

S3 Option Appraisal

1. Introduction

- 1.1 The purpose of this paper is to report on the recent progress on the proposed option appraisal method and to put forward recommendations with a view to reducing the number of options to a manageable number for consideration in Stage 3 of the HISAM study.
- 1.2 Stage 1 of HISAM generated 12 development options for the Interchange and wider Masteplan. As a result of the Stage 1 Appraisal, subsequently confirmed by the Project Board 2 (5 July 2006, Item 2.) and acceptance of the recommendations in Stage 2, six options were eliminated and a further six carried forward for development in Stage 3 (these were options 3.2, 3.3, 4.2, 4.3, 5.2 and 5.3). These options were selected on the basis of their performance in meeting the planning objectives outlined in the STAG Part 1 appraisal (see HISAM Stage Report, Volume 1 Chapter 4 May 2006).
- 1.3 Since August 2006, delays experienced by the Trams Project have impacted severely on the scope and timing of Stage 3. However, these have also created an opportunity to undertake an Interim Review of Options and this was discussed and agreed in principle at Steering Group (SG) 11, and Project Board (PB) 6, during December 2006.
- 1.4 Following these meetings a paper was presented to SG12 and PB7 in January 2007 which examined four particular issues and made recommendations :
 - **Haymarket Link** : recommended that this link be eliminated from any further consideration (this affected options 5.2 and 5.3).
 - **Listed Buildings** : recommended that Stage 3 continues to consider the retention and removal of listed buildings in future options (Listed Buildings are Haymarket Station and Ryries Bar)
 - **Tram Alignment** : recommended that this be eliminated from further consideration (this affected option 5.3).
 - **Sub Division of Site** : recommended that the site's development be viewed as comprising both public sector components principally the Interchange, and private sector components, wider development opportunities. This will affect the application of cost protocols.
- 1.5 The paper entitled Interim Review of Options (which is attached at Appendix A) was agreed by PB7 on 25 January 2007 and has formed the basis of recent work to refine the options.

2. Interim Review of Options

- 2.1 The Interim Review of Options identified a number of factors relating to the Haymarket Link. The first of these was that the closure of the Haymarket Junction is unlikely to be sanctioned in the short term and as long as the junction is to remain open there is no justification for the Haymarket Link. In addition to

this it was clear that east to west traffic movements will still be included in the base case.

- 2.2 The Interim Review of Options also explained that:
- There would be significant capital costs associated with the Haymarket Link
 - There would be significant disruption and compensation costs
 - It would result in the loss of a significant amount of developable land
 - The public realm benefits from the closure of the junction could be generated in other ways.
- 2.3 In addition to these factors, Technical Note 5c (26 October 2006), summarising the analysis of the Haymarket Junction, also highlighted the traffic problems and inconvenience to car users if vehicles travelling east to west had to be re-routed via the Haymarket Link. The analysis showed that over 1400 vehicles travel from Morrison Street to Haymarket Terrace (900) or West Maitland Street (500) in the AM peak. Rerouting these vehicle trips through the Haymarket Link, particularly those going to West Maitland Street would lead to an increase in journey times and would also result in an inefficient operation of movements.
- 2.4 Taking all of these factors together it was recommended that a decision be taken to remove the Haymarket Link at this stage of the appraisal.
- 2.5 The Interim Review of Options paper also set out a number of reasons to reject options that include the realignment of the tram. These were that it would:
- Result in a significant increase in costs without any comparable increase in benefits;
 - Involve complex construction issues;
 - Exacerbate congestion for people switching between modes;
 - Involve the demolition of a number of listed structures; and
 - Would result in complex design challenges.
- 2.6 It was therefore recommended that the tram realignment be rejected. This, together with all decisions to reject options that were originally carried forward from the Stage 1 Appraisal Report, will be tabulated in the final Stage 3 Report to provide a clear, full and quantified audit trail of all key decisions regarding the inclusion, removal or renaming of options. The options will also continue to be checked at each stage to ensure they meet the planning objectives.
- 2.7 Over the recent past, further progress has been made through the Sub Groups, on considering the scope and content of options for the interchange and the wider masterplan site and the phasing of such developments. Indeed, through these efforts, it has become apparent that what were previously conceived as six individual free standing options in Stage 1, albeit based on the two assumptions of either retaining the listed buildings or removing the listed buildings, might better be presented in Stage 3 as two principal options, under these same scenarios on listed buildings, comprising sequential phases of development.

- 2.7 In this way, Options 3.2 and 4.2 can be viewed as early stages of Option 5.2 in which the listed buildings are retained; while similarly options 3.3 and 4.3 can be viewed as early phases of Option 5.3 in which the listed buildings are removed.
- 2.8 However it has already been established that certain elements of Options 5.2 and 5.3 should be eliminated for reasons of their practicality, cost and deliverability ie the relocation of the tram alignment and the Haymarket Link Road above the rail tracks west of Dalry Road.
- 2.9 In acknowledging recent progress in the Trams project in relation to the business case, the tram alignment/ stop and the related junction alignment at Haymarket, it is apparent that the scope for any material difference between the options in traffic engineering and public transport terms, is limited. However, options remain in regard to the extent of decking and these will be influenced by possible redesignation of Haymarket as a sub-surface station and by the related change in cost and value
- 2.10 Accordingly, it is proposed in Stage 3 that a new vocabulary is introduced for the alternatives to be developed and appraised. It is thus proposed that Option A refers to the retention of listed buildings, while Option B refers to the removal of listed buildings with a commensurate increase in decking and the development footprint.
- 2.11 In addition, and as required by the Project Board, it is proposed that each of the two principal options would contain a number of development phases, which themselves would be determined by public sector support, market conditions and the private sector's attitude to risk prevailing at the time. In this way it is proposed that two options be taken forward and that each comprise three phases (equivalent to short, medium and long term phases of development) but with no timeframe yet determined. This concept will be developed further in Stage 3.
- 2.12 In addition, it is proposed that a comparator option (Option C¹) be introduced to illustrate a solution entirely focused on the Interchange which captures a number of the immediate interchange related benefits of the two larger scale options, but at a lower cost and without seeking to enable development opportunities in the wider area.
- 2.13 The aim of the comparator option is to meet the STAG guidance recommendation to include a solely public sector funded option. This will therefore allow a value for money comparison with options A and B to determine whether the incremental benefits associated with these options are sufficient to outweigh the additional costs.
- 2.14 Finally, while all of the above refer to HISAM options and their phases for the Interchange and wider area, it appears possible that 'pre-HISAM' works could be undertaken through an arrangement between TS and FS, in order to improve links between the existing concourse and all platforms, while simultaneously rendering the station DDA compliant. It is intended that this be part of the

¹ The precise details of Option C, and how it differs from Options A and B, are still being considered and it is anticipated that this will become clearer during Stage 3.

option appraisal process. The scope and timing of the ‘pre-HISAM’ works have not yet been determined but the HISAM team require confirmation from TS and CEC of its content by 30 April to meet the appraisal programme.

- 2.15 For clarity Figure 1 illustrates the evolution of Stage 2 Options through to Stage 3 Options. In summary, the options and phases proposed to be examined in Stage 3 are shown in Table 1, while graphic illustrations of options A, B and C are attached at the end of this note.

Table 1: Option Appraisal for Stage 3

Option	Pre HISAM	Phase 1	Phase 2	Phase 3
Pre HISAM	✓			
A : Listed Buildings Retained		✓	✓	✓
B : Development without Listed Buildings		✓	✓	✓
C : Transport Interchange only (public sector funded)		✓		

3. Stage 3 Appraisal

- 3.1 Regarding the formal Stage 3 Appraisal, it is proposed to undertake a full STAG Part 2 on Phase 1 only, of options A, B and C. The aim of this will be to identify and measure the transport related impacts of the interchange facility. It is recognised however that there is likely to be other, wider impacts associated with Phases 2 and 3. While these impacts are not transport related (and therefore do not require a STAG appraisal and measurement against the STAG objectives) it will be important to identify the positive and other impacts associated with this development, as they may have implications for the wider Haymarket area². It will also be important to determine whether the revenue generated by the incremental development ie beyond Phase 1, would outweigh the costs, to the extent that there could be a financial contribution (albeit retrospectively) to construction of the interchange facility. Further analysis of the incremental implications of later phases will therefore be undertaken for options A and B³. This approach has been agreed at a meeting with the Project Team, representatives of CEC and economists at Transport Scotland on 06/03/07.
- 3.2 For the purposes of this study, the do-minimum option will include any investment that is currently committed at Haymarket, irrespective of Options A, B or C. In addition, it is known that some further work can be expected in the area, ‘pre-HISAM’. This has already been referred to in para 2.14 and is likely to include the tram line and stop construction, components of a FS/TS project to upgrade and link the station with the tram stop and certain improvements to the public realm in the area. Accordingly, prior to the STAG appraisal, it will be necessary to consider and agree what precisely the pre-HISAM scheme will comprise in terms of development components, so that it can be subsumed

² The investment required for Phases 2 and 3 will depend on private sector funding; accordingly, it will not be necessary to measure their performance against STAG objectives which requires measurement of the effectiveness of public expenditure. However it will be important to assess their impact against the wider opportunities for Haymarket to determine the contribution they may make.

³ At this stage the content, scope and timing of the various phases has yet to be agreed and further work on this is being carried out during Stage 3.

within the do-minimum option to become the 'do-minimum/pre-HISAM'. As already noted, the team would require a decision from TS and CEC on the content of this by 30 April.

- 3.3 A full STAG Part 2 appraisal will be carried out for Phase 1 of Options A, B and C. The aim will be to capture all the impacts associated with the implementation of the interchange under 3 options. As explained above, Options A and B involve greater levels of investment and development. However, Option C is included to meet the requirement of benchmarking against a relatively low cost primarily public sector funded option. The purpose of including option C is to determine whether the additional benefits associated with Options A and B are sufficient to outweigh the additional costs. For example, it may be that many transport benefits generated by introducing an interchange facility at Haymarket could be captured in the low cost option.
- 3.4 It is likely that the vast majority of the transport impacts of the project will be generated in Phase 1. Accordingly the assessment of Phases 2 and 3 would focus on their economic benefits, in terms of the wider development and regeneration impacts plus their financial implications.
- 3.5 The STAG Part 2 appraisal process and methodology used to assess and compare the Haymarket options will be consistent with Transport Scotland's guidance. The appraisal will follow on from the STAG Part 1 Report (HISAM: Stage 1 Report: Long List of Options, Volume 1: Main Report, June 2006) and will involve a more detailed investigation of the potential positive and negative impacts, including more robust capital costs and risk analysis.
- 3.6 The Part 2 appraisal will measure in detail the impacts against the Government's five objectives for transport investment (economy, environment, safety, integration and social inclusion/accessibility) and these are discussed below.
- 3.7 The **economic** impact of the interchange will be split into two parts.

Transport Economic Efficiency (TEE)

- 3.8 The first part will be the Transport Economic Efficiency (TEE) analysis as recommended in STAG. The aim will be to capture the welfare benefits of each of the options. The TEE analysis traditionally captures these impacts through quantitative changes to, for example, transport user's journey times, user charges (fares), vehicle operating costs and operators revenues and costs.
- 3.9 The nature of the Haymarket interchange project however makes this type of valuation difficult. This is because the Options for Haymarket are unlikely to involve improvements to track or signalling infrastructure that generally make journey times quicker, such as upgrading or introducing new road or rail infrastructure. (However since improvements within the Interchange may reduce journey times for passengers alighting the trains and transferring to/ from other modes, some efficiencies may be detectable and these are discussed below). The main aims of this project are to improve the facilities at Haymarket for all transport users so that journey experience for public transport users is efficient and pleasant and will thus encourage continued use of public transport services.

Indeed, in light of this it was originally anticipated that the appraisal of the benefits at Haymarket would be captured in a qualitative assessment.

- 3.10 However a weighting and scoring system is in the process of being designed (as agreed with TS). This will be based on the transport user survey carried out by George Street Research. This involved asking people arriving and leaving Haymarket which factors they considered to be important for their trip and to rate the current condition of facilities at Haymarket. The outputs of the research are being used to gauge the benefits associated with the improvements that could occur under the first phase of Options A, B and C. The options will then be ranked against their performance in addressing the attributes that individuals regard as being important.
- 3.11 An alternative approach has also been considered that could supplement the weighting and scoring system, although care would be taken to avoid double counting of benefits. Research has been carried out for underground stations in London and for bus stations in Manchester for Greater Manchester PTE that uses values that transport users place on new or improved attributes of a station to estimate the benefits associated with upgrades. The analysis employs a "willingness-to-pay technique", derived from Stated Preference research.
- 3.12 There are also standard values set out in the rail industry's Passenger Demand Forecasting Handbook (PDFH) for measuring the benefits at interchange facilities. These are shown in table 2 below.

Table 2. PDFH values for interchange station facilities (pence)

Attribute	Commuters	Business	Leisure
Intercom to Control Centre	4	23	20
Real time information monitors	23	38	37
Additional staff present	10	15	30
CCTV	10	14	13
Heated and refurbished waiting rooms	5	7	10
Clear Departure Information	3	21	21
Plenty of seats on platform	17	25	24
Better Lightning	3	4	4
Additional Printed Timetable information	0	12	12

- 3.13 After detailed discussions with client representatives it has been agreed to apply the PDFH values where appropriate to the appraisal of the interchange. While the values and attributes set out in the Handbook do not match precisely with the proposed improvements and new facilities at Haymarket, the information provides a valuable aid that can be used in the cost benefit analysis. Further work

will be required however to identify the precise details of the attributes of Phase 1 to enable a robust quantified appraisal to be carried out (eg will the waiting rooms be heated and will there be a charge for use of the toilets ? etc) and supplement the outputs from the weighting and scoring system.

- 3.14 While it was anticipated at the outset of the study that the improvements at Haymarket would not result in journey time savings (as it would not directly involve track or rolling stock improvements) it has become increasingly apparent as the study has progressed, that the do-minimum/pre-HISAM option would result in rising levels of passenger congestion within the station as rail patronage numbers at Haymarket increase over time. The increased number of users leads to much longer through-times between passengers leaving trains and exiting the station, particularly as bottlenecks are created on stairs at platform level. It is clear that the introduction of more stair capacity and escalators would allow easier and quicker movement within the station and shorter journey times, particularly in the morning and evening peaks.
- 3.15 It is therefore intended to quantify these benefits (using standard values of time for commuters, business users and leisure users) using a spreadsheet model and forecast passenger numbers. The results would be compared against the costs to arrive at a Benefit Cost Ratio (BCR) and Net Present Value (NPV) for the Phase 1 of Options A, B and C. This analysis would complement the weighting and scoring system to arrive at a more accurate estimate of the benefits associated with each of the options.
- 3.17 It is therefore proposed that a three-part approach be used for the TEE analysis involving the weighting and scoring system, the values set out in the Passenger Demand Forecasting Handbook and journey time savings for passengers moving through the interchange facility⁴. This approach has been agreed with staff at Transport Scotland.
- 3.18 In addition to the TEE analysis carried out for Phase 1, quantified analyses will also be carried out to capture the impacts associated with Phases 2 and 3. Because the impacts will not be primarily transport related it is not proposed that these are captured using a STAG type analysis. This analysis will only apply to options A and B. While it is unlikely there will be any additional transport benefits generated by Phases 2 and 3, and since it is probable that private sector developer returns will outweigh the development costs of these later phases, there may be scope for a cross funding contribution between the development and interchange components, thereby leading to a qualitative improvement to the Phase 1 interchange which is assumed to be the primary focus of Transport Scotland's attention. It will be important therefore to investigate the potential revenue and cost impacts of particular components of the project.

Economic Activity and Location Impacts (EALI)

⁴ It should be noted that the three approaches are intended to capture the different types of benefits to users under each option and thus be complementary. The improvements to the Haymarket Interchange will have different types of impacts and the three approaches will attempt to identify as many of these as possible without double counting. The aim is not to compare the results of one approach against the other but to assess the collective impacts of one option against another using the three approaches.

- 3.19 In addition, it is possible that there may be non-transport benefits associated with Phases 2 and 3 that will be of interest to the Scottish Executive and the City of Edinburgh Council. These benefits could include employment and regeneration impacts. It will therefore be necessary to capture these, while at the same time ensuring that there is no double counting of benefits from the interchange and also taking account of displacement impacts at the Scottish level. An Economic Activity and Location Impact (EALI) analysis will therefore be carried out to accompany the TEE on all options as appropriate.
- 3.20 A significant amount of work has already been carried out to estimate the potential demand and revenue impacts from the enhanced development of Phases 2 and 3. On the basis of current thinking an indicative development capacity for the type of use by area and level can be calculated. Total floorspace across the concourse plus several levels in option A amounts to 57,000sqm while Option B generates some 75,000sqm (numbers TBC).
- 3.21 A development value exercise is also being undertaken that capitalises retail values according to floor area and mix of uses. The initial viability is currently being reviewed in respect of:
- Development capacity – density, massing, height and total floorspace
 - Development costs – particularly issues of optimism bias and risk
 - Development values – the robustness of values is being reviewed on basis of market analysis and projections
- 3.22 Any shortfall in development value will be converted to additional floorspace and represented in a revised urban design proposal to be tested with the City of Edinburgh Council.
- 3.23 The economic analysis is only one element of the STAG appraisal and must be weighed against the impacts against the other criteria for government investment in transport. These are considered below.
- 3.24 **Environment** – all aspects of the environmental impacts will be included, but in particular there will be detailed analysis and consideration of the issues regarding retention of the listed buildings, natural heritage, noise, contamination and visual amenity impacts of the new station building. An Environmental Appraisal is being carried out for the first Phase of each of the three options.
- 3.25 **Safety** – the accident benefits associated with improvements to the station are likely to be minimal, although issues with potential vehicle and pedestrian conflict (as users leave the interchange site or switch mode) will be considered and accounted for in the design of the different options. There are clearly issues of personal security and safety at transport interchanges and the appraisal will aim to capture these impacts, albeit qualitatively.
- 3.24 The main objectives of the project will be to provide a multi-modal transport interchange that will offer an efficient, enjoyable travel and arrival experience for all transport users passing through Haymarket. There will clearly be **integration**

benefits at the new interchange through improvements of connection between modes and these will be captured in the appraisal of the 3 Options and their phases in particular. In addition to these transport integration benefits generated by the physical improvements to the infrastructure the STAG Part 2 appraisal will also consider how the project integrates with other government policy and initiatives (whether at the local/Edinburgh or national level). For example, the improvements at Haymarket will help contribute to and integrate with environmental policy and land-use planning policies. It is anticipated at this stage however that the integration benefits of Options A and B are likely to be higher than those for Option C which focuses entirely on the interchange.

- 3.25 The final government objective for transport is **social inclusion/accessibility** and a detailed assessment will be carried out to capture these impacts. There will be clear benefits associated with the physical improvements that will make accessibility easier for all public transport users and pedestrians within the interchange and close vicinity. In addition, a significant amount of data has been collected that will allow a detailed analysis of the distribution of the benefits to users. While a large number of people using Haymarket are business users and commuters (shown through the user survey), the improvements will impact on tourists, visitors, schoolchildren, students, parents with children and the elderly. Due to the different characteristics of Options A and B compared to Option C, it will be important to measure whether the higher cost options are likely to generate more positive accessibility impacts across different groups.
- 3.26 While a significant amount of analysis has and will continue to be carried out to inform all of the issues discussed above, it is proposed that a detailed and comprehensive **consultation** exercise be carried out to inform the process and allow users to feed in their views to the STAG appraisal. The public consultation, together with stakeholder responses and users views will make an important contribution to the appraisal process in measuring the preference and performance of the 3 options.
- 3.27 A detailed cost analysis is also being carried out for each of the options. This will allow the net benefits associated with all the government's objectives to be compared against the costs of each of the options. As recommended in STAG, this will look at not only the infrastructure costs associated with each of the Phases, but also other costs, such as operating and maintenance costs for the first Phase of Options A, B and C. An exercise to assess the development costs and values is also being carried out to consider the private sector investment opportunities and attractiveness of the enhanced development in Phases 2 and 3 of Options A and B.
- 3.28 A detailed register has been prepared to identify the potential risks associated with Options A, B and C. The **risk register** has identified a number of potential risks, from cost escalation and political risks, through to those associated with the tram scheme. In addition, specific risks have been identified within Phases 2 and 3, particularly market interest, potential investment and revenue implications. A management plan is now in place to ensure a structured approach to identification, mitigation and control of the risks that may emerge between the study stage and implementation. The risk register and management plan are monitored on a regular basis. While there are clearly higher risks associated with Options A and B, the risk register mainly focuses on Phase 1 as this is the phase

that can have the greatest impact on public funds. The risks associated with Phases 2 and 3 will be for private sector developers/investors to manage.

- 3.29 The risk register is also being used to calculate, in conjunction with DfT and HMT guidance, the percentage to be used for the **optimism bias** adjustment. This work is progressing and will develop in parallel with the risk register, cost estimates and development value exercise as the design specifications of options A, B and C become clearer. The optimism bias adjustments will apply only to the public sector costs of the options, i.e. to the Phase 1, and not to the extended development in Phases 2 and 3.
- 3.30 The final output of the STAG Part 2 appraisal will be the results of the impacts of the 3 options against the government's 5 objectives. This will include Phase 1 for the three options A, B and C, as well as the performance against Phases 2 and 3 for Options A and B. The results of the appraisal will provide a ranking from which a preferred Option will be identified. A STAG Report will be delivered in accordance with the guidance and summarised in Appraisal Summary Tables as advised.

4. Conclusion

- 4.1 The purpose of this paper has been to review recent progress on the proposed option appraisal method for Stage 3 of HISAM and make recommendations on the way forward. This has shown that, to reflect recent research and findings and for reasons of clarity, it is now appropriate to adopt a new vocabulary for options in Stage 3.
- 4.2 In this regard, it is recommended to the Steering Group and Project Board that:
- two principal Options are adopted to represent 'Listed buildings retained' ie Option A and 'Listed Buildings removed' ie Option B
 - a public sector funded Option C be adopted
 - a do-minimum/pre-HISAM option be formed to represent the future situation at Haymarket, before the HISAM project
 - definition of the pre-HISAM components be confirmed by TS and CEC by April 30.
- 4.3 In addition, both principal options will be viewed as comprising sequential phases of development i.e. short, medium and long term, with Option C comprising one phase only. The scope, content and timing of these phases are currently being considered.
- 4.4 In order to enable HISAM to progress timeously with Stage 3 and focus effort on the appraisal of potentially deliverable options, the Steering Group and Project Board are invited to review and adopt the recommendations.

RAB/PMcC

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