WESTERN PERIPHERAL ROUTE - NORTHERN LEG

STAG APPRAISAL

OVERVIEW

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Western Peripheral Route

Northern Leg

STAG Assessment

Executive Summary

This STAG analysis must be read in conjunction with that for the Modern Transport System (MTS) STAG analysis. That document assessed the options for transport in the North East of Scotland at the strategy level. It's conclusion was that the most effective way forward for transport was to develop an integrated package of measures (the integrated transport strategy ITS, which has become known as the Modern Transport System) which includes a Western Peripheral Route (WPR). This effectively proves the need for the WPR as it forms part of the most effective solution.

The Western Peripheral Route is seen in the MTS as providing both a bypass and a distributor around the city of Aberdeen between the A90 trunk road to the north and south. It will provide access to the Park and Ride and rail freight transfer sites around the periphery of the city and will improve access to National and European transport networks, reducing the peripherality of the area. It will remove traffic from unsuitable roads in and around Aberdeen. It is required to facilitate the implementation of other projects within the MTS and allow the most effective use of roadspace throughout the City.

The previous roads authority for the North East, Grampian Regional Council, developed a corridor for a route between the A90 Stonehaven Road and the A96 Inverurie Road. This corridor was subsequently endorsed by both current roads authorities in the area, Aberdeen City Council (ACC) and Aberdeenshire Council (AC). The stretch of route between the A96 Inverurie Road and A90 Ellon Road had not been examined in great detail. NESTRANS, a partnership between the two Councils, ACC & AC, Scottish Enterprise Grampian (SEGr) and Aberdeen and Grampian Chamber of Commerce (AGCC) decided in Autumn 2001 to develop the northern leg of the route to a preferred route corridor stage, similar to the standard of the western leg approval.

This work would be developed using the STAG document whilst also following the Design Manual for Roads and Bridges (DMRB). It would also be an analysis under the umbrella MTS STAG that had also been commissioned.

The MTS STAG had developed a set of objectives for the MTS and a set of problems to be resolved. These were developed and extended to cover the specific issues to be addressed by the Western Peripheral Route. The objectives were assessed against the

problems to ensure they addressed all the problems identified. Concurrently a DMRB stage 1 environmental assessment was carried out. This identified the constraints to developing the proposal. A set of possible proposals was then developed and taken forward to a public consultation.

From this work an agreed set of possibilities was taken forward to a DMRB Stage 2 comparative assessment. This has involved:

- An environmental assessment
- An engineering assessment
- A traffic assessment using a newly developed transport model (ASAM)
- An economic assessment
- A Stage 2 public consultation

This work has been used in the preparation of a STAG assessment, assessing each proposal against the criteria above and summarising in a summary spreadsheet table. Eighteen permutations have been examined comprising different permutations of six sections (some of which had minor variations). The summary spreadsheet table compares the different options as follows:

- Assess North, Central and South sections
- Assess Kirkhill 1 and Kirkhill 2 sections thus providing a best option north of the airport
- Assess best north of airport route against only route south of airport, Bucksburn

At this stage the technical analysis has identified that route C 3 provides the better option but that route SB 3 could provide an adequate alternative. These were compared to route B 1 as the only remaining option to the south of the airport. The technical analysis would suggest that over all the criteria assessed in the summary spreadsheet table the routes to the north of the airport provide the better alternative. This view is confirmed by the public perception where the public thought that Central (66%) provided the best option over South (21%) with Bucksburn being preferred by 13%.

The summary spreadsheet table is presented in Appendix Q. This shows that each of the three options taken forward for public consultation has a very good positive economic impact. The assessments against each of the criteria varies but is summarised in the table.

An appraisal summary table has been partially prepared and follows this text. It was completed following the public consultation and will be used as a tool, by the two Council's, in making the decision on which route will become the preferred route.

Route C 3 (Central) has been recommended as the preferred scheme option. Reasons for this choice have been highlighted in Appendix Q, the appraisal summary.

1. INTRODUCTION

NESTRANS has prepared this assessment of the Western Peripheral Route, a key element of the Modern Transport System for the North East, to determine a preferred route for the Northern Leg of the Western Peripheral Route.

1.1 NESTRANS

The North East of Scotland Transport Partnership (NESTRANS) is a public/private partnership made up of Aberdeen City Council, Aberdeenshire Council, Scottish Enterprise Grampian and Aberdeen and Grampian Chamber of Commerce. NESTRANS has developed and is promoting an integrated transport strategy for the North East, which spans a 16 year period from 1999 – 2015.

1.2 MODERN TRANSPORT SYSTEM

This strategy and the package of transport improvements within it are know as the 'Modern Transport System' (MTS). The MTS is an integrated transport strategy that was developed to achieve the following stated outcome:

> **To deliver a Modern Transport System for the North East of Scotland which enables a more economically competitive, sustainable and socially inclusive society.**

As agreed with the Scottish Executive, NESTRANS has carried out an assessment of the MTS following the methodology described in the Scottish Transport Appraisal Guidance (STAG). A full formal appraisal of the strategy was not required given work that had previously been undertaken within the CRU 'Sustainable Transport Study for Aberdeen' and Halcrow Fox 'Delivery of an Integrated Transport Strategy for North East Scotland' reports. However assessments of the strategy were made using the ASAM model to prove the MTS strategy was the best strategy for the North East of Scotland. A copy of the MTS STAG Assessment has been included in Appendix A. This STAG assessment of the Western Peripheral Route Northern Leg should be read in conjunction with the MTS STAG.

1.3 WESTERN PERIPHERAL ROUTE

The Western Peripheral Route (WPR) is one of the key transport proposals within the MTS (as proven in the MTS Stag assessment). The stated purpose of the Western Peripheral Route within the MTS is:

> **To act both as a bypass and a distributor around the City between the A90 (T) to the north and south. It will provide**

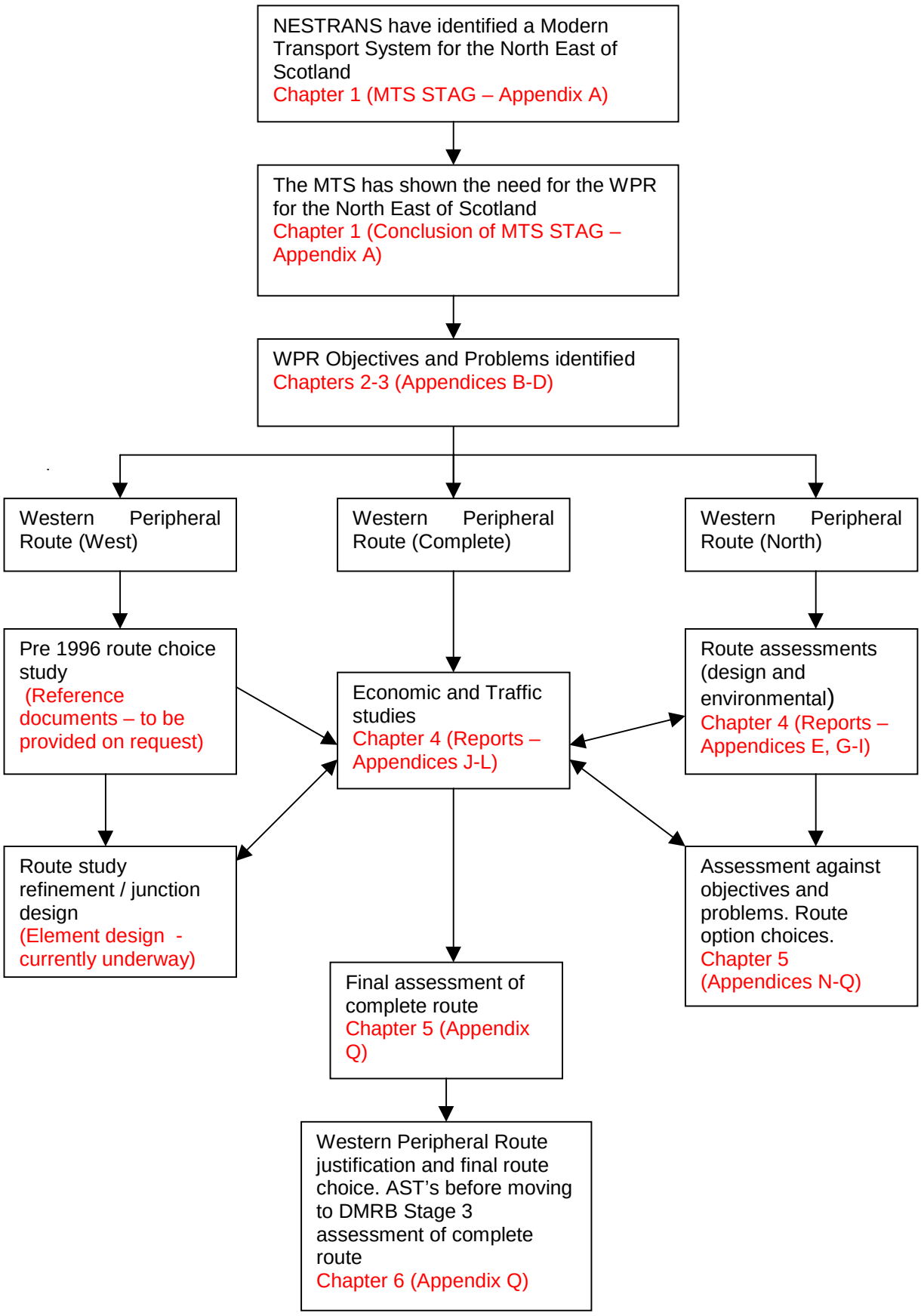
access to the Park & Ride and rail freight transfer sites around the periphery of the City and improve access to National and European transport networks, reducing the peripherality of the area. It will remove traffic from unsuitable roads in and around Aberdeen. It is required to facilitate the implementation of other projects within the MTS and allow the most effective use of roadspace throughout the City.

A peripheral route around Aberdeen has been considered over a number of years and included in the policy and strategy documents of Aberdeen City Council, Aberdeenshire Council and their predecessor authority Grampian Regional Council.

Whilst it has always been the intention to provide a route between the A90 (T) to the south and north of the Aberdeen, work had previously centred on the section between the A90 (T) Stonehaven Road and A96 (T) Inverurie Road. Grampian Regional Council carried out extensive studies and consultation into this section in the early to mid 1990's and a preferred corridor was adopted in 1996. This corridor was later endorsed by Grampian's successor authorities Aberdeen City and Aberdeenshire Councils. Although the work to identify a preferred corridor for this section of the route preceded the STAG guidelines, the level of work undertaken addressed the main components of a STAG assessment and the route identification process has not therefore been revisited. All previous reference documentation relating to the WPR western section corridor selection process is however available on request, if required.

In autumn 2001, NESTRANS instructed studies to fully identify a preferred corridor for the remaining northern section of the route between the A96 (T) Inverurie Road and A90 (T) Ellon Road. The subsequent works have been carried out under the STAG guidelines.

It is the intention to carry out a DMRB Stage 3 assessment and design work on the complete WPR when a Northern Leg route has been chosen. The following flow chart shows how the various past, present and future assessments sit together.


NESTRANS have identified a Modern Transport System for the North East of Scotland
Chapter 1 (MTS STAG – Appendix A)
The MTS has shown the need for the WPR for the North East of Scotland
Chapter 1 (Conclusion of MTS STAG – Appendix A)
WPR Objectives and Problems identified
Chapters 2-3 (Appendices B-D)
Western Peripheral Route (West)
Western Peripheral Route (Complete)
Western Peripheral Route (North)
Pre 1996 route choice study
(Reference documents – to be provided on request)
Economic and Traffic studies
Chapter 4 (Reports – Appendices J-L)
Route assessments (design and environmental)
Chapter 4 (Reports – Appendices E, G-I)
Route study refinement / junction design
(Element design - currently underway)
Assessment against objectives and problems. Route option choices.
Chapter 5 (Appendices N-Q)
Final assessment of complete route
Chapter 5 (Appendix Q)
Western Peripheral Route justification and final route choice. AST's before moving to DMRB Stage 3 assessment of complete route
Chapter 6 (Appendix Q)

IDENTIFYING OUTCOME AND SETTING OF OBJECTIVES

2.1 MTS OBJECTIVES

Objectives were developed for the Modern Transport System as described in chapter 2 of the MTS Stag Appraisal contained within Appendix A. As a key component of the MTS, the Western Peripheral Route was assessed against the overall strategy objectives.

2.2 WESTERN PERIPHERAL ROUTE OBJECTIVES

In addition to compliance with the overall MTS objectives, a further set of objectives specific to the Western Peripheral Route were derived to achieve the stated outcome for the route listed at paragraph 1.3

The WPR objectives were developed in accordance with chapter 2 of the Scottish Transport Appraisal Guidance document. As with those derived for the MTS, the additional WPR objectives were prepared under the 5 Government criteria headings of Environment, Safety, Economy, Integration and Accessibility. The finalised list of objectives for both the WPR and MTS are given in Appendix B.

3. ANALYSIS OF EXISTING AND POTENTIAL PROBLEMS

3.1 MTS PROBLEMS AND OPPORTUNITIES

The problems being experienced in the North East of Scotland that the MTS is intended to resolve and the opportunities that exist were identified as described in chapter 3 of the MTS Stag Appraisal contained within Appendix A. As a key component of the MTS, the Western Peripheral Route will have been assessed against the overall problems that the strategy addresses.

3.2 WESTERN PERIPHERAL ROUTE PROBLEMS AND OPPORTUNITIES

In addition to the overall problems and opportunities identified for the MTS, a further set of problems and opportunities specific to the Western Peripheral Route were derived.

The problems and opportunities were also developed in accordance with chapter 3 of the Scottish Transport Appraisal Guidance document. The additional WPR problems and opportunities were again prepared under the 5 Government criteria headings of Environment, Safety, Economy, Integration and Accessibility. The finalised list of problems and opportunities for both the WPR and MTS are given in Appendix C.

Once the WPR problems were identified, an assessment was carried out to ensure that all of the combined MTS and WPR problems would be addressed if the MTS and WPR objectives (discussed in chapter 2) were achieved. Appendix D contains the appraisal framework used to relate the objectives to the problems. A decision was made as to whether satisfaction of each objective would have a neutral, no, positive or negative impact on each problem. Comments were made where any objectives were considered to have a potential impact on a problem.

This assessment showed that, although the problems and objectives had been derived independently, every objective addressed had positive impact against at least one problem and were all therefore required. The objectives were also shown to be sufficient, in that all problems were addressed by at least one objective. No further consideration of the objectives was therefore deemed necessary.

4. OPTION GENERATION, SIFTING AND DEVELOPMENT

4.1 STAGE 1 – ROUTE IDENTIFICATION

Previous studies had concentrated on the western section of the WPR. In order to identify the route as a whole, a preferred corridor for the northern section of the WPR between the A96 (T) Inverurie Road and the A90 (T) Ellon Road has been investigated. This work was instructed by NESTRANS in Autumn 2001 and has been carried out in accordance with the STAG manual. Stage 1 has involved the identification of routes for the WPR northern section to be taken forward for a comparative assessment.

4.1.1 Environmental and Engineering Assessment

Consultants were employed to compile a constraints map identifying the environmental constraints that exist within a defined study area. A range of potential route corridors were then assessed by a joint team of engineers from both Councils that would avoid, wherever possible, the sites with heritage, ecological, landscape and other environmental significance highlighted within the constraints map. The routes were designed to dual carriageway standard, but the option of initial construction as a single carriageway with subsequent construction of a second carriageway at a future date was also considered. This required the routes to also be assessed in accordance with single carriageway overtaking standards. The routes were also assessed against outline traffic and economic effects and the objectives of the WPR. Eighteen preferred corridors were then recommended for further consideration. The stage 1 Environmental and Engineering Assessment report is contained within Appendix E.

4.1.2 Public Consultation

The stage 1 consultation was mainly aimed at local members, community councils, community bodies, statutory bodies and where possible local landowners. A press launch however was held on 31 May 2002 to inform the general public of the preferred corridors that were proposed for comparative assessment. In addition to the resultant articles in the press and television, displays were set up in Council offices with leaflets available for members of the public at these locations and local libraries within the study area. Leaflets were also given to members of the public who wrote or telephoned regarding the consultation.

The consultation was carried out between mid June to mid August 2002 and the public were asked for any comments on this process, whether based upon their local knowledge any constraints had been missed and to comment on any alternative routes they considered worthy of further consideration. Although the information gathered from the public consultation did not lead to a

recommendation to alter any of the routes being considered for comparative assessment, the constraints identified and comments received were included in the stage 2 environmental assessment. A copy of the report outlining the public consultation process and summarising the results is contained within Appendix F.

4.2 STAGE 2 – COMPARATIVE ASSESSMENT

Stage 2 has involved gathering detailed environmental, engineering, traffic and economic information for the preferred routes identified within the stage 1 assessment. This is required for a comparative assessment to be carried out between the options to enable the selection of a single preferred route corridor.

4.2.1 Environmental and Engineering Assessment

The Stage 2 Environmental Assessment was carried out to the Design Manual for Roads and Bridges Volume 11, stage 2 level. The assessment, carried out by environmental consultants, concentrated on the preferred corridors for comparative assessment and identified in greater detail the advantages, disadvantages and constraints associated with each option. The joint Council design team meanwhile refined the engineering aspects of the route options, identifying in greater detail the horizontal and vertical alignment and junction and structure configurations. The stage 2 environmental and engineering assessment progressed in tandem, with details of any significant environmental aspects advised at the earliest opportunity. This allowed the design team to attempt to mitigate any highlighted environmental impacts and continually appraise the environmental consultants of any amendments to the routes as the more detailed design progressed. The final stage 2 Environmental and Engineering Assessment reports are contained within Appendices G and H respectively.

The full air and noise assessment requires traffic flow predictions. This particular element was therefore calculated once the results were available from the Aberdeen Sub Area Model (ASAM). The traffic flow attractions to the various route options for the northern section of the WPR could not obviously be modelled on a stand-alone basis. The traffic flow using each of the northern link options was therefore tested by adding the preferred corridor for the western section and testing the route as a whole. An addendum report with the results of the air and noise assessment for the northern options is contained within Appendix I.

4.2.2 Traffic and Economic Assessments

The Scottish Executive has commissioned the production of the 'Traffic Model for Scotland'. Part of this, the Aberdeen Sub-area Model (ASAM) became available to NESTRANS during October 2002. The model has been used to identify the optimum components for the Modern Transport System. In addition, ASAM is also being used for option testing of individual schemes within the MTS, such as the WPR.

Although interested in the traffic attractions and any subsequent relief to the existing road network associated with each of the options for the northern section of the WPR, it is meaningless to test the options for this section of the route on a stand-alone basis. The various route options for the northern section were therefore modelled in conjunction with the approved corridor for the western section to test the effect of the various possibilities for the WPR as a whole between the A90 (T) to the south and north of Aberdeen City. The traffic implications of the WPR were assessed using the highways matrices only within ASAM and the final report is contained within Appendix J. The Scottish Executives model builders carried out the modelling work with specialist advice sought from traffic consultants to advise the assessment team.

The output from ASAM was also used in the Transport Economic Efficiency (TEE) appraisal, which looked at the cost-benefit transport impacts of each option. All options provided significant benefits with BCR's between 2.3 – 2.9. The three taken forward for consultation all had BCR's of over 2.6.

Specialist consultants carried out an Economic Activity and Location Impact (EALI) analysis to assess the impact of the WPR route options on both the local and national economy. This report concludes that a Western Peripheral Route will have a significant impact on the North East economy. The choice of route however is not significant in providing these benefits. This report is attached as Appendix L.

4.2.3 Public Consultation

The results of the detailed engineering, environmental, traffic and economic studies were collated and summarised for each of the route options previously identified for comparative assessment. A further public consultation was then held to inform the public of each routes' results and to obtain their comments as to a preferred option and any objections. The consultation was held between early January to mid February 2003. The consultation has taken the form of roadshows and exhibitions with leaflets and questionnaires available as well as the detailed analysis on show. Questionnaires were printed in the local council paper and the local press. There has been a high level of interest shown with some 670 people attending the five roadshows. 1350 people have responded to the questionnaire. A report has been attached as Appendix M.

THE APPRAISAL PROCESS

5.1 ASSESSMENT OF ROUTE OPTIONS AGAINST OBJECTIVES AND PROBLEMS

Each of the WPR route options for the northern section as identified following the stage 1 environmental and engineering assessment detailed in chapter 4 were assessed against the MTS and WPR objectives and problems and opportunities as described in chapters 2 and 3. The appraisal tables for the assessment of each route option are contained in Appendices N and O respectively. Given that this assessment could in some circumstances be seen to be a subjective opinion, individual comments were prepared to explain how the performance of each route option against the objectives and the problems had been considered. Overall comments are also given to summarise each options performance.

Based upon the comments, the level to which each route option had met each of the objectives and problems was then graded between '- 3' negative impact to '+3' positive impact with zero given for neutral or no impact. Based upon the individual gradings, a single summary grading was then derived for the overall impact on all 5 Government criteria, namely Environment, Safety, Economy, Integration and Accessibility and also the further North East Specific criteria for problems. The summary rating against the Government criteria was then considered in conjunction with the additional ratings for acceptability and deliverability to give a final overall grading for the impact of each route option against the objectives and problems. Summaries of these numerical gradings are also contained at the back of Appendices N and O respectively.

5.2 COMPARATIVE ASSESSMENT OF ROUTE OPTIONS

A booklet was prepared for each of the 18 various route options within the preferred corridors identified for comparative assessment in chapter 4. The booklets gave the following summary details for each option:

- Route description
- Performance against the objectives and problems
- Risks associated with that section
- Stage 2 Environmental Assessment
- Traffic related predictions
- Engineering details
- Economic performance and implications

A summary comment by NESTRANS giving their overall opinion of the option, given the above details, was then provided. The booklets prepared for each of the 18 potential route permutations were used in the stage 2 public consultation exercise and are contained in Appendix P.

A summary spreadsheet table was prepared that showed the information from the booklets, summarised to an even greater extent, along with a summary of the response from the public consultation. This table is contained within Appendix Q. The summary spreadsheet table provides a summary of the routes performance against all the assessment criteria graded in the +3/-3 format. Appendix Q also provides a summary of the appraisal process and the rationale for reducing to three final options and the recommendation on a preferred scheme option.

The STAG appraisal summary table is produced in the Executive Summary.

6. CONCLUSION

The Stage 1 assessment had identified over 100 possible route options. This preliminary analysis reduced this to 18 routes for Stage 2 comparative assessment. These routes were taken to a public consultation to determine with the public that all the constraints had been identified and that within the constraints the 18 route options were a reasonable set of routes to test.

This testing has been carried out using the STAG method but also has been done in accordance with the Design Manual for Roads and Bridges. Reports have been prepared covering Engineering, Environment, Traffic and Economics. These reports have been used as the base information from which a STAG appraisal has been carried out.

This STAG appraisal has considered the objectives for the proposal, the problems to be resolved by the proposal as well as the governments five key criteria. This has been done under the umbrella of the MTS STAG document. That document, having proved the need for the Western Peripheral Route, meant that the basis for this STAG was the choice of route.

The analysis has shown that each route has a similar cost estimate, provides benefits to traffic and provides value for money. The EALI report shows that a WPR will be of benefit to the area's economy. Apart from minor differences in traffic distributions, which have been taken into account in the analysis, the major differences between the routes is therefore in the engineering and environment.

Bearing this in mind three routes have been taken forward for public consultation. These were:

Bucksburn
Central and
South

Central proved the best option in both the technical appraisal and in the public view and has therefore been recommended to both Councils for adoption as the preferred scheme option.

The Northern Leg and the already chosen Western Leg will be considered in a DMRB Stage 3 Assessment to complete the part 2 STAG analysis of the western Peripheral Route.