

Appendix 13.2 Rock Cuts Transport Scotland

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1. Introduction

1.1. The Proposed Scheme

1.1.1. The A9 Dualling Dalraddy to Slochd DMRB Stage 3 engineering design assessed in the Environmental Impact Assessment (EIA) and reported in this ES is hereafter referred to as the Proposed Scheme and is shown in Figure 5.2 in Volume 3.

1.2. Rock Cut Design

- 1.2.1. It is recognised that geology 'plays an important part in the landscape of the A9' and that along the route 'there are several instances of specific local landforms [forming] a key part of the landscape and creating the sense of local distinctiveness' ⁱ. It is considered that rock cuttings can both contribute to and detract from the local landscape character, and can be highly visible to road users. Consequently, it is important to implement a sympathetic design and construction process in order to achieve attractive rock cuttings that become positive features along the route.
- 1.2.2. This technical appendix sets out an overview of the process followed and consequent outcomes in relation to the design of the rock cuts required as part of the Proposed Scheme.
- 1.2.3. The primary aim of this process was to ensure that the design solution at the proposed areas of rock cut were responsive to the specific landscape context within which they are located, with respect to the principles outlined within Transport Scotland's Fitting Landscapesⁱⁱ document and the Special Landscape Qualities of the Cairngorms National Parkⁱⁱⁱ (refer to Appendix 13.3 and 13.4).
- 1.2.4. To ensure that the approach taken was compliant with the landscape and visual objectives for the area, landscape and visual constraints and opportunities were considered in relation to the geotechnical methods shown in Figure 1.1 in order to arrive at the preferred design principle from several fundamentally contrasting approaches.
- 1.2.5. Development of the landscape and visual aspects of the specific rock cut locations was undertaken in order to maximise the benefits of a place-responsive design as outlined in Fitting Landscapesⁱⁱ (refer to Figure 1.1: Overview of the principles considered for each proposed rock cut).
- 1.2.6. This approach has adopted the principles of iterative design, as supported by DMRB Interim Advice Note (IAN) 135/10^{iv}, Guidelines for Landscape and Visual Impact Assessment (GLVIA3)^v and Fitting Landscapesⁱⁱ. All three documents were used to both inform and guide the design and assessment process.
- 1.2.7. IAN 135/10 states that '*Mitigation should be addressed as an intrinsic part of the assessment process, amending the design wherever possible to avoid or reduce landscape and/or visual impacts as part of an iterative process'*.
- 1.2.8. It is stated within GLVIA3 that '*EIA itself can be an important design tool. It is now usually an iterative process, the stages of which feed into the... design of the project. The iterative design and assessment process has great strength because it links the analysis of environmental issues with steps to improve the... design of a particular scheme'.*

- 1.2.9. The basis for this exercise is outlined within Fitting Landscapesⁱⁱ, which claims that 'delivering project outcomes requires landscape architects to assist the design team in preparing integrated solutions'. Furthermore, it supports 'bespoke and locally appropriate solutions' and states that 'local characteristics and features are primary assets that should be used to inform the design and development... Appreciation of local elements, features and characteristics and their integration into the transport landscape should have a high priority in design'.
- 1.2.10. A summary of all planning policy considered in relation to the landscape can be found within Chapter 19 (Policies and Plans).



Figure 1.1: Overview of Principles Considered for each Proposed Rock Cut

2. Approach and Methods

- 2.1.1. The alignment of the Proposed Scheme and the design of the associated rock cuts has been developed through an iterative design process involving engineering, environmental and landscape specialists in order to reduce landscape, visual and other environmental impacts, integrate the road into the surrounding landscape and provide a pleasant experience for travellers.
- 2.1.2. Perceptual and experiential characteristics were considered alongside the more physical and technical aspects of design. This included consideration given to the contribution made by the rock cuts and their surroundings to the narrative of the wider route.
- 2.1.3. This exercise was informed by both field surveys and desk study, including a review of the Cairngorms National Park Landscape Character Assessment^{vi}, discussed in more detail in Chapter 13 (Landscape), and The Special Qualities of the Cairngorms National Parkⁱⁱⁱ, discussed in more detail in Appendix 13.4 (Special Qualities of the Cairngorms National Park).

2.2. Limitations

- 2.2.1. A preliminary Ground investigation (GI) was undertaken in early 2017. Traditional investigative techniques such as borehole and trial pits were supplemented by field mapping of existing rock faces and analysis of high resolution LiDAR data for Slochd by engineering geologists. Boreholes and trial pits were scheduled in order to gain a general appreciation of ground conditions across the Proposed Scheme. At the time of writing, a detailed GI is underway. This will provide a greater understanding of ground conditions at Slochd and will give increased confidence in the design assumptions that have been made. The rock engineering design has been progressed on the basis of the preliminary GI findings and will be refined once the detailed GI results are available.
- 2.2.2. It is recognised that there is a degree of uncertainty as to the nature of discontinuities and the exact form and stability of new rock exposures until excavation starts. Consequently, the focus of this process was to establish principles and objectives for each rock cut which are intended to guide the design evolution during construction.
- 2.2.3. Only rock faces in excess of 3m high were considered as part of this process. It is recognised that smaller areas of exposed rock exist along the A9 and new exposures may be required as part of the Proposed Scheme. These can contribute to character and will be carefully considered once detailed GI is available.

3. Rock Cut Locations: Landscape & Visual Baseline

3.1. Slochd

3.1.1. Slochd is an area situated on the northern edge of the Cairngorms National Park and at the northernmost extents of the Proposed Scheme, as illustrated by Figure 3.1. It is a landscape character area within the wider 'Badenoch and Strathspey' area as defined by the Cairngorms National Park^{vi}.



Figure 3.1: Map showing location of Slochd

- 3.1.2. The character of the area is defined by 'northern hill slopes covered with heather moorland' and a 'deep, steep sided gorge... which has been widened to accommodate the A9, as well as earlier roads and the railway' ^{vi}.
- 3.1.3. It is noted that, for users of the A9, 'the drama of travelling from the north through the narrow Pass and then emerging through the trees onto an expanse of open moor, with panoramic views to the south, creates a definitive sense of arrival to the Park' ^{vi}.
- 3.1.4. As illustrated by Photographs 3.1 and 3.2, exposed rock is a characteristic feature at Slochd. It is frequently visible from the A9 in the form of large rock cuttings or smaller areas of exposed rock within steep vegetated slopes. For southbound travellers entering the national park, the iconic geometry of the rock plug between the A9 and the Highland Main Line (HML) railway is a key feature. Further south, the 'Soldier's Head' is an undesignated natural feature of the weathered rock face of notable local interest. Both are features specifically associated with the Slochd area.
- 3.1.5. It is considered that Slochd is a highly prominent location on the A9 route and that design proposals here must respond to the unique character of the landscape.

3.1.6. There are several physical constraints at Slochd including the HML railway, steep topography adjacent to both sides of the A9, National Cycle Network Route (NCN) 7 and several minor watercourses culverted under the A9.



Photograph 3.1: Photo showing character of natural rock slopes at Slochd



Photograph 3.2: Photo showing character of engineered slopes at Slochd

- 3.1.7. Three rock cuts are required in the area of Slochd as part of the Proposed Scheme; these have been identified as Slochd Summit, Slochd Mor and Slochd Beag. There are illustrated by Figure 3.2 and described further below.
- 3.1.8. The wider landscape objectives for these rock cuts is to ensure that they enhance the drama of the gateway into the national park and are appropriate within the rocky, moorland character of the surrounding landscape.



Figure 3.2: Map showing the location of rock cuts required at Slochd

Slochd Summit

- 3.1.9. As illustrated by Figure 3.2, Slochd Summit is the northernmost rock cut required as part of the Proposed Scheme. It is situated to the north of the entrance to the national park and experienced in conjunction with the rock plug between the A9 and the HML railway.
- 3.1.10. The existing rock face is approximately 200m long and has a height of 30m. As illustrated by Photograph 3.4, remedial works comprising installation of rockfall protection mesh, dowels, rockbolts and possible cable strapping have been undertaken at this location because of the risk to the A9 of rock falls. Due to the close proximity between the A9 and the rock face, the mesh treatment is visually prominent and detracts from the attractive forms associated with the rock face, giving it an 'over-engineered' appearance. However, the vertical and horizontal scale of the rock cut, and the contribution it makes to the drama at Slochd, is not substantially diminished by the mesh and it remains a contributing factor to traveller experience at this location.



Photograph 3.3: Photo showing character of Slochd Summit rock face prior to installation of rockfall protection mesh (Source: British Geological Society)

- 3.1.11. Photograph 3.3 shows the rock face before it the installation of rockfall protection mesh. It illustrates the natural qualities of the rock at Slochd Summit; veins, folds, faults and fractures are all features of visual interest displayed within the rock that would be exposed by the removal of the mesh.
- 3.1.12. As illustrated by Photograph 3.5, Slochd Summit is a highly prominent location within the wider landscape of Slochd due to its presence at the gateway to the national park. There are very few trees at this location, consequently it is not appropriate to propose tree planting as part of the landscape and visual mitigation and the proposed rock cut would be visible to users of the A9, NCN7 and the HML railway.



Photograph 3.4: Photo of existing rock face at Slochd Summit



Photograph 3.5: Photo of gateway to the Cairngorms National Park to the north from the A9

Slochd Mor

- 3.1.13. As illustrated by Figure 3.2, Slochd Mor is situated between Slochd Summit and Slochd Beag; to the south of the pinch-point at which the rock plug is located and to the north of the left-in-left-out junction at which the A9 is connected to NCN7.
- 3.1.14. The natural rock slopes at Slochd Mor, as illustrated by Photograph 3.6, are varied in form and interspersed by areas of scree and low-level vegetation. Whilst exposed rock is not a dominant element in itself, these slopes contribute texture and pattern to the landscape and a degree of visual interest to users of the A9.
- 3.1.15. The existing rock cutting at Slochd Mor, as illustrated by Photograph 3.7, has a relatively consistent form and gradient. The visibility of exposed rock is limited to small areas and broken up by areas of scree and heath. However, despite the lack of visual interest of the rock cutting, its texture and colours are in keeping with its surroundings and it contributes to the distinctive character at Slochd.
- 3.1.16. A positive design solution at Slochd Mor will enhance the gateway to the national park by extending the dramatic qualities associated with Slochd Summit slightly further south.



Photograph 3.6: Photo of natural rock slope at Slochd Mor



Photograph 3.7: Photo of existing rock cutting at Slochd Mor

Slochd Beag

3.1.17. As illustrated by Figure 3.2, Slochd Beag is the southernmost rock cut required at Slochd. It is situated to the west of the deep, steep-sided gorge through which the HML railway and NCN7 pass under the A9. The scale of the gorge and the associated underbridge are not appreciated by users of the A9 due to the elevation of the A9 and the solid bridge parapets that restrict outward views. However, the gorge marks a notable transition in the experience for road users; the road is channelled by coniferous

woodland to the east of the crossing which contrasts with the more open outward views and the varying textures on the hillslopes to the north and west.

- 3.1.18. The existing rock face at Slochd Beag is approximately 275m long and 35m high and is situated adjacent to the southbound carriageway. There is also low-level exposed rock adjacent to the northbound carriageway. The rock face is a notable feature due to its scale, and is an element in the view for road users. However, it is recognised that *'sections of the rock cuttings still appear raw and the verge/cutting treatments have potential for improvement'*^{*i*}. Furthermore, as illustrated by Photograph 3.8, the rock face is set back from the carriageway and lacks a clearly defined geometric aesthetic.
- 3.1.19. The rock face is interspersed with scrubby vegetation and influenced by areas of coniferous woodland at the top and to the west, in addition to trees adjacent to the northbound carriageway. Consequently, the appearance of Slochd Beag is somewhat softened in comparison to the exposed rock further north at Slochd Summit.
- 3.1.20. Slochd Beag is a prominent location within the wider character of Slochd and is located at a key threshold for users of the A9, however its contribution to the experience of the road user and wider landscape is not effectively realised and it is not perceptible to users of the HML railway or NCN7.



Photograph 3.8: Photo of existing rock face at Slochd Beag in the Context of the A9

3.2. Aviemore

- 3.2.1. As illustrated by Figure 3.3, the Aviemore rock face is situated to the south of Aviemore. It is situated within the 'Loch Alvie to Inverdruie' character area which falls within the wider 'Badenoch and Strathspey' area as defined by the Cairngorms National Park^{vi}.
- 3.2.2. The character of this area is defined by 'steep sided, densely wooded, prominent outcrop hills' and the area has 'richly diverse vegetation cover' including 'extensive policy woods as well as juniper and birch scrub and extensive broadleaved and native pine woodland' ^{vi}.
- 3.2.3. The existing rock face is situated on the inside of a sweeping bend on the A9. As illustrated by Photograph 3.9, most of the crest of the rock face is wooded with pine and

birch and the base has low, scrubby trees softening the threshold between the rock and the ground. There is a wide grass verge between the A9 and the rock face.

- 3.2.4. The rocky character of Craigellachie National Nature Reserve lies to the north and is largely covered by birch. Consequently, exposed rock is not a prominent element for travellers on the A9 and the rock face stands out as a feature of interest.
- 3.2.5. The planting adjacent to the A9 to the north and south of the rock face is dominated by birch and aspen which is light and airy in character and rises up the adjacent hill slopes, contrasting with the sheer angle, scale and aesthetic solidity of the rock face.
- 3.2.6. For southbound travellers, the rock face contributes to the experience of the point at which a notable view of the Duke of Gordon's Monument on Torr Alvie is opened up, and views to the Cairngorm Massif to the east are more generally afforded. Consequently, this is a particularly interesting location as part of a wider journey for users of the A9.



Figure 3.3: Map showing location of Aviemore rock face



Photograph 3.9: Photo of Aviemore rock face

4. Design Proposals

4.1. Slochd Summit

Rock Cut

- 4.1.1. The aim of the proposals at Slochd Summit is to enhance the gateway to the national park, maximising the drama and respecting the distinctive localised character of the rocky pass.
- 4.1.2. Removing the netting and bolting that currently covers the rock face would have clear landscape and visual benefits at this important location, and was a key aspiration as part of the process.
- 4.1.3. Several options were considered at Slochd Summit, including a design allowing for shallow slopes which would reduce the potential for the failure in the rock mass. However, this was considered inappropriate due to the resulting loss of drama at the rocky pass and the requirement for substantial loss of Annex 1 habitat resulting from the necessary land-take associated with this design. A design allowing for fixed net and bolting was also discounted despite minimising the required land-take and subsequent habitat loss, because it would fail to enhance the gateway to the national park.
- 4.1.4. A proposal of designing in safety measures at the foot of the slope was decided upon. Inclusion of such measures would manage the risk to road users and trunk road operation from the release of material from the rock cutting. It would reduce the loss of Annex 1 habitat as the angle of the rock face could be maximised. This principle would also allow for the removal of the existing mesh treatment, opening up more attractive short-range views of the rock face from the A9, NCN7 and the HML railway and maximising the drama afforded by the rock face to the adjacent landscape.
- 4.1.5. A rock trap ditch was preferred despite the requirement for a slightly higher land-take than some alternatives because it would not be visually intrusive, and would therefore maximise the appreciation of the aesthetic qualities of the rock face.
- 4.1.6. It was agreed that long and consistent lines should be avoided in the design at Slochd Summit. Consequently, embayments are proposed along the rock face to achieve an irregular appearance. Furthermore, a variation in the height of ledges is incorporated into the design to give the rock face a more naturalistic appearance. The provision of embayments and varied geometry in the rock face design will also increase the potential diversity of naturalisation of the rock face by flora and fauna.
- 4.1.7. Rockfall containment barriers will be required on the crest of benches. Bunds have been identified as preferable to fences or barriers to allow for a minimised use of man-made materials, thereby affording the rock face a more naturalistic appearance. Due to the elevated position of the bunds, the varied form of the rock cut and the angle of view at which they would be viewed, these would not appear as overly linear, consistent features.
- 4.1.8. Pockets of topsoil would be irregularly incorporated into the ledges, benches and bunds to promote accelerated regeneration of locally present species. It is recognised that this would prolong the naturalisation process in comparison to alternative methods such as seeding or planting. However, it is considered to be a more appropriate solution to allow for irregular patterns and a greater age diversity of plants around the rock face, which would contribute to a more naturalistic aesthetic.

4.1.9. Where the rock cutting meets the soil cutting or natural slope above, seeding of a dry heath mix, containing species consistent with the adjacent hillside, would ensure that the rock face is embedded into the landscape.



Figure 4.1: 3D Model of Rock Cut Design at Slochd Summit



Figure 4.2: Artists impression of the Design at Slochd Summit in the Context of the Gateway to the National Park from the North



Figure 4.3: Illustrative Section at Ch.24000 showing Proposed Rock Cut at Slochd Summit

Rock Plug

- 4.1.10. The unusual geometry of the rock plug at Slochd Summit is crucial in affording the location a distinctive character. Due to the physical constraints at this location and the pinch-point created by the plug itself, the alignment of the Proposed Scheme was required to run closer in proximity to the rock plug, increasing the risk of rockfall reaching the A9.
- 4.1.11. The only feasible options for treatment of the rock plug were to remove it, or apply mesh treatment to reduce the risk of rock fall affecting the A9. The alternative options shown on Figure 1.1 were dismissed due to a lack of space or an unacceptable visual impact at this prominent location.
- 4.1.12. It was decided that mesh treatment would be preferable to the removal of the rock plug as this would maintain the unusual geometry that is visible at the gateway to the national park. If the rock plug were to be removed, this would increase the perceived width of the pass at Slochd resulting in a reduction of drama for users of the A9 and NCN7.
- 4.1.13. Furthermore, If the rock plug were to be removed, this would expose a meshed rock face adjacent to the west side of the HML railway, meaning that either of the feasible options would result in visible mesh from the A9 at this point. Due to the proposed removal of the mesh treatment on the rock face at Slochd Summit, there would be a net reduction in the surface area of mesh treatment at this key location.
- 4.1.14. The mesh treatment to the rock plug will be appropriately selected to minimise its visual prominence. A low diameter wire and large apertures would be utilised and faceplate areas would be minimised.
- 4.1.15. The installation of mesh on the rock plug will be sensitively undertaken to reduce the visual prominence of the mesh. Draping of mesh will not be considered appropriate and sensitive contouring, as illustrated by Photograph 4.1, will be undertaken to ensure that the distinctive geometry would be retained. Contouring will also provide for variation in the location and aspect of the face-plates which will avoid a grid-like appearance and reduce the presence of sun glare.
- 4.1.16. The extent of cabling will be minimised, and seams associated with the overlap of mesh will be sensitively designed. These measures will minimise the potential for the appearance of straight and noticeable lines on the rock face. Photograph 4.2 illustrates how excessive cabling detracts from the qualities of the rock at the existing Slochd Summit rock cut. Photograph 4.3 shows the prominence of poorly designed seams on the rock face adjacent to the HML.
- 4.1.17. In order to minimise the visual impact of the mesh at its tie-in with the ground level, the boundary will be folded back to the manufacturers minimum recommendation. This will avoid excessive overlap and loose tails, both of which could detract visually from the rock plug.



Figure 4.4: Illustrative Section at Ch.23900 showing Proposed Rock Cut at Slochd Summit in the Context of the Existing Rock Plug



Photograph 4.1: Photo showing how contouring mesh can reduce its prominence (Image Credit: Geobrugg)



Photograph 4.2: Photo at Slochd showing how cabling can detract from views of the rock face



Photograph 4.3: Photo at Slochd showing how poorly designed seams can create a 'striped' effect

4.2. Slochd Mor

4.2.1. The aim of the proposals at Slochd Mor is to increase the presence of exposed rock through this section of the A9 and complement the drama of Slochd Summit.

- 4.2.2. The design will focus on the area of existing rock cutting and will seek to minimise works to the natural rock slopes to the north and south of the existing rock cutting in order to retain their character.
- 4.2.3. A similar process to that proposed for Slochd Summit was undertaken. The conclusion is that the incorporation of a rock trap ditch will represent the most beneficial solution as it will maximise the landscape and visual benefits whilst negating the need to 'chase' the slope.
- 4.2.4. Through this area the A9 is on sidelong ground with steep slopes above and below the carriageway. Design of the new Slochd Mor rock cutting has, in part, been constrained by the steep topography. The potential for incorporation of embayments and variation such as at Slochd Summit is severely limited. Furthermore, the character of the rock mass does not appear to lend itself to such a design approach. Therefore, naturalistic variations would be incorporated into the form of the rockfall containment bund which would be varied in form so as not to mirror the forms of the rock faces, thereby increasing the irregularity of the appearance of the wider rock cut.
- 4.2.5. For the reasons outlined in paragraph 4.1.8, pockets of topsoil would be irregularly incorporated into the benches and bunds.
- 4.2.6. For the reasons outlined in paragraph 4.1.9, the threshold between rock and soil at the top and sides of the overall rock cut would be seeded with a dry heath mix.



Figure 4.5: 3D Model of Rock Cut Design at Slochd Mor



Figure 4.6: Illustrative Section at Ch.23375 showing Proposed Rock Cut at Slochd Mor

4.3. Slochd Beag

- 4.3.1. The aim of the proposals at Slochd Beag is to enhance the contribution that the rock cut makes to the character of the surroundings by increasing the sense of drama for users of the A9 and maximising the juxtaposition between the sheltered enclosure of the rock face and the exposure of extensive views to the north east for southbound travellers.
- 4.3.2. Due to the alignment of the Proposed Scheme, the A9 would be closer in proximity to the rock face. Consequently, the prominence of the rock face to road users and the sense of drama and contrast would be increased.
- 4.3.3. A similar process to that outlined in relation to Slochd Summit was undertaken. For the same reasons, a rock trap ditch design approach was adopted.
- 4.3.4. The proposed rock cutting will blend in with part of the existing rock face. This will result in increased visual interest as two different levels of weathering will be visible in the rock. This will also represent the introduction of a subtle layering of human influence on the landscape through the years, which may provide visual and cultural interest as the rock weathers.
- 4.3.5. The bund at the crest of each rock face would be varied in form so as not to mirror the forms of the rock faces, thereby increasing the irregularity of the appearance of the wider rock cut. Furthermore, for the reasons outlined in paragraph 4.1.8, pockets of topsoil would be irregularly incorporated into the ledges, benches and bunds.
- 4.3.6. For the reasons outlined in paragraph 4.1.9, the threshold between rock and soil at the top and sides of the overall rock cut would be seeded with a dry heath mix. Scrub and scattered pine and birch trees will be planted at the crest of the slope to tie the rock cut in with the adjacent woodland at the top of the slope and replicate the existing character.



Figure 4.7: 3D Model of Rock Cut Design at Slochd Beag



Figure 4.8: Artists impression of the Design at Slochd Beag as Viewed from the A9





4.4. Aviemore

- 4.4.1. The aim of the proposals at Aviemore is to minimise the visual intrusion of any engineered aspects of the design, thereby maximising the prominence of the existing rock face for road users. Initial design proposals showed a requirement for the existing rock face at Aviemore to be re-configured. However, the Proposed Scheme was realigned to minimise the impact on the rock face and consequently, only a rock trap ditch at the base of the existing rock face is proposed. This would be formed with a minimal amount of excavation due to the proposed increase in road level.
- 4.4.2. It is anticipated that the proposed remediation works will require the removal of existing lighting at the foot of the rock face.
- 4.4.3. Retaining the existing rock face in-situ maintains the maturity of the weathered rock and trees at the crest.

- 4.4.4. Some remedial works would be required to the Aviemore rock face in order to ensure the safety of the road user. These works are anticipated to include the removal of loose material with the potential for localised design solutions to ensure the stability of the slope. The exact nature of the works will be fully defined at the detail design stage. Landscape and visual objectives will be considered as part of this process.
- 4.4.5. For the reasons outlined in paragraph 4.1.8, pockets of topsoil would be irregularly incorporated into and adjacent to the rock trap ditch to promote natural regeneration at the base of the rock face, replicating the existing character.

5. Summary

- 5.1.1. The involvement of a landscape architect and other environmental disciplines early in the process has enabled landscape and visual aspects of design to be considered alongside relevant constraints and incorporated into the fundamental principles of the rock cut design, embracing the ethos of iterative design and allowing for mitigation measures to be embedded into the Proposed Scheme.
- 5.1.2. It is recommended that this process is revisited once further GI information is available around Slochd.
- 5.1.3. It is recommended that smaller areas of exposed rock, both existing and proposed, are considered in more detail during the next stage of the design process.



ⁱⁱ Transport Scotland. (2014). Fitting Landscapes: Securing More Sustainable Landscapes ⁱⁱⁱ Scottish Natural Heritage and the Cairngorms National Park Authority. (2010). The Special Landscape Qualities of the Cairngorms National Park. Scottish Natural Heritage Commissioned Report, no.375 ^{iv} Highways Agency. (November 2010). Interim Advice Note 135/10 Landscape and Visual Effects Assessment.

^v The Landscape Institute and the Institute of Environmental Management and Assessment. (2013). Guidelines for Landscape and Visual Impact Assessment.

vi Cairngorms National Park Authority in partnership with British Geological Survey. (2009). Cairngorms National Park Landscape Character Assessment.