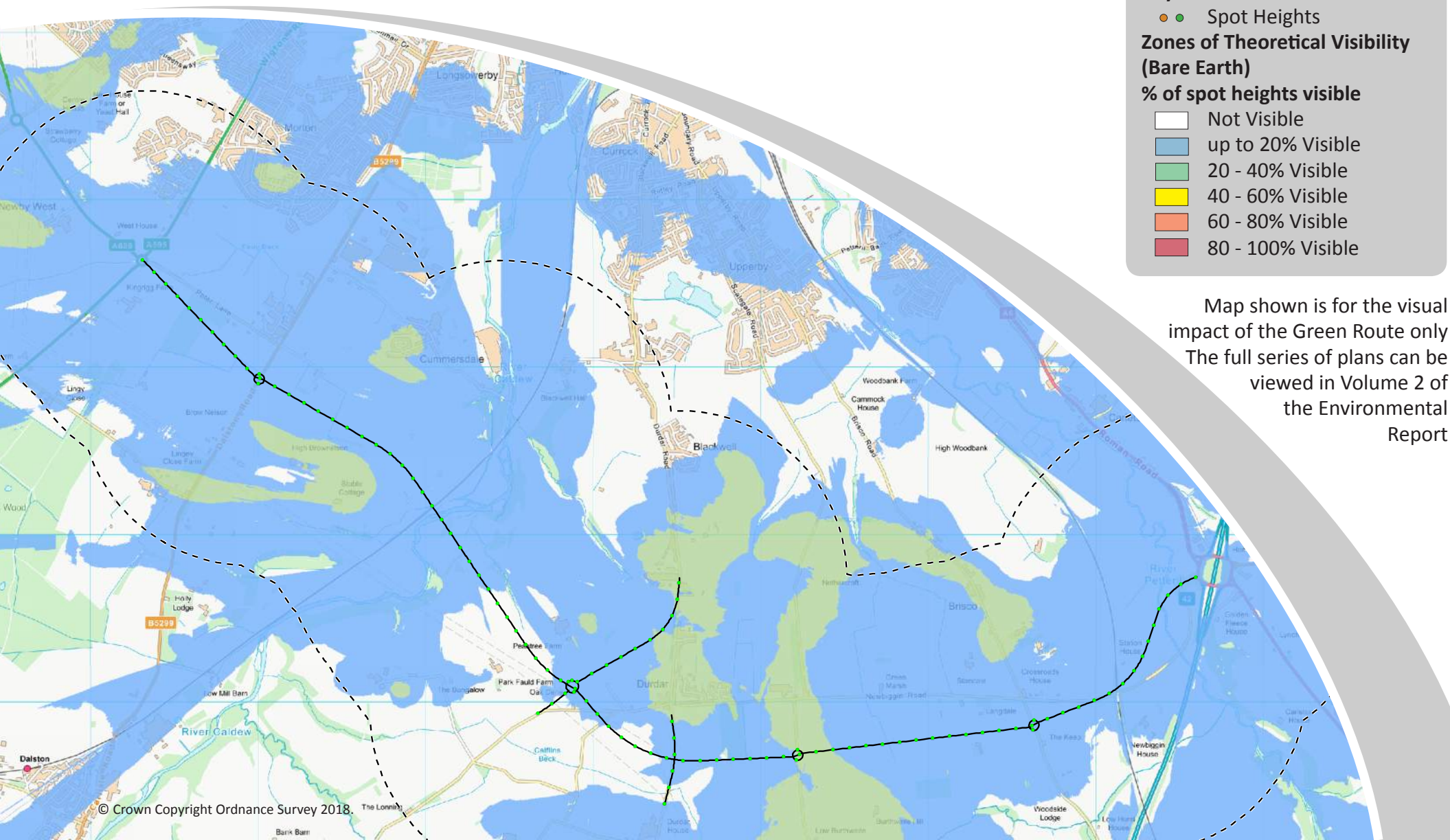


Landscape Character Area 3 –  
Durdar and Blackwell



Landscape Character Area 2 –  
River Caldwel Valley





**Key:**

- Spot Heights

**Zones of Theoretical Visibility (Bare Earth)**

**% of spot heights visible**

- Not Visible
- up to 20% Visible
- 20 - 40% Visible
- 40 - 60% Visible
- 60 - 80% Visible
- 80 - 100% Visible

Map shown is for the visual impact of the Green Route only  
 The full series of plans can be viewed in Volume 2 of the Environmental Report



# Visual Impact

The assessment of visual impact considers how views of the landscape from sensitive locations, such as residential properties and outdoor locations with public access, will be changed as a result of the proposed Scheme.

## Mitigation

- Native broadleaf mature tree planting and hedgerow planting to replace lost vegetation and reduce the prominence of engineered structures in the view.
- Use of false cuttings to screen the road from view.
- Bridges that are designed to recede into the landscape through a slender design and use of locally sourced materials.

## Environmental Effects

### The Orange Route

- During operation, of the seven View Points (VP) assessed, six will have significant adverse effects in the winter of the opening year. Effects will be **large adverse** for five of these and **moderate adverse** for the remaining. The effects relate to a change in visual amenity through the loss of mature vegetation and scarring of landscape with cuttings, the dissection of field patterns, the dominance of engineered structures in the view and the obstruction of long range views through the introduction of embankments and structures.
- Once mitigation planting has established, in the summer 15 years after opening significant adverse effects are anticipated at five viewpoints. Effects on the Cumbria Way are likely to remain **large adverse**. At the remaining viewpoints, Durdar North, Brisco Common, River Petteril and Carleton, effects will reduce to **moderate adverse**.

### The Green Route

- During operation, of the seven View Points (VP) assessed, six will have significant

adverse effects in the winter of the opening year. Effects will be **large adverse** for two of these and **moderate adverse** for the remaining. The effects relate to a change in visual amenity through the loss of mature vegetation and scarring of landscape with cuttings, the dissection of field patterns, the dominance of engineered structures in the view and the obstruction of long range views through the introduction of embankments and structures.

- Once mitigation planting has established, in the summer 15 years after opening, significant adverse effects are anticipated at two viewpoints. Effects on the Cumbria Way and River Petteril are likely to remain **large adverse** and are associated with the dominance of the proposed bridge structures and embankments within the view.

## Comparison of Options

- The visual impact will be less significant for the Green Route.

**The preferred option in terms of visual impact is the Green Route.**





# Outdoor Access and Recreation

The assessment of outdoor access and recreation considers activities made by people as pedestrians (including ramblers), cyclists, equestrians and water users (such as anglers and kayakers) as well as users undertaking different forms of non-competitive recreation in an area, such as playing in a park. Jointly these are referred to as 'non-motorised users' (NMUs). It considers impacts on both the ability to make use of a site or route and the ease with which access can be taken.

## Mitigation

- Alternative open space provided to compensate for the loss of land at Brisco Common (Orange Route only).
- Appropriate pedestrian/cyclist diversions in place for any Public Right of Way (PRoW) or cycle routes closed during the construction phase.
- A shared use pedestrian/cyclist path provided on one (Green Route) or both (Orange Route) sides of the route.
- Shared use path link to national trails running through the Caldew Valley.
- Provision of overbridges and underpasses for PRoW severed by the Scheme.

- Vehicle access to a car park used by walkers at Wreay Woods retained.

## Environmental Effects

### The Orange Route

- A new bridge over the River Caldew will have a **very large adverse** effect on key national walking and cycling trails running through the valley (Cumbria Way, National Cycle Network, Coast to Coast) during construction. Mitigation through temporary diversions is unlikely to fully negate the temporary severance of the NMU routes.
- Once in operation a shared use path linking the existing path with the new highway alignment would lead to a **moderate to large beneficial** effect due to the creation of new links across the network, the potential to reduce journey times and enhanced opportunities for local recreation.
- Under this option, Brisco Common would be lost in its current form due to land take for a new roundabout and adjoining spur road. Alternative space would need to be provided to accommodate displaced NMU's. During the construction phase suitable open space provision within

proximity is unlikely to be available and therefore effects are considered to be **moderate to large adverse**. During the operation phase however, there is an opportunity for an enhanced open space provision (subject to land purchase). Effects could be of **slight beneficial** significance.

- Three PRoW would be severed, although the connectivity for two will be restored during operation through the provision of overbridges, underpasses and diversions. One footpath will be permanently severed and a section closed. Effects are considered to be **moderate to large adverse**.
- **Moderate to large adverse** impacts to on-road cycling during the operation phase are considered significant under this option. The introduction of new roundabouts at intersections with minor roads will reduce the amenity value of these routes for cyclists.

### The Green Route

- **Very large adverse** effects on key national walking and cycling trails running through the River Caldew Valley (Cumbria Way, National Cycle Network, Coast to Coast) are anticipated under this option for the construction phase.







## Effects on Agricultural Soil

The assessment of effects on agricultural soils considers the value of land (in terms of Agricultural Land Classification (ALC)), the extent of land take and the likely effects of severance on individual farm units. It also considers land covered by Environmental Stewardship Agreements.

### Mitigation

- Route alignment should avoid 'Best and Most Versatile' (BMV) agricultural land where practical.
- Alternative access to be provided for agricultural land severed by the route, where possible. This could include new field entrances/gates, access tracks, underpasses and overbridges.
- Field boundaries to be reinstated with stock proof fencing, hedging and walls.

### Environmental Effects

#### The Orange Route

- This option is estimated to have a total agricultural land take of 42.2ha, of which 8.3ha can be classified as 'Best and Most Versatile' (BMV). This loss is not considered to be significant.

- The permanent loss of land managed under environmental stewardship schemes equates to 6.2ha. Two landowners are affected.
- Five landowners are affected by severance. The total amount of land likely to be severed to a degree that is rendered unviable and hence lost from agricultural use is 5.3ha.

#### The Green Route

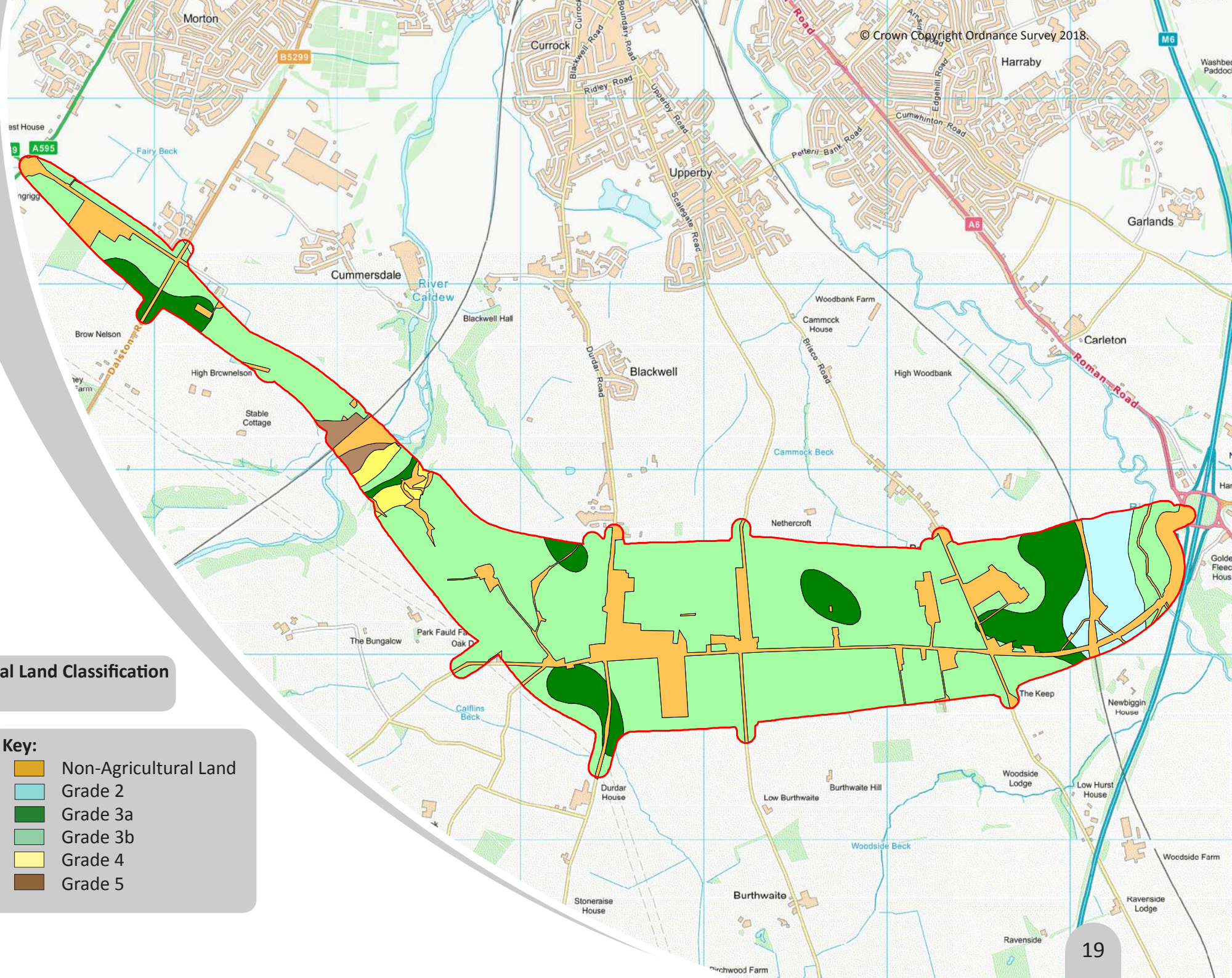
- The Green Route is estimated to have a total agricultural land take of 43.8ha, of which 8.2ha can be classified as BMV. This loss is not considered to be significant.
- The permanent loss of land managed under environmental stewardship schemes equates to 8.8ha. Three landowners are affected.
- Seven landowners are affected by severance. The total amount of land likely to be severed to a degree that is rendered unviable and hence lost from agricultural use is 6.7ha.

### Comparison of Options

- The Green Route is anticipated to impact marginally less on the loss of BMV land compared to the Orange Route although, overall it requires the most agricultural land take. This loss is not significant under either option.
- The Orange Route has the least severance impact, affecting the fewest number of landowners and resulting in the least amount of land lost due to severance by a considerable margin. Whilst the Orange Route is thought to have the greatest impact on general accessibility, this is unquantifiable and therefore considered to be a broad based judgement. As such it is not considered within the choice of preferred route.
- The Orange Route is also anticipated to have the least impact on land that is under environmental stewardship agreements, affecting both fewer landowners and less land than the Green Route.

**The preferred option in terms of effects on agricultural soils is the Orange Route.**





### Agricultural Land Classification (ALC)

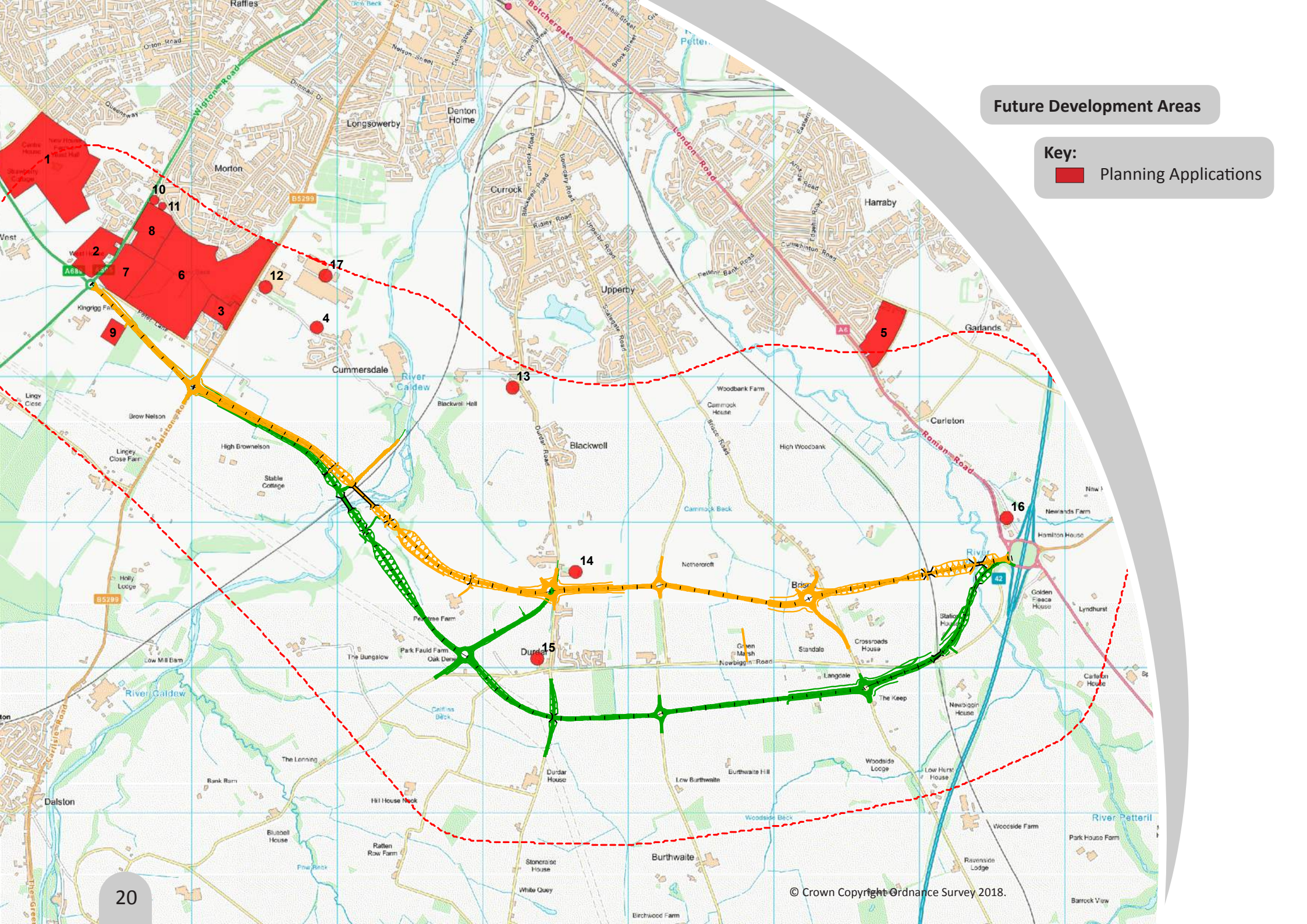
**Key:**

- Non-Agricultural Land
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5



### Future Development Areas

**Key:**  
■ Planning Applications







## Effects on Development Land

Land allocated for future development, independent of the Scheme, could be affected by the proposals as a result of direct land take, severance and accessibility. There could also be changes to the amenity value and commercial attractiveness of a site following construction of the road.

### Mitigation

No specific mitigation has been identified at this stage.

### Environmental Effects

#### The Orange Route

- 18 potential development sites have been identified within proximity to the Scheme. Excluding St Cuthbert's Garden Village, none are expected to experience direct impacts in terms of severance or land take. Changes to amenity, associated with the proximity of the road are likely in some cases whereas others will experience improved accessibility and commercial attractiveness.
- In terms of St Cuthbert's Garden Village, this option will result in land take along the majority of its length within the indicative

boundary. As this option passes through the centre of the Garden Village area; it impacts significantly on the design, use and layout options available. The route could form a barrier between either side. The effect would be to sever the eventual urban form, reducing flexibility of design, liveability and developing an overall sense of place.

#### The Green Route

- As with the Orange Route, no direct impacts are expected on any development sites other than the Garden Village.
- In terms of St Cuthbert's Garden Village, land take will be more than the alternative. The option follows the southern boundary of the identified site for the majority of its length and therefore impacts of severance are not anticipated. In sections however, the route diverges away from the development area, limiting the options for placing land uses that would benefit from good connectivity, such as employment.

### Comparison of Options

- The Green Route will result in more land take from the St Cuthbert's Garden Village

area in comparison to the Orange Route. However, the issues of severance associated with the latter will be difficult to mitigate. The impacts of severance are considered to greatly outweigh the benefits from a lower overall land take.

**The preferred option in terms of effects on development land is the Green Route.**







# Noise and Vibration

The assessment focusses on the operational noise and vibration effects resulting from traffic using the scheme. Using traffic data it models likely changes to noise levels in the short and long term and compares these levels against a scenario where the Scheme is not in place.

## Mitigation

- Noise barriers in the form of earth mounds placed where noise levels are anticipated to increase significantly.
- Provision of double glazing (noise insulation) for qualifying properties under the Noise Insulation Regulations.

## Environmental Effects

### The Orange Route

- This option would cause an increase in noise levels for receptors located at the southern end of Brisco, and introduce a new noise source for the north-eastern façades of the receptors at Durdar, for the southern façades of the receptors at Blackwell and for isolated properties around the River Caldw. This could cause **slight to moderate adverse** effects at some properties.

- The area of Meadow Lane and Foxglove Close at the junction of Peter Lane and Dalston Road would show decreases in noise for the receptors in the first row of properties by Peter Lane. Properties on the north side of Newbiggin Road and southern façades of Durdar will also see reductions in noise.
- Overall the significant adverse effects would outnumber the significant beneficial effects.

### The Green Route

- This option would cause an increase of noise levels on Durdar Road (south of Durdar) and isolated properties around the River Caldw. Effects would be of **slight to moderate adverse** significance.
- This option would however move the majority of traffic further away from the existing properties by Newbiggin Road which would show decreases in noise levels (especially at Durdar). Properties in Durdar and at Meadow Lane and Foxglove Close would also have resultant decreases in noise.

- Overall the significant beneficial effects would outnumber the significant adverse effects.










## Comparison of Options

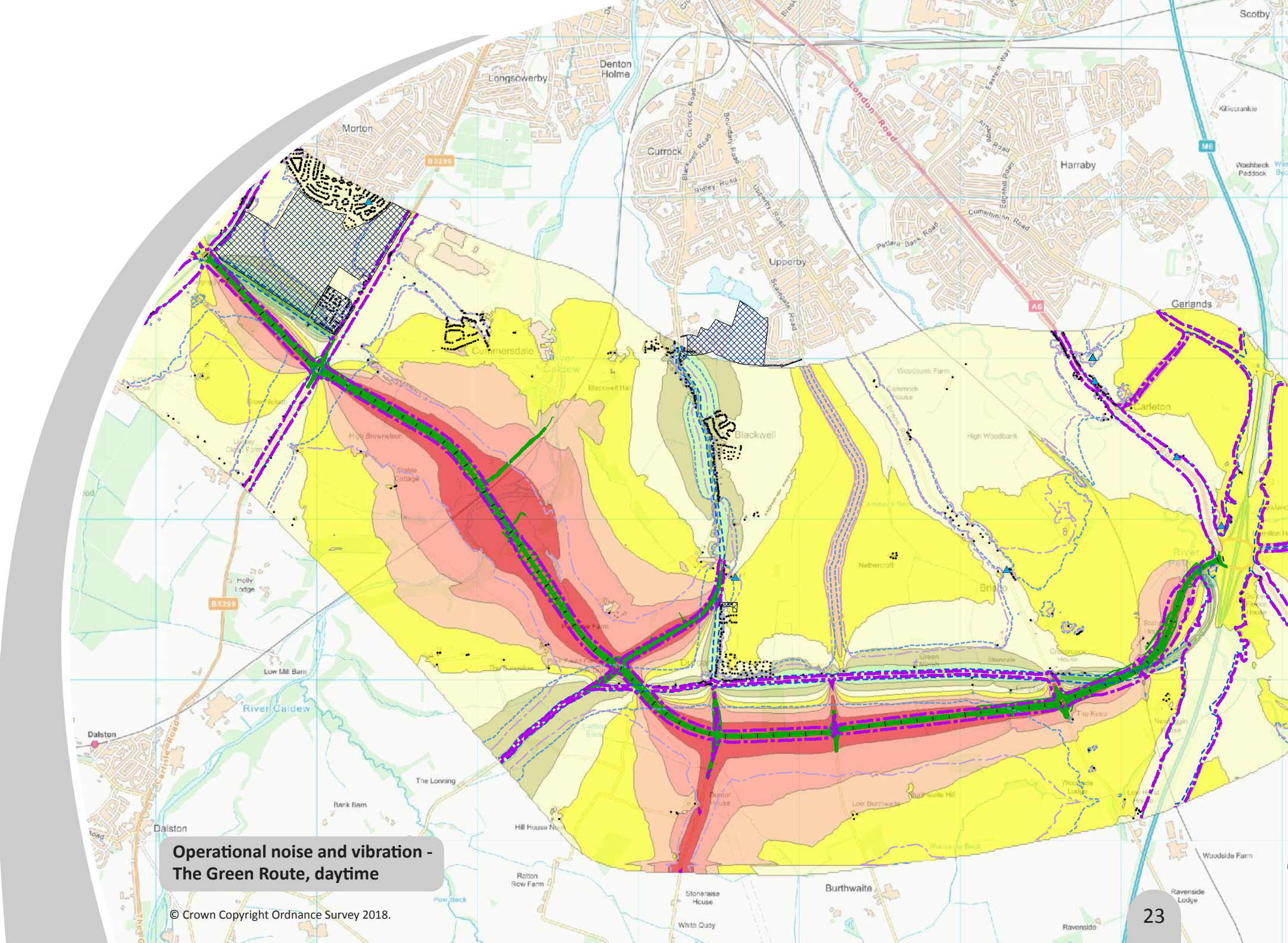
- The Green Route will result in more beneficial effects in terms of a reduction in traffic noise when compared to the Orange Route.

**The preferred option in terms of noise and vibration is the Green Route.**

Note: The plan opposite shows only one scenario of noise and vibration impact. The full series of plans can be viewed in Volume 2 of the Environmental Report.

### Key:

	Major increase
	Moderate increase
	Minor increase
	Negligible increase
	Negligible change
	Negligible decrease
	Minor decrease
	Moderate decrease
	Major decrease



**Operational noise and vibration -  
The Green Route, daytime**

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# Water Environment

The water environment comprises aspects of water quality, flood risk, geomorphology and land drainage.

## Mitigation

- Ponds will be created at regular intervals along the length of the route to capture and filter any surface water run off from the carriageway.
- Culverts will be designed at locations where the route crosses an existing (small) water-course, to minimise the risk from flooding.
- New bridge structures over the River Caldew and River Petteril will be designed to minimise the impact on flood risk and will be resilient to future climate change.
- Best practice will be applied, particularly during construction to ensure impacts on water quality are minimised.

## Environmental Effects

### The Orange Route

- This option crosses two 'main' rivers and five 'ordinary' water courses. With mitigation in place, impacts on the flood risk posed by the River Caldew, River Petteril and various minor watercourses is

considered to be of **neutral** significance.

- This option directly crosses a known area of surface water flood risk to the east of Brisco.
- The risk of releasing sediment and contaminants into water course is likely to be higher during the construction phase. This could result in poor water quality and have a negative impact on freshwater fish and invertebrates. With mitigation in place, possible negative effects are considered unlikely and are assessed to be of **neutral** significance.
- In cuttings there is a risk that water run off from the road could penetrate into groundwater. This could have a negative impact on water quality. With mitigation in place, negative effects are considered to be of **neutral** significance.
- The geomorphology of both the River Caldew and River Petteril are likely to be adversely affected by the introduction of bridges. These structures could potentially cause changes to the amount of material carried by the rivers and the speed and depth of the flow will be altered. The rivers will also become constrained by the

proposed single span bridge, with their natural movement across the valley from side to side prevented. Effects will be more significant on the River Caldew as this river is particularly active in its movement. With mitigation, effects on the River Caldew will be of **moderate adverse** significance.

### The Green Route

- This option crosses two 'main' rivers and five 'ordinary' water courses. With mitigation in place, impacts on the flood risk posed by the River Caldew, River Petteril and various minor watercourses is considered to be of **neutral** significance.
- This option is within proximity to a small area of known surface water flood risk associated with the upper reaches of the Calfins Beck.
- Potential impacts to water quality during the operation and construction phases are similar to those noted in the Orange Route. Effects are considered to be of **neutral** significance.
- Effects on groundwater are considered to be of **neutral** significance under this option.

- As the crossing points over the River Caldw and River Petteril are similar to those under the Orange Route, effects on geomorphology will be similar to those listed above. Residual effects on the River Caldw are considered to be of **moderate adverse** significance.

### Comparison of Options

- The likely significant effects will be similar under both route options. As the Orange Route directly crosses an area of known surface water flood risk, the Green Route is considered to be more favourable.

**The preferred option in terms of water environment is the Green Route.**







# Vehicle Travellers

## Driver Views

The construction of a new road may open up new views of the landscape to vehicle travellers. In areas of high quality scenic landscapes, route selection may enable a greater appreciation of distinctive landscape features. In contrast, a route passing through a heavily industrialised area for instance, may open up unattractive views.

The assessment of vehicle travellers considers both the views from the new road and the surrounding road network.

## Mitigation

No specific mitigation has been identified at this stage.

## Environmental Effects

### The Orange Route

- This option will introduce new views for vehicle travellers, predominantly open and intermittent in nature. Some views will be restricted, particularly where the route descends into deep cuttings.
- During operation, of the eight sections of existing highway assessed, views from three will experience significant adverse effects in the winter of the first year of operation. All are considered to be of **moderate adverse** significance.
- Once mitigation planting has established, in the summer 15 years after opening, significant adverse effects are anticipated on views from three sections of existing highway. All are considered to remain at **moderate adverse** significance.

### The Green Route

- This option will introduce new views for vehicle travellers, predominantly open and intermittent in nature.
- During operation, of the eight sections of existing highway infrastructure assessed, views from three will experience significant

adverse effects in the winter of the first year of operation. All are considered to be of **moderate adverse** significance.

- Once mitigation planting has established, in the summer 15 years after opening, significant adverse effects are anticipated on views from one section of existing highway infrastructure. This is considered to remain at **moderate adverse** significance.

## Comparison of Options

- The effects on driver views will be less significant for the Green Route.

**The preferred option in terms of vehicle travellers (driver views) is the Green Route.**

## Driver Stress

The amount of stress a vehicle traveller experiences when using the road network can be influenced by various factors including; road layout and geometry, the surface characteristics, the frequency and type of junctions and the speed and flow of traffic using the route. Taken together, these factors can induce in drivers feelings of discomfort, annoyance, frustration or fear. Ultimately these feelings can detract from the value and safety of a journey.

The assessment uses predicted traffic flows and looks at how driver stress on existing road links used to travel in a general east-west direction could be influenced by the Scheme. The two links being:

- Link A – Rural Route: using Newbiggin Road, the B5299 via Dalston and Peter Lane.
- Link B – City Centre Route: using London Road, Botchergate, Hardwicke Circus, Georgian Way and Wigton Road.

### Mitigation

No specific mitigation has been identified at this stage.

### Environmental Effects

#### The Orange Route

- Most roads on Link A are likely to witness an over 10% decrease in traffic flows.
- Driver stress is expected to be 'low' on most links and will be improved under this option.
- Most roads on Link B are likely to witness a 10% decrease in peak traffic flows. Driver stress is likely to remain in the 'high or moderate' stress banding, although A6 London Road will reduce to 'low' under this option.

#### The Green Route

- All roads on Link A are likely to witness an over 10% decrease in traffic. Driver Stress is expected to be 'low' on all links.
- Most roads on Link B are likely to witness a 10% decrease in peak traffic flows. Driver stress is likely to remain in the 'high' stress banding but will reduce to 'low' on the A595 Wigton Road and A6 London Road.

### Comparison of Options

- Both options will have a beneficial effect on driver stress lowering traffic flows on surrounding roads and through the city centre.
- The Green Route has the most benefits.

**The preferred option in terms of vehicle travellers (driver stress) is the Green Route.**







# Geology and Soils

The assessment of geology and soils considers the impact of the Scheme on the soil and geological and hydrogeological conditions. This includes factors such as the character of existing soils, the risks of soil contamination, perched groundwater and ground gas.

## \* Mitigation

- Best practice will be applied, particularly during construction, to ensure impacts on hydrogeology are minimised. This will include ensuring that the highway drainage does not discharge to groundwater in an uncontrolled manner.
- Further geotechnical investigations and monitoring are required to inform additional mitigation measures.

## \* Environmental Effects

### The Orange Route

- Effects on topsoil, solid geology, superficial soils and (terrestrial) geomorphology are not considered significant under this option.
- In terms of hydrogeology, the installation of highway drains below existing groundwater levels introduces a potential risk of pollutants (i.e. fuel oils) entering the

principle aquifer if not adequately controlled.

- The use of deep cuttings extending below the principle aquifer bedrock could potentially result in a localised reduction to the groundwater level. Further geotechnical investigations are required to fully understand this risk; however with mitigation in place effects are considered to be of **moderate adverse** significance.
- There is an opportunity to enhance the geological environment through exposure of sandstone of the St Bees formation in cuttings. This would create an aesthetically pleasing feature.

### The Green Route

- Effects on topsoil, solid geology, superficial soils and (terrestrial) geomorphology are not considered significant under this option.
- In terms of hydrogeology, effects are the same as noted above. The alignment of this option falls within proximity to a former landfill site at Durdar Farm, a potential leachate source. Again, further investigation is required to fully understand the risks posed however with mitigation in

place (cut off drains or impermeable walls) the significance of effects is considered to be **moderate adverse**.

- Possible exposure of sandstone of the St Bees formation in cuttings could create an aesthetically pleasing feature.

## \* Comparison of Options

- Due to the potential effects associated with the former landfill site (affecting the Green Route only) and a lack of detailed understanding of the risks posed at this stage, the preferred option in terms of geology and soils is the Orange Route.

**The preferred option in terms of geology and soils is the Orange Route.**





# Materials

The assessment of materials focusses on the potential environmental effects associated with the transport of materials to the scheme and subsequent use during construction. It also includes the production, movement, transport, processing and disposal of waste from the Scheme.

## Mitigation

No specific mitigation has been identified at this stage.

## Environmental Effects

### The Orange Route

- The Orange Route is 7.1km (4.4miles) in length with two major structures, one significant structure, and four roundabouts, plus 0.5km (0.3miles) of side road diversions.
- The approximate bulk cut fill balance is 57,000 m<sup>3</sup> of import required.
- Potential effects on human receptors relate to the dispersal of dust and toxins from hazardous materials, primarily during the construction phase. With mitigation in place effects are not considered to be significant.

### The Green Route

- The Green Route is 8.0km (5.0miles) in length with five major structures and four roundabouts, plus 1.2km (0.7 miles) of side road diversions.
- The approximate bulk cut fill balance is 100,000 m<sup>3</sup> of surplus material.
- As above, any effects relating to the dispersal of dust and toxins from hazardous materials are not considered to be of significant.

## Comparison of Options

- As the Orange Route is shorter in length in comparison to the Green Route, the amount of materials required will be proportionally less.

**The preferred option in terms of materials is the Orange Route.**

## What Happens Next

The findings of the EIA, alongside other technical reports, have been used by Cumbria County Council to inform the selection of a preferred route. If funding is secured, the preferred route will undergo further design development and assessment and a planning application will be prepared. The next stage of EIA will involve:

- Conducting more detailed environmental surveys.
- Continuing consultation with Statutory agencies, interest organisations and the public.
- Reviewing the EIA and proposed mitigation as details of the route are developed.
- Preparing an 'Environmental Statement'.



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