Western Peripheral Route Northern Leg
SUMMARY SPREADSHEET

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Link Option	**Issues**	**Comments**	**Environment Grading**	**Issues**	**Comments**	**Traffic Grading**	**Issues**	**Comments**	**TEE Grading**	**Issues**	**Comments**	**EALI Grading**	**Issues**	**Comments**	**Engineering Grading**	**Comments**	**Problems Grading**	**Comments**	**Objectives Grading**	**Issues**	**Comments**	**Integration Grading**	**Issues**	**Comments**	**Consultation Grading**	**Issues**	**Comments**	**Overall Grading**
North	**Visual impact** Section Goval to A90 Section Goval **River crossing** **Land Use**	The most exposed section with little mitigation possible. Considered least desirable route. Junction with A947 highly visible but considered best option for passing through Goval. River crossing highly visible and in vicinity of good fishing pools with good water quality environment Considered too far out to form a natural urban boundary. Causes severe disruption to East Aberdeenshire Golf Club.	-2		Traffic has been assessed using the highways only matrix of ASAM. The results at this stage are useful for comparative assessment. More detailed work is required at Stage 3, detailed design. The North options carried the lowest traffic flows on the WPR. They also gave a lower level of relief to the overall congestion and delay when compared with the other route proposals.	+2	**N 1 N 3 N 4 N 6 N 1 (amended Kirkhill 1 route) N 3 (amended Kirkhill 1 route)**	**Cost(£M) Benefit/Cost Ratio 127.7 126.8 122.9 123.0 121.7 120.8** Cost estimates for all routes are in the range £120m-£130m. Within the estimating tolerances all these prices are similar. Cost estimate is therefore unlikely to be a significant route choice issue. The Benefits/costs ratio's derived for the scheme are, as with the estimated costs, similar. Benefits/costs are therefore unlikely to be a significant route choice issue. All benefit/cost ratio's show the WPR provides a significant benefit for the costs incurred, comparable with projects being undertaken elsewhere in Scotland. **Stage 2** **A 'full demand' traffic matrix model run of ASAM was not required for the North Route as the 'highways only' traffic flow figures indicated that there were better alternatives.**		The Modern Transport System will provide positive benefits for the economy of the North East of Scotland. The Western Peripheral Route plays a significant role in the provision of these benefits. The particular routing of the Western Peripheral Route is not significant. These benefits mainly arise in relation to sectors involving high volume / low value products (such as fish and paper), where companies based in the North East potentially suffer a disproportionate level of impact arising increases in costs associated with their location. Additional costs caused by congestion have potential to reduce already low margins as only a small proportion of any cost increase can be passed on to customers in highly competitive markets. As industries such as oil and gas become more global and focussed on technology, the apparent peripherality of the North East, both physically and psychologically, is potentially an emerging disadvantage. The area needs to attract global management in the energy sector, a function that could be located anywhere in the world. Aberdeen may suffer and companies may choose to relocate closer to main markets and better transportation links, such as worldwide air services. In terms of recruitment, relocating staff from outwith the North East is affected by the geographical location and perception that people have of the area. Given the current low unemployment and tight skilled labour market, this combined with limited available land for industrial development and poor transportation links between areas of employment and sources of labour will limit economic expansion in some sectors in and around Aberdeen.		+2	**River crossing** **Rail crossing**	Each of the routes North, Central, South cross the river in an area of flood plain. It is considered that a perpendicular crossing is better and as such North is better than Central is better than South. Construction of the bridge over the River Don will be one of the key engineering features which will entail piling operations. Each of North, Central and South will require a rail underbridge	+1	The North route detracts from being the best option for solving the current problems primarily due to its location being approximately 4-5 km from the urban city limits. As it, in comparison, is so far from the city limits it attracts less traffic and gives least relief to overall congestion and delay on the network. The other major difficulty is it not expected to address is the problem of future development. Any development will be difficult to accommodate along or in the proximity of this route corridor. This is due to a combination of its distance from the City of Aberdeen, and its location in the rural setting.	+2	The North route detracts from being the best option primarily due to its location being approximately 4-5 km from the urban city limits. As it, in comparison, is so far from the city limits it attracts less traffic and gives least overall relief to current network congestion and delay. The other major detractor is future development will likely be difficult to accommodate along or in the proximity of this route corridor. This is due to a combination of its distance from the City of Aberdeen, and its location in the rural setting.	+2	**Link to Park and Ride sites** **Rail Freight interchange** **Land Use**	The North route with an extended roundabout could offer access to an A947 P&R with an additional junction on the A947. Little benefit to A90(N) P&R. All routes to the north of the airport provide good access from both North and South of the City with ready access to the A947 at Goval. Limited opportunity for development due to the remote nature of the link from the urban environment.	+2	**Stage 1 consultation** **Stage 2 consultation**	Preferred by West Don CC North option was not considered in the stage 2 public consultation.	Not Applicable	**Overall assessment**	Although the North route has some advantages, notably in the Goval area, this route does not have as many advantages as the Central or South routes. **Recommendation:** **This option was dropped after the Stage 2 assessment was carried out.**	Not Applicable
Central	**Visual Impact** Section Goval to A90 Section Goval **Ecology** **River crossing** **Land Use**	Considered exposed and close to SSSI and Potterton however minor route re-alignments could bring considerable improvements. Junction with A947 highly visible but considered considerably better than South option. Concern over impact on SSSI's but good mitigation possibilities River crossing highly visible and in vicinity of good fishing pools with good water quality environment WPR will provide a natural boundary to the City of Aberdeen's urban area. Whilst the Central route is further out than the South the land form does still permit this route to form a natural boundary and does increase development options.	-1		Traffic has been assessed using the highways only matrix of ASAM. The results at this stage are useful for comparative assessment. More detailed work is required at Stage 3, detailed design. The Central options carried marginally less traffic flows on the WPR than the Bucksburn and South ones, but more than the North options. They gave less relief to overall congestion and delay when compared with the South and Bucksburn route proposals, but more improvement in comparison with the North options.	+2	**C 1 C 3 C 4 C 6 C 1 (amended Kirkhill 1 route) C 3 (amended Kirkhill 1 route) Note: The amendment to the Central route has no cost implications.**	**Cost(£M) Benefit/Cost Ratio 126.0 2.394 126.6 2.394 122.8 2.496 123.0 2.496 120.0 2.537 120.6 2.537** Cost estimates for all routes are in the range £120m-£130m. Within the estimating tolerances all these prices are similar. Cost estimate is therefore unlikely to be a significant route choice issue. The Benefits/costs ratio's derived for the scheme are, as with the estimated costs, similar. Benefits/costs are therefore unlikely to be a significant route choice issue. All benefit/cost ratio's show the WPR provides a significant benefit for the costs incurred, comparable with projects being undertaken elsewhere in Scotland. **Stage 2** **Cost(£M) Benefit/Cost Ratio 120.0 4.8** **A 'full demand' traffic matrix model run of ASAM was carried out for the Central Route incorporating the re-aligned Kirkhill 1 section. Under all the WPR options tested at Stage 2 there is a decrease in traffic flows at the key link locations across the network. The BCR's derived for the scheme provide a significant benefit for the costs incurred.**	+3	The Modern Transport System will provide positive benefits for the economy of the North East of Scotland. The Western Peripheral Route plays a significant role in the provision of these benefits. The particular routing of the Western Peripheral Route is not significant. These benefits mainly arise in relation to sectors involving high volume / low value products (such as fish and paper), where companies based in the North East potentially suffer a disproportionate level of impact arising increases in costs associated with their location. Additional costs caused by congestion have potential to reduce already low margins as only a small proportion of any cost increase can be passed on to customers in highly competitive markets. As industries such as oil and gas become more global and focussed on technology, the apparent peripherality of the North East, both physically and psychologically, is potentially an emerging disadvantage. The area needs to attract global management in the energy sector, a function that could be located anywhere in the world. Aberdeen may suffer and companies may choose to relocate closer to main markets and better transportation links, such as worldwide air services. In terms of recruitment, relocating staff from outwith the North East is affected by the geographical location and perception that people have of the area. Given the current low unemployment and tight skilled labour market, this combined with limited available land for industrial development and poor transportation links between areas of employment and sources of labour will limit economic expansion in some sectors in and around Aberdeen.		+2	**Geology** **River crossing** **Rail crossing**	The Central route has a soils geology that will permit the greatest re-use of excavated material, reducing the requirement for imported material. This is the most environmentally friendly and cost effective method of soils use. Each of the routes North, Central, South cross the river in an area of flood plain. It is considered that a perpendicular crossing is better and as such North is better than Central is better than South. Construction of the bridge over the River Don will be one of the key engineering features which will entail piling operations. Alternative route realignment for the tie-in at the A90(N) to be investigated. This may bring environmental advantages. Each of North, Central and South will require a rail underbridge	+2	The Central route is essentially located 2-3 km from the urban fringes in a rural setting. Due to its location it attracts marginally less traffic as compared with other options that are located closer to the city. This is also true of the relief to overall congestion and delay on the network. The location of the route corridor provides additional options for future development opportunity but the South routes provide a better boundary. The need for developable land has to be balanced against its location in the rural setting.	+3	The Central route is essentially located 2-3 km from the urban fringes in a rural setting. Due to its location it attracts less traffic to utilise this link as compared with other options that are located closer to the city. This option provides more relief to overall congestion and delay on the network than the North route, but marginally less than the South and Bucksburn routes. Due to its remoteness from the City of Aberdeen it appears not to be as good a boundary to the city as compared to the South route. However when considering its location with regard to the city, its boundary has the advantage of increasing the quantity of future developable land between it and the city limits. This would allow greater options and flexibility for planning decisions in the future.	+3	**Link to Park and Ride sites** **Rail Freight Interchange** **Land Use**	The Central route could offer a good link to an A947 P&R with an access from the main junction roundabout. A new junction would also be needed on the A947. Provides some improvement to access to A90(N) P&R. All routes to the north of the airport provide good access from both North and South of the City with ready access to the A947 at Goval. Location of the link provides more flexibility for development but this has to be balanced against its location in the rural environment.	+2	**Stage 1 consultation** **Stage 2 consultation**	Of the over 1350 questionnaires returned, this was by far the preferred option, with 66% of those indicating a preference selecting this option. Looking at the responses from different postcode areas, this option is always the most favoured, even in the areas the route passes through/nearby. Conversely, it was only highlighted by 16% as being the worst option. In the general comments supplied, a large number of people stated that the route should be remote from existing built up areas to reduce impact to people and allow for future expansion. A number of interest groups have commented on various issues, attributable to the Central Route, for consideration prior to selection of a 'preferred route'. Some groups support the Central Route and some of them are against it. A summary of their comments is contained in the Stage 2 Public Consultation Report.	+3	**Overall assessment**	**Recommendation:** **C 3 (including route re-alignments at Potterton and Kirkhill) is the 'preferred option' to be taken forward to the NESPC meeting of 21 March 2003 for them to make a recommendation to both Councils. This will then allow both Councils to approve a 'preferred route' in April 2003.**	+2
South	**Visual Impact** Section Goval to A90 Section Goval **Ecology** **River crossing** **Land use**	Considered relatively exposed with some mitigations possible Section along river considered acceptable but significant concerns over A947 junction which would be highly visible Serious concern alongside river. Some mitigations may be possible. River crossing highly visible and in vicinity of good fishing pools with good water quality environment The South route does offer a good boundary for urban expansion northwards. Although options for future development are more limited than the Central the Central options are probably longer term before they could be achieved.	-2		Traffic has been assessed using the highways only matrix of ASAM. The results at this stage are useful for comparative assessment. More detailed work is required at Stage 3, detailed design. The South options carried marginally less traffic flows on the WPR than the Bucksburn ones, but more than the Central and North options. The South options gave greater relief than North and Central to overall congestion and delays but less than Bucksburn.	+3	**SB 1 SB 3 SB 4 SB 6 SB 1 (amended Kirkhill 1 route) SB 3 (Amended Kirkhill 1 route)**	**Cost(£M) Benefit/Cost Ratio 127.3 2.460 126.4 2.460 123.0 2.642 123.3 2.642 121.3 2.604 120.4 2.604** Cost estimates for all routes are in the range £120m-£130m. Within the estimating tolerances all these prices are similar. Cost estimate is therefore unlikely to be a significant route choice issue. The Benefits/costs ratio's derived for the scheme are, as with the estimated costs, similar. Benefits/costs are therefore unlikely to be a significant route choice issue. All benefit/cost ratio's show the WPR provides a significant benefit for the costs incurred, comparable with projects being undertaken elsewhere in Scotland. **Stage 2** **Cost(£M) Benefit/Cost Ratio 120.0 4.84** **A 'full demand' traffic matrix model run of ASAM was carried out for the South Route incorporating the re-aligned Kirkhill 1 section. Under all the WPR options tested at Stage 2 there is a decrease in traffic flows at the key link locations across the network. The BCR's derived for the scheme provide a significant benefit for the costs incurred.**	+3	The Modern Transport System will provide positive benefits for the economy of the North East of Scotland. The Western Peripheral Route plays a significant role in the provision of these benefits. The particular routing of the Western Peripheral Route is not significant. These benefits mainly arise in relation to sectors involving high volume / low value products (such as fish and paper), where companies based in the North East potentially suffer a disproportionate level of impact arising increases in costs associated with their location. Additional costs caused by congestion have potential to reduce already low margins as only a small proportion of any cost increase can be passed on to customers in highly competitive markets. As industries such as oil and gas become more global and focussed on technology, the apparent peripherality of the North East, both physically and psychologically, is potentially an emerging disadvantage. The area needs to attract global management in the energy sector, a function that could be located anywhere in the world. Aberdeen may suffer and companies may choose to relocate closer to main markets and better transportation links, such as worldwide air services. In terms of recruitment, relocating staff from outwith the North East is affected by the geographical location and perception that people have of the area. Given the current low unemployment and tight skilled labour market, this combined with limited available land for industrial development and poor transportation links between areas of employment and sources of labour will limit economic expansion in some sectors in and around Aberdeen.		+2	**River crossing** **Rail crossing**	South is the route with the largest amount of construction in or near the river flood plain. Construction of the bridge over the River Don will be one of the key engineering features which will entail piling operations. Each of the routes North, Central, South cross the river in an area of flood plain. It is considered that a perpendicular crossing is better and as such North is better than Central is better than South. Each of North, Central and South will require a rail underbridge	+1	The South A route is essentially located within 1km of the urban fringes and as such it could be considered as a suitable boundary that envelops the city. Due to its closer proximity to the city it attracts more traffic to utilise this link as compared with other northern options of Central and North. This option provides marginally less relief to the overall network congestion and delay than the heavier trafficked Bucksburn route. However, the route corridor does not pass in close proximity to the Aberdeenshire Council proposed Park and Ride site at Parkhill. With regard to the problem of future development, its setting is not remote from the city and should be acceptable. The South B route is essentially located within 1km of the urban fringes and as such it could be considered as a suitable boundary that envelops the city. Due to its closer proximity to the city it attracts more traffic to utilise this link as compared with other northern options of Central and North. This option provides marginally less relief to the overall network congestion and delay than the heavier trafficked Bucksburn route. The adv option when compared to the South A option is the route corridor lies in close proximity to the Aberdeenshire Council proposed Park and Ride site at Parkhill. With regard to the problem of future development, its setting is not remote from the city and should be the most acceptable.	+3	The South A route is essentially located within 1km of the urban fringes and as such it could be considered as a boundary that envelops the city. Due to its closer proximity to the city it attracts more traffic to utilise this link as compared with other northern options of Central and North. This option provides more relief to the overall network congestion and delay than the Central and North, but marginally less than the Bucksburn route. With regard to future development, its setting is not remote from the city and should be the most acceptable. Integration of the Park and Ride sites is less than the South B route as the route crosses the River Don downstream of the Aberdeenshire Council proposed Park and Ride site at Parkhill. The South B route is essentially located within 1km of the urban fringes and as such it could be considered as a boundary that envelops the city. Due to its closer proximity to the city it attracts more traffic to utilise this link as compared with other northern options of Central and North. This option provides more relief to the overall network congestion North, but marginally less than the Bucksburn route. With regard to future development, its setting is not remote from the city and should be the most acceptable.	+3	**Link to Park and Ride sites** **Rail Freight Interchange** **Land Use**	The South route provides the best opportunity to integrate an A947 P&R system into the revised route network as two roundabouts are planned. Provides some improved access to A90(N) P&R All routes to the north of the airport provide good access from both North and South of the City with ready access to the A947 at Goval. Location of the link is a reasonable boundary for development.	+3	**Stage 1 consultation** **Stage 2 consultation**	Some objection to route through "Parkhill/Goval" area. Probably applicable to North and Central as well but thought to be stronger against South. Preferred by Bucksburn/Newhills CC and Belhelvie CC Of the over 1350 questionnaires returned, this was the next preferred option, with 21% of those indicating a preference selecting this option. Alternatively, 21% of the questionnaires returned included Central as the worst option. In the general comments submitted, a large amount stated that the route should be remote from existing built up areas to reduce impact to people and allow for future expansion. A number of interest groups have commented on various issues, attributable to the South Route, for consideration prior to selection of a 'preferred route'. Some groups support the South Route and some of them are against it. A summary of their comments is contained in the Stage 2 Public Consultation Report.	+1	**Risks** **Overall assessment**	Altering drainage pattern into Perwinnes moss although this should be a design detail. **Recommendation:** **In comparison between the South and Central routes, the environment and engineering differances are of greater substance and outweigh the traffic and integration differances. This along with the public consultation tends to support the Central Route.Drop this proposal as there is a better alternative.**	+1
Kirkhill 1	**Visual impact** Kirkhill 1 section Kirkhill 1A/1C section Kirkhill 1B section **Ecology**	Particularly visible on stretch leading down to River Don. Particular concern over headlight glare however the possible minor route re-alignment proposed for Shell pipeline is considered an improvement. Most effects are mitigable through tree planting. Mid section hidden and south section hideable with tree planting. Junction with A96 considered highly visible and intrusive on view on entry to city. Causes minor impact on Golf Club. Route being behind Marshalls trailers considered less intrusive. Does have impact on 4 houses. Lesser impact on SAC than Kirkhill 2. Reduces impact on golf club. Concern over severance of foraging routes although this is largely mitigable. Detailed survey required and measures to be designed into route. Access bridge may be helpful.	-1	**Access to the airport Access to the A96**	Traffic has been assessed using the highways only matrix of ASAM. The results at this stage are useful for comparative assessment. More detailed work is required at Stage 3, detailed design. Kirkhill 1 & 2 both take similar volumes of through traffic although Kirkhill 2 carries considerably more traffic as it also carries existing local traffic accessing the Industrial Estate. Access to the airport from the North (from the WPR) would either be through the Industrial Estate (unacceptable) and likely to be closed off by the airport or via the access to the A96.For traffic from the North (WPR) then for Kirkhill 1B access is similar to Kirkhill 2A/1B. Access from Kirkhill 1A is from one roundabout with the A96 then via the two new roundabouts associated with the link road and a traffic signal junction. Access from the South for both Kirkhill 1 and 2 is considerably better than existing.	+2	**N 1 N 3 C 1 C 3 SB 1 SB 3 N 1 (amended Kirkhill 1 route) N 3 (amended Kirkhill 1 route) C 1 (amended Kirkhill 1 route) C 3 (amended Kirkhill 1 route) SB 1 (amended Kirkhill 1 route) SB 3 (amended Kirkhill 1 route)**	**Cost(£M) Benefit/Cost Ratio 127.7 126.8 126.0 2.394 126.6 2.394 127.3 2.460 126.4 2.460 121.7 120.8 120.0 2.537 120.6 2.537 121.3 2.604 120.4 2.604** Cost estimates for all routes are in the range £120m-£130m. Within the estimating tolerances all these prices are similar. Cost estimate is therefore unlikely to be a significant route choice issue. The Benefits/costs ratio's derived for the scheme are, as with the estimated costs, similar. Benefits/costs are therefore unlikely to be a significant route choice issue. All benefit/cost ratio's show the WPR provides a significant benefit for the costs incurred, comparable with projects being undertaken elsewhere in Scotland. **Stage 2** **A 'full demand' traffic matrix model run of ASAM was carried out for the Central and South Routes incorporating the re-aligned Kirkhill 1 section.Refer to the comments for the Central and South sections.**	+3	The Modern Transport System will provide positive benefits for the economy of the North East of Scotland. The Western Peripheral Route plays a significant role in the provision of these benefits. The particular routing of the Western Peripheral Route is not significant. These benefits mainly arise in relation to sectors involving high volume / low value products (such as fish and paper), where companies based in the North East potentially suffer a disproportionate level of impact arising increases in costs associated with their location. Additional costs caused by congestion have potential to reduce already low margins as only a small proportion of any cost increase can be passed on to customers in highly competitive markets. As industries such as oil and gas become more global and focussed on technology, the apparent peripherality of the North East, both physically and psychologically, is potentially an emerging disadvantage. The area needs to attract global management in the energy sector, a function that could be located anywhere in the world. Aberdeen may suffer and companies may choose to relocate closer to main markets and better transportation links, such as worldwide air services. In terms of recruitment, relocating staff from outwith the North East is affected by the geographical location and perception that people have of the area. Given the current low unemployment and tight skilled labour market, this combined with limited available land for industrial development and poor transportation links between areas of employment and sources of labour will limit economic expansion in some sectors in and around Aberdeen.		+2	**Park and Ride** Kirkhill 1 Kirkhill 1B **Construction** **Shell pipeline**	No impact. Access roundabout and A96/Dyce Drive link road re-positioned. Some parking spaces to be re-positioned. Planning permission and CPO to be amended. Although construction of Kirkhill 2 is considerably easier than Kirkhill 1, this is counterbalanced by the substantially increased traffic management requirements that would be required to construct the Kirkhill 2 option. Thereby the impact on drivers is negligible compared to Kirkhill 2. There are two large rock cuts within this link that would require further investigation at detailed design stage to establish the method of extraction. Assessed route would involve a £7m diversion of the pipeline however an alternative minor route re-alignment would avoid the diversion and bring environmental advantages.	+1	For the purposes of the assessment against the 'problems' the links Kirkhill 1 and Kirkhill 2 are considered as equal except that the Kirkhill 2 link, as it passes through the middle of the Kirkhill Industrial Estate will create new problems throughout its length. The close proximity of the industrial units and their business interaction on both sides of the proposed corridor will lead to safety and severance issues.	+2	For the purposes of the assessment against the 'objectives' the links Kirkhill 1 and Kirkhill 2 are considered as equal.	+2	**Link to Park and Ride sites** **Rail Freight Interchange**	Kirkhill 1 B provides good access to the A96 P&R site via two roundabouts. Kirkhill 1A is more remote but still in the vicinity. All routes to the north of the airport provide good access from both North and South of the City with ready access to the A947 at Goval.	+3	**Stage 1 consultation** **Stage 2 consultation**	West Don CC in favour assessing other routes to have too great an impact on people. Kirkhill 1B was included with a minor route realignment (at the Kirkhill Forest section) as part of the South and Central options at the stage 2 public consultation. A number of interest groups have commented on various issues, attributable to the Kirkhill section which is common to both the Central and South options, for consideration prior to selection of a 'preferred route'. A summary of their comments is contained in the Stage 2 Public Consultation Report.	+2	**Risks** **Environment** **Overall assessment**	Shell pipeline costs although possible mitigation through re-alignment. Not the environmentalists first choice however the reasons for this are mitigable. Kirkhill 1B has advantages over Kirkhill 1A. As the environmental concerns are mitigable this route performs better than the Kirkhill 2 route. **Recommendation:** **C 3 (including route re-alignments at Potterton and Kirkhill) is the 'preferred option' to be taken forward to the NESPC meeting of 21 March 2003 for them to make a recommendation to both Councils. This will then allow both Councils to approve a 'preferred route' in April 2003.**	+1
Kirkhill 2	**Kirkhill 2** **Kirkhill 2A/1B**	DMRB methodology concentrates on residential impacts and places less emphasis on impacts in commercial and industrial areas. Nevertheless noise levels increase is expected to be substantial. Significant impact on SAC. Reduces impact on SAC. Junction with A96 considered to have similar impact to Kirkhill 2	-2	**Access to the airport Access to the A96**	Traffic has been assessed using the highways only matrix of ASAM. The results at this stage are useful for comparative assessment. More detailed work is required at Stage 3, detailed design. Kirkhill 1 & 2 both take similar volumes of through traffic although Kirkhill 2 carries considerably more traffic as it also carries existing local traffic accessing the Industrial Estate. Detailed design work would be required to ensure the access junctions didn't introduce delay on the WPR. This delay could be generated by junctions and accesses in close proximity to the proposed junctions. Access to the Industrial estate from the airport could be via the airport access roads (unacceptable). These would be closed by the airport. Access to the airport from the North (from the WPR) would either be through the Industrial Estate (unacceptable) and likely to be closed off by the airport or via the access to the A96. On Kirkhill 2 this would mean three roundabouts to the A96 followed by a further two roundabouts and a traffic signalled junction. On Kirkhill 2A/1B this would mean two roundabouts to the A96 followed by one further roundabout and one traffic signal junction. Access from the South for both Kirkhill 1 and 2 is considerably better than existing.	0	**N 4 N 6 C 4 C 6 SB 4 SB 6**	**Cost(£M) Benefit/Cost Ratio 122.9 123.0 122.8 2.496 123.0 2.496 123.0 2.642 123.3 2.642** Cost estimates for all routes are in the range £120m-£130m. Within the estimating tolerances all these prices are similar. Cost estimate is therefore unlikely to be a significant route choice issue. The Benefits/costs ratio's derived for the scheme are, as with the estimated costs, similar. Benefits/costs are therefore unlikely to be a significant route choice issue. All benefit/cost ratio's show the WPR provides a significant benefit for the costs incurred, comparable with projects being undertaken elsewhere in Scotland. **Stage 2** **A 'full demand' traffic matrix model run of ASAM, incorporating the Kirkhill 2 section, was not required for any of the options, as the comparitive assessment work showed there were better alternatives.**	+3	The Modern Transport System will provide positive benefits for the economy of the North East of Scotland. The Western Peripheral Route plays a significant role in the provision of these benefits. The particular routing of the Western Peripheral Route is not significant. These benefits mainly arise in relation to sectors involving high volume / low value products (such as fish and paper), where companies based in the North East potentially suffer a disproportionate level of impact arising increases in costs associated with their location. Additional costs caused by congestion have potential to reduce already low margins as only a small proportion of any cost increase can be passed on to customers in highly competitive markets. As industries such as oil and gas become more global and focussed on technology, the apparent peripherality of the North East, both physically and psychologically, is potentially an emerging disadvantage. The area needs to attract global management in the energy sector, a function that could be located anywhere in the world. Aberdeen may suffer and companies may choose to relocate closer to main markets and better transportation links, such as worldwide air services. In terms of recruitment, relocating staff from outwith the North East is affected by the geographical location and perception that people have of the area. Given the current low unemployment and tight skilled labour market, this combined with limited available land for industrial development and poor transportation links between areas of employment and sources of labour will limit economic expansion in some sectors in and around Aberdeen.		+2	**Kirkhill Industrial Estate** Severance Road safety Operational impacts Bridge over Dyce Drive Main road/Construction	The impact of a 70 mph route through the industrial estate will be significant making pedestrian access impossible except for the proposed overbridge and making working between industrial units on either side of the route more difficult. The main accesses for the industrial estate will be concentrated on routes which are currently general access roads with accesses. The increase in volume of traffic on these roads is not compatible with the number of frontage accesses. There would be an increased accident and congestion risk. The two main access points have dumbbell junctions. The size and design of these would need to be carefully assessed to ensure that there would be no tailbacks onto the WPR. There would be a net loss of on street parking due to this having to be removed to permit traffic to flow. Operational impacts are difficult to judge but there would clearly be many impacts. These would include loss of parking from car parks, loss of yard areas, splitting of yard areas to permit punch through roads to be constructed. The bridge over Dyce Drive would place a road over Dyce Drive, some 7m above the existing road and therefore above roof level of neighbouring properties. The visual impact of this bridge would be significant. This bridge would cut access to the Bucksburn Taxi's office and could cut access to an office development. The new road would create an alley behind properties currently perpendicular to Dyce Drive. These properties would have fire exits leading out into the alley (created by bridge retaining wing walls). The new main road would have to be built on retaining walls in places and would bring the road considerably closer to properties. in some locations this would be within just a few metres from property doors leading to a loss of operational and parking space. Construction of the dual carriageway on the existing alignment will lead to considerable delays for traffic for a period up to 12 months. This maybe particularly important for industrial and airport traffic. This disruption is anticipated to be severe and will have significant impact.	-2	For the purposes of the assessment against the 'problems' the links Kirkhill 1 and Kirkhill 2 are considered as equal except that the Kirkhill 2 link, as it passes through the middle of the Kirkhill Industrial Estate will create new problems throughout its length. The close proximity of the industrial units and their business interaction on both sides of the proposed corridor will lead to safety and severance issues.	+2	For the purposes of the assessment against the 'objectives' the links Kirkhill 1 and Kirkhill 2 are considered as equal.	+2	**Link to Park and Ride sites** **Rail Freight Interchange** **Land use**	Access to the A96 P&R for Kirkhill 2 A/1 B is the same as Kirkhill 1B. Access from Kirkhill 2 is more convoluted passing through 3 roundabouts. All routes to the north of the airport provide good access from both North and South of the City with ready access to the A947 at Goval. The new access junctions, punch through roads and road overbridges in the industrial area will have significant impact on the operations of the companies in the estates.	+1	**Stage 1 consultation** **Stage 2 consultation**	Bucksburn/Newhills CC felt this route had potential. Kirkhill 2 option was not considered in the stage 2 public consultation.	Not Applicable	**Risks** **Overall assessment**	Operational impacts proving too severe on some industrial/office operations. Public utility risks including the major BP pipeline. Engineering difficulties are considered considerable and to have major impact on operation of Industrial Estate. Traffic delay's due to construction likely to be extensive. Kirkhill 2A/1B has greater advantages than Kirkhill 2 (part). Disadvantages are greater for the Kirkhill 2 route than the disadvantages of the Kirkhill 1 route **Recommendation:** **This option was dropped after the Stage 2 assessment was carried out.**	Not Applicable
Bucksburn	**River crossing** **Ecology** **Rowett** **Tunnel**	Considered to be the best crossing in environmental terms. Green Burn will have to be culverted losing a significant local environmental feature but in general the ecology of the route is good. The impact on the Rowett is described as serious and significant. This impact falls across a number of areas including severance, noise, air quality and operations. It has been established that the route will have a significant adverse impact on the experimental capability of the Rowett. It is however noted that the Rowett is close to the airport flightpath and suffers intermittent noise from this source The tunnel mitigates well for the route passing through a residential area and it is discussed in detail in the Engineering section.	-2	**Access to the airport Access to the A96**	Traffic has been assessed using the highways only matrix of ASAM. The results at this stage are useful for comparative assessment. More detailed work is required at Stage 3, detailed design. Bucksburn carries more traffic on the WPR than the other routes, and provides the greatest level of relief to the overall congestion and delay on the network. Additional traffic is attracted to the A947. Detailed design work would be required to ensure the access junctions didn't introduce delay on the WPR. This delay could be introduced from existing junctions in the vicinity of the proposed new junction. Access is via an improved A96 junction. This junction will be busier than those for the Northern routes.	+2	**B 1**	**Cost(£M) Benefit/Cost Ratio 119.2 2.930** Cost estimates for all routes are in the range £120m-£130m. Within the estimating tolerances all these prices are similar. Cost estimate is therefore unlikely to be a significant route choice issue. The Benefits/costs ratio's derived for the scheme are, as with the estimated costs, similar. Benefits/costs are therefore unlikely to be a significant route choice issue. All benefit/cost ratio's show the WPR provides a significant benefit for the costs incurred, comparable with projects being undertaken elsewhere in Scotland. **Stage 2** **Cost(£M) Benefit/Cost Ratio 120.0 5.5** **A 'full demand' traffic matrix model run of ASAM was carried out for the Bucksburn Route. Under all the WPR options tested at Stage 2 there is a decrease in traffic flows at the key link locations across the network. The BCR's derived for the scheme provide a significant benefit for the costs incurred. Bucksburn provides the highest BCR for all the options.**	+3	The Modern Transport System will provide positive benefits for the economy of the North East of Scotland. The Western Peripheral Route plays a significant role in the provision of these benefits. The particular routing of the Western Peripheral Route is not significant. These benefits mainly arise in relation to sectors involving high volume / low value products (such as fish and paper), where companies based in the North East potentially suffer a disproportionate level of impact arising increases in costs associated with their location. Additional costs caused by congestion have potential to reduce already low margins as only a small proportion of any cost increase can be passed on to customers in highly competitive markets. As industries such as oil and gas become more global and focussed on technology, the apparent peripherality of the North East, both physically and psychologically, is potentially an emerging disadvantage. The area needs to attract global management in the energy sector, a function that could be located anywhere in the world. Aberdeen may suffer and companies may choose to relocate closer to main markets and better transportation links, such as worldwide air services. In terms of recruitment, relocating staff from outwith the North East is affected by the geographical location and perception that people have of the area. Given the current low unemployment and tight skilled labour market, this combined with limited available land for industrial development and poor transportation links between areas of employment and sources of labour will limit economic expansion in some sectors in and around Aberdeen.		+2	**River crossing** **Tunnel** Construction Operation Rail crossing	Construction of the bridge over the River Don will be one of the key engineering features which will entail piling operations. Construction of the tunnel will cause severe significant impact on residents in Bankhead Road, Stoneywood Rd, Waterton Road and Lade Crescent as well as residents of Bankhead and Stoneywood in general. Some residents will literally open their front doors into a building site for a period of approx. two years. The cut and cover tunnel will require bored piling operations, an excavation 11 metres deep incorporating a localised 14 metres deep excavation along its length to allow construction of the Greenburn Culvert. There is a possibility of having a bored tunnel but this would significantly increase the safety risks, costs, construction period and reduce the economic benefit. It would also depend on site investigation proving it possible. The tunnel will require mechanical ventilation leading to maintenance costs. With the tunnel in a residential area and in close proximity to both a primary and secondary school there is a risk of children being attracted to the tunnel resulting in a road safety risk and also a graffiti problem possibility. It is not desirable to have a tunnel pass through a residential area if there are alternatives. Construction of a bridge under the railway is always a significant structural problem and will entail railway closures. The requirement for a rail overbridge means a significant engineering structure will be encountered which is considerably more complicated than the rail underbridges in other routes.	-3	The Bucksburn route essentially encompasses the City suburb of Bridge of Don and is the closest of all the routes to the city of Aberdeen. Due to its close proximity to the city more traffic is attracted to utilise this link as compared with all other options of South, Central and North and it therefore gives most relief to overall congestion and delay. This route however attracts greater volumes of vehicles onto the A947 Stoneywood Road and gives less relief to the A96 Auchmill Road in comparison with the other WPR options. With regard to future development, its setting being relatively close to the city, it is feasible that future development will be required on both sides of the route corridor. Integration of Aberdeen Airport, Raiths Farm (rail freight interchange, Dyce) and Park and Ride site at Parkhill is less than all the other route options. This is because the route crosses the River Don downstream at Bankhead.	+2	The Bucksburn route essentially encompasses the City suburb of Bridge of Don and is the closest of all the routes to the city of Aberdeen. Due to its close proximity to the city more traffic is attracted to utilise this link as compared with all other options of South, Central and North. It also provides greatest overall relief to the existing network. With regard to future development, its setting being relatively close to the city, it is feasible that future development will be required on both sides of the route corridor. Integration of Aberdeen Airport, Raiths Farm (rail freight interchange, Dyce) and Park and Ride site at Parkhill is less than all the other route options. This is because the route crosses the River Don downstream at Bankhead.	+2	**Link to Park and Ride sites** **Rail Freight Interchange** **Land Use**	The close proximity of the A90(N) junction offers the opportunity of better access to the Bridge of Don Park and Ride. Access to the A96 P&R site involves leaving the WPR at Dyce Drive and driving out of town to the car park. Although not a large distance the psychological impact of going out of town to come back in is poor. Access to the interchange would be via the A96 and A947 Stoneywood Road. These roads are already extremely busy and the model predicts even further traffic on the A947 Stoneywood Road. Extra congestion likely making this access poor. Possibility of accessing via Dyce Drive which in peak times is already extremely busy. Access considered poor. Provides no access to A947 site. Route passes through Research Institute land and also uses recreational land in the Bankhead area although this is largely to be returned to original state after construction.	-1	**Stage 1 consultation** **Stage 2 consultation**	Considerable opposition to route in particular concerning impact at Bankhead. (It has to be borne in mind that the level of objection will be related generally to the number of residents affected therefore objection levels will be skewed by this route) This route is not favoured by Belhelvie CC, Bucksburn/Newhill CC or West Don CC. Strong objection from Rowett. Airport in favour of routes to north of airport rather than this one. This route favoured by BP. Of the over 1350 questionnaires returned, this was the least favoured option, with only 13% of those indicating a preference selecting this option. Looking at the responses from different postcode areas, this option is generally always the least favoured, with only the Bridge of Don and Kirkhill/Newmachar/Blackburn areas having Bucksburn coming in second place to Central, albeit still with less than 20%, as the preferred option. Bucksburn was also highlighted as being the worst option in 80% of the questionnaires returned. A number of interest groups have commented on various issues, attributable to the Bucksburn Route, consideration prior to selection of a 'preferred route'. Some groups support the Bucksburn Route and some of them are against it. A summary of their comments is contained in the Stage 2 Public Consultation Report.	-2	**Risks** **Overall assessment**	Cost over-runs on the major tunnel/ railway under bridge. Impact on the Rowett being as severe as to generate major consequence for the Rowetts' operations. Altering drainage pattern into Perwinnes moss although this should be a design detail. **Recommendation:** **The Central and South options that lie to the north of the airport provide a number of advantages which outweigh the benefits provided by the Bucksburn Route.Drop this proposal as there is a better alternative.**	0

Criteria assessed for Northern Leg only

Criteria assessed for complete Western Peripheral Route