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EAST OF HUNTLY TO ABERDEEN

A96 Dualling

East of Huntly to Aberdeen scheme

Green/Violet Pairing Assessment

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Green/Violet Pairing Assessment

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1 Pairing assessment

1.1 Introduction

This document provides details of the assessments undertaken on the A96 Dualling East of Huntly to Aberdeen scheme where two route options have common start and end points and perform the same function. The assessment is used to deselect poorer performing route options, allowing development of the remaining options to progress through to full DMRB Stage 2 assessment, which will ultimately identify the preferred route option for the scheme.

1.2 Identification of route options for pairing

The location of the route options identified for pairing assessments is shown on Figure 1 and covers the area to the north of Inverurie. The options in this area avoid the High Impact Areas of Keith Hall Inventory Gardens and Designed Landscape and the Inventory Battlefields of Harlaw and Barra.

The Green and Violet route options both represent a potential route from the Pink and Brown route options at Pitcapple to the north of Inverurie, with both route options passing between the settlements of Inverurie and Oldmeldrum. The route options are split into three sections, described in Sections 3.1 and 3.2:

- Green route option – sections G1, G2 & G3
- Violet route option – sections V1, V2 & V3

Section B3 facilitates a variation of the Green and Violet route options. It is necessary to consider whether utilising section B3 creates a better performing route option combination than either of the Green and Violet route options identified above. These route options are as follows and are described in more detail in Sections 4.1 and 4.2:

- Green-Blue - Sections G1, G2 & B3 (leading to V3)
- Violet - Sections V1, V2 and part of V3

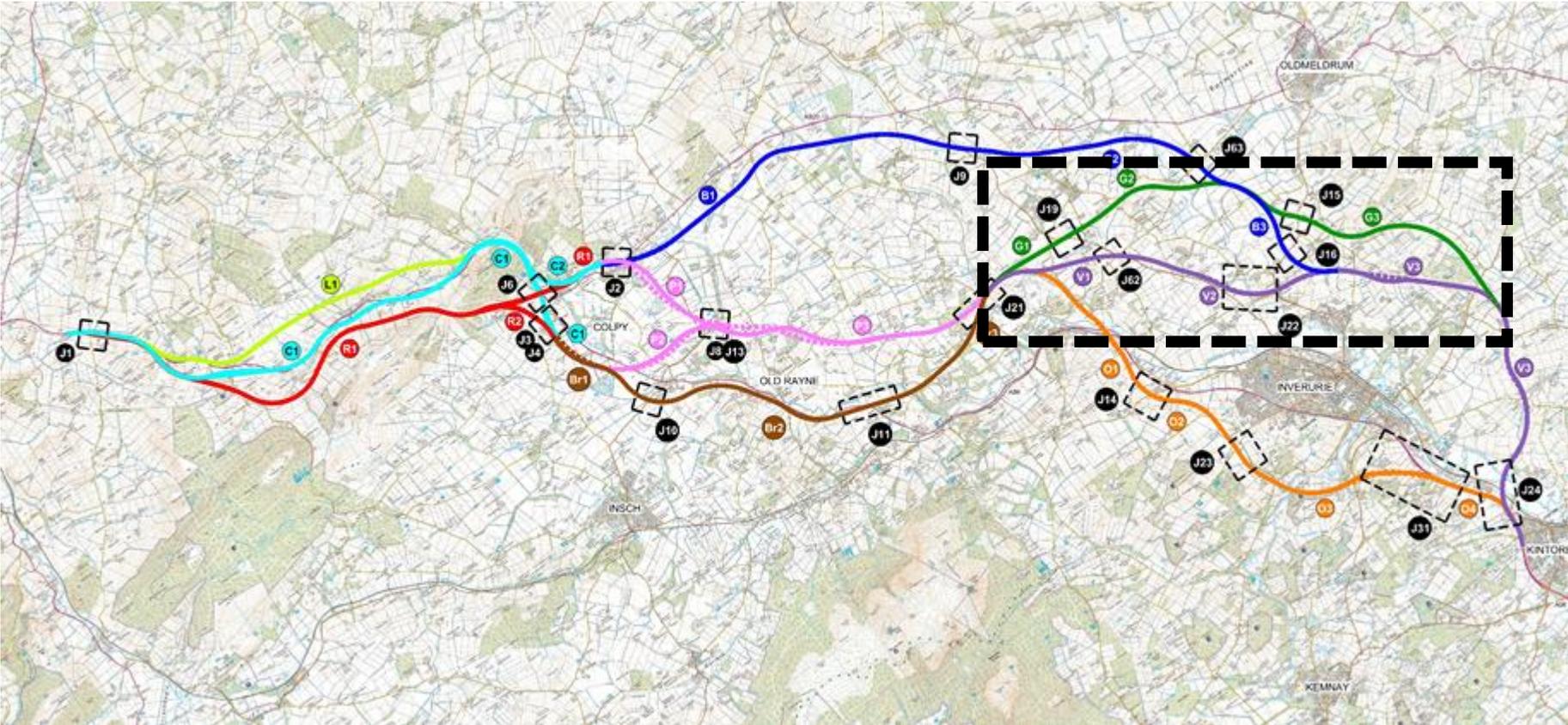


Figure 1 – Location of route options for pairing assessment

2 Pairing assessment basis

The Engineering, Environmental and Traffic/Economic appraisals and key differences have been drawn together into a multi-disciplinary assessment, to determine the better performing route option to be taken forward from each pairing assessment. These appraisals can be found in Appendix A. The engineering and environmental plans associated with the pairings are included in Appendix B and C respectively.

The appraisals are based on the developed third fix alignments, which incorporates the following development:

- Indicative junction layouts in accordance with the Junction Strategy where applicable.
- Application of central reserve and verge widening for visibility.
- Statutory authority consultation.
- Addressing where possible impacts identified during the Second Fix assessment.

The appraisals adopted the 7-point assessment scale consistent with that utilised in the second fix alignments appraisal. The purpose of the pairing assessment was to establish the key comparative differences between the respective route options, and as such the pairing assessments included in Appendix A concentrated on the differences in the Major and Moderate Adverse Impacts to establish the better performing route option

The following colour coding has been used to indicate preferences for each paired element:

	Better Performing
	No preference

3 Pairing assessment Green vs Violet route options

This assessment considers the following route options:

- Green route option – sections G1, G2 & G3
- Violet route option – sections V1, V2 & V3

3.1 Green route option description

A96 dual carriageway

The Green route option is made up of three sections, G1, G2 and G3 and follows the route to the north and east of Inverurie, shown in Figure 2 below. From the crossing of the Burn of Durno at the diverge point with the Pink and Brown route options, the route option heads due east, passing north of the Hill of Lumphart, and southwest of properties at Mill of Lumphart. The route option heads south east across the Lochter Burn, passing properties at Lochend of Barra, Bructor, Smithycroft and Shadowside. At Old Bourtie, the route option heads east before turning south at Sunnybrae to head towards the tie-in point with section V3 to the south of the B993, near Isaactown and Ashlea Grange. The route option length is approximately 12.7km.

Daviot Junction (J19)

A grade separated junction compliant with the Design Manual for Roads and Bridges (DMRB) has been developed on the B9001 Rothienorman to Inverurie road, to the south of the settlement of Daviot which allows for all traffic movements. The mainline is on embankment through this location and allows for a perpendicular underbridge to accommodate the re-aligned B9001 via two new junction roundabouts north and south of the mainline, that seeks to minimise impacts on existing properties and land. The slip roads also tie into these roundabouts via a loop arrangement and there is some minor realignment of existing side roads to tie into the junction southern roundabout.

Barra Junction (J15)

A DMRB compliant, grade separated junction has been developed on a realigned section of the B9170 road from Oldmeldrum to Inverurie that seeks to minimise impacts on existing properties and land. The junction layout is a standard loop arrangement with slip roads allowing for all traffic movements that connect to two new roundabouts located either side of the mainline on the B9170. The mainline is on embankment in this location over the existing side road to be maintained at its current level. The B9170 is realigned to the east of its current line over a 1.5km length avoiding a direct impact on the Barra Battlefield to the west.

3.2 Violet route option description

A96 dual carriageway

The Violet route option is made up of three sections V1, V2 and part of V3 and follows the route shown in Figure 2 to the north and east of Inverurie. From the

crossing of the Burn of Durno, at the diverge point with the Pink and Brown route options, the route option follows the B9001 in a southeasterly direction to the new link road at Uryside / Tullochmor. The route option tracks east to Hillbrae and then south east past the Hill of Selbie, south of Ordiefauld to the tie-in point with section V3 south of the B993 near Isaactown and Ashlea Grange. The route option length is approximately 11.5km.

Daviot Junction (J62)

A DMRB compliant, grade separated junction has been developed on the B9001 Rothienorman to Inverurie road, to the south of the settlement of Daviot. The mainline is on embankment in this location and allows for a perpendicular underbridge to accommodate the re-aligned B9001 via two new junction roundabouts north and south of the mainline, that seeks to minimise impacts on existing properties and land. The slip roads also tie into these roundabouts via a loop arrangement with some localised realignment of existing B9001 and three side roads required to tie into the junction roundabouts.

Uryside (Inverurie North) Junction (J22)

A DMRB compliant, grade separated junction has been developed at Uryside. The layout is a split junction with eastbound on/off slips via a loop onto a new roundabout on the B9170, Oldmeldrum to Inverurie road. Westbound on/off slips are via a half diamond arrangement onto a new roundabout on the B9001 Rothienorman to Inverurie road. All movements are catered for with interconnectivity between the junction roundabouts via the existing northern link road.

3.3 Green vs Violet pairing assessment conclusion

The full pairing assessment for Green (G1/G2/G3) against Violet (V1/V2/V3) route options is included in Appendix A1.

The engineering appraisal found that the Violet route option was better performing than the Green route option. Both route options performed similarly in terms of Standards Compliance, Utilities and Residual Hazards. However, the Violet route option performed better than the Green route option with regards to Earthworks/Geotechnics, Structures, Drainage & Hydrology and Cost, primarily due to reduced interaction with the Lochter Burn and floodplain.

The environmental appraisal did not identify a preference between the Green and Violet route options. The environmental appraisal found that the Green route option had less negative impacts in terms of the Landscape, People and Communities, Noise and Air Quality due to more of the route being in cutting, reducing visual intrusion. It also found that the Green route option had less impact on prime agricultural land and is a greater distance from LDP settlement areas.

The Violet route option was considered to have fewer negative impacts on Ecology, Water and Cultural Heritage as it affects fewer designated ecological sites, has fewer water crossings and avoids the extensive floodplain of the Kings Burn and Lochter Burn. Violet was also considered to impact a lower number of high level/sensitive heritage assets and avoids impacts on the Battle of Barra Inventory Historic Battlefield.

The traffic and economic appraisal concluded that the Violet route option is preferred over the Green route option, offering better journey times and greater reduction in accident rates. The Violet route option attracts significantly higher volumes of traffic to the new dual carriageway and offers greater traffic reduction on the existing A96. It is also closer to Inverurie, generating greater benefits for access to public transport, jobs and services currently located in the town, and the proposed development sites at Uryside and Portstown.

The pairing assessment for the Green against Violet route options concluded that the Violet route option (V1/V2/V3) is the better performing route option combination.



Figure 2 – Green vs Violet route option and junction identifier

4 Pairing assessment Green-Blue vs Violet route options

It is necessary to consider whether utilising section B3 creates a better performing route combination than either of the Green and Violet routes options.

The paired sections are as follows:

- Green-Blue - Sections G1, G2 & B3 (leading to V3)
- Violet - Sections V1, V2 and part of V3)

4.1 Green-Blue route option description

A96 dual carriageway

The Green-Blue route option is made up of three sections G1, G2 and B3. It follows the route shown in Figure 3 below to the north and east of Inverurie. From the crossing of the Burn of Durno, at the diverge point with the Pink and Brown route options, the route option passes north of the Hill of Lumphart, and southwest of properties at Mill of Lumphart. The Green-Blue route option heads south east across the Lochter Burn passing properties at Muirton and Lochend of Barra. The route option continues as section B3, running south east to the tie-in point with V3 at Old Bourtie/Hillbrae. The route option length is approximately 9.1km.

Barra Junction (J16)

A DMRB compliant, grade-separated junction option has been developed on the B9170, Oldmeldrum to Inverurie road at Bructor that seeks to minimise impacts on existing properties and land. The junction layout is a standard loop arrangement with slip roads allowing for all traffic movements that connect to two new roundabouts located either side of the mainline on the existing B9170.

4.2 Violet route option description

A96 dual carriageway

This paired section of the Violet route option is made up of three sections V1, V2 and part of V3 and follows the route shown in Figure 2 to the north and east of Inverurie. From the crossing of the Burn of Durno, at the diverge point with the Pink and Brown route options, the route option follows the B9001 in a southeasterly direction to the new link road at Uryside / Tullochmor. The route option tracks east to Old Bourtie/ Hillbrae and the tie-in point with section B3. The route option length is approximately 7.8km.

Daviot Junction (J62)

A DMRB compliant, grade separated junction has been developed on the B9001 Rothienorman to Inverurie road, to the south of the settlement of Daviot. The mainline is on embankment in this location and allows for a perpendicular underbridge to accommodate the re-aligned B9001 via two new junction roundabouts north and south of the mainline, that seeks to minimise impacts on existing properties and land. The slip roads also tie into these roundabouts via a loop arrangement with some localised realignment of existing B9001 and three side roads required to tie into the junction roundabouts.

Uryside (Inverurie North) Junction (J22)

A DMRB compliant, grade separated junction has been developed at Uryside. The layout is a split junction with eastbound on/off slips via a loop onto a new roundabout on the B9170, Oldmeldrum to Inverurie road. Westbound on/off slips are via a half diamond arrangement onto a new roundabout on the B9001 Rothienorman to Inverurie road. All movements are catered for with interconnectivity between the junction roundabouts via the existing northern link road.

4.3 Green-Blue vs Violet pairing assessment conclusion

The full pairing assessment for Green-Blue (G1/G2/B3) against Violet (V1/V2/V3) route options is included in Appendix A2.

The engineering appraisal concluded that the Violet route option is better performing than the Green-Blue route option. Both route options perform similarly in terms of Standards Compliance, Utilities and Residual Hazards. However, the Violet route option performed better than the Green route option with regards to Earthworks/Geotechnics, Structures, Drainage & Hydrology and Cost, primarily due to reduced interaction with the Lochter Burn and floodplain.

The environmental appraisal did not identify a preference between the Green-Blue and Violet route options. The environmental appraisal found that the Green-Blue route option had less negative impacts in terms of the Landscape, People and Communities, Noise and Air Quality due to more of the route option being in cutting, reducing visual intrusion. It also found that the Green route option had less impact on prime agricultural land.

The Violet route option was considered to have fewer negative impact on Ecology, Water and Cultural Heritage as it affects fewer designated ecological sites, has fewer water crossings and avoids the wider sections of floodplain of the Kings Burn and Lochter Burn. Violet was also considered to impact a lower number of high level/sensitive heritage assets and avoids impacts on the Battle of Barra Inventory Historic Battlefield.

The traffic and economic appraisal concluded that the Violet route option is preferred over the Green-Blue route option, offering better journey times and a greater reduction in accident rates and higher economic benefits. The Violet route option attracts significantly higher volumes of traffic to the new dual carriageway and offers greater traffic reduction on the existing A96. It is also a shorter and more direct route compared to Green-Blue and therefore offers most direct access to public transport, jobs and services currently located in Inverurie, and the proposed development sites at Uryside and Portstown.

The pairing assessment for the Green-Blue against Violet route options concluded that the Violet route option (V1/V2/V3) is the better performing route option combination.

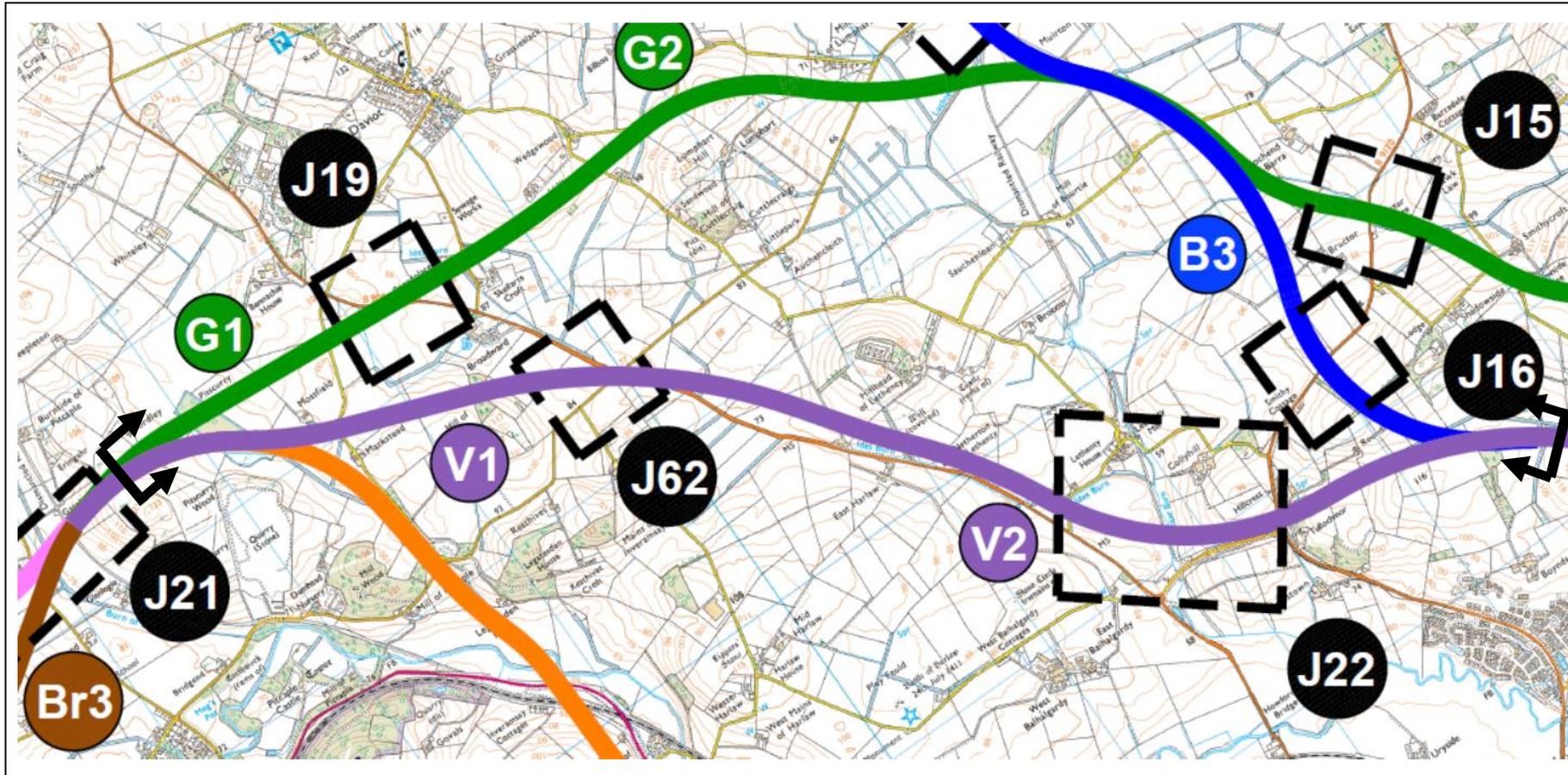


Figure 3 – Green-Blue vs Violet route options and junction identifier

5 Durno Junction provision (J21)

In parallel with the pairing assessment stage, the junction strategy for the scheme was being developed. A case for removing the proposed Junction 21 from the scheme was investigated and subjected to multi-disciplinary review. The recommendation from this review was to remove the junction, primarily due to low traffic figures and engineering impact. Therefore, a sensitivity test on the pairing assessment was required to see if the removal of this junction from the scheme caused a change to the overall conclusion.

5.1 Junction 21 location

Junction 21 is located on all route options which pass to the immediate north of Pitcaple (route options P3 or Br1 to route options V1, G1, or O1), as shown in Figure 3. The junction connects with the C83C local road and is intended to serve the small settlements of Durno, Whiteford and Pitcaple. The settlements have a combined population of 650 residents.

5.2 Impact on pairing assessment

With Junction 21 removed from the scheme, the Violet route option continues to attract higher traffic volumes than the Green route option. Without Junction 21, the Violet route option also continues to attract more traffic and perform more favourably against the Scheme Objectives and STAG criteria.

Journeys to and from Durno would not be able to utilise the new dual carriageway directly, however, access will be maintained via the existing A96 which will benefit from lower traffic volumes. The impact on accessibility within these pairing assessments is therefore considered to be minor.

It is concluded that removal of Junction 21 does not materially alter the result of the pairing appraisal of Green and Violet route options.

6 Overall pairing assessment conclusions

The pairing assessments undertaken on the Green vs Violet and Green-Blue vs Violet route options concluded as follows:

- The engineering and traffic and economic appraisal of the Green vs Violet route options identified the Violet route option as better performing. The environmental appraisal did not identify a preference. The overall conclusion was that the Violet route option was better performing than the Green route option.
- The engineering and traffic and economic appraisal of the Green-Blue vs Violet route options identified the Violet route option as better performing. The environmental appraisal did not identify a preference. The overall conclusion was that the Violet route option was better performing than the Green-Blue route option.
- Removal of Junction 21 (Durno) was found not to influence the results of the pairing assessments.

It is concluded that the Violet route option (V1/V2/V3) is the better performing route option combination and should be progressed.

Route option combinations Green (G1/G2/G3) and Green-Blue (G1/G2/B3) should be removed from further consideration.

Appendix A

Pairing assessments

Appendix B

Engineering plans

Appendix C

Environmental plans



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