

CITY OF PLYMOUTH

Subject: Eastern Corridor High Quality Public Transport (HQPT)
Scheme: Deep Lane Proposals

Committee: Cabinet

Date: 8 June 2010

Cabinet Member: Councillor Wigens

CMT Member: Director for Development and Regeneration

Author: Juli Wileman, Major Scheme Project Manager

Contact: Tel: (01752) (30)7703
e-mail: juli.wileman@plymouth.gov.uk

Ref: 0721 Eastern Corridor

Part: I

1.0 Executive Summary:

- 1.1 This report records progress on the development of options for the A38 Deep Lane Junction, which is part of the Eastern Corridor High Quality Public Transport (HQPT) Scheme.
 - 1.2 A junction improvement at Deep Lane is required in order to accommodate future traffic growth and traffic generated by the strategic residential and employment developments along the Eastern Corridor.
 - 1.3 During 2009 Plymouth City Council, Devon County Council and the Highways Agency have been working in partnership to develop alternative options for Deep Lane Junction. Around fifteen options were investigated, but following an initial appraisal that considered operational efficiency, the promotion of sustainable transport, environmental impact, network resilience, safety and cost, four options were short listed and then developed in more detail.
 - 1.4 These four options were the subject of a public consultation event towards the end of 2009 and a Stage 1 Scheme Assessment Report in March 2010 which considered the costs, benefits, risks, environmental impact and technical issues associated with each option.
 - 1.5 The results of the public consultation and the outputs of the Stage 1 Assessment Report have been considered by Plymouth City Council, Devon County Council and the Highways Agency and Officers have recommended two options to be developed further and included within the Eastern Corridor High Quality Public Transport Major Scheme Business Case. One option would be the "Preferred Option" and the other option would be the "Lower Cost Alternative".
 - 1.6 The submission of the Major Scheme Business Case to DfT, which will also be considered as part of the Regional Funding Allocation process, is programmed for the first half of 2011.
-

2.0 Corporate Plan 2010-13:

- 2.1 The Eastern Corridor Major Scheme and the submission of the business case to secure capital funding, is a key project for delivering the Local Transport Plan, the Local Development Framework (LDF) Core Strategy, the North Plymstock Area Action Plan (AAP) and South Hams District Council's Sherford AAP.
- 2.2 The scheme directly assists Corporate Improvement Priority 11 "Improving Access across the City" and the submission of the business case is a key milestone for CIP 11 in 2010/11. It will provide faster and more reliable journey times for public transport services along the Eastern Corridor, linking new and existing residential areas with better access to employment, education, leisure, retail and healthcare facilities.

3.0 Implications for Medium Term Financial Plan and Resource Implications: Including finance, human, IT and land

- 3.1 There are no financial implications as a direct result of the recommendations in this report. The costs associated with the preferred option will be included in the next overall Eastern Corridor HQPT scheme forecast, which is returned periodically to the DfT.

4.0 Resource Implications:

- 4.1 There are no resource implications arising from this report

5.0 Other Implications: e.g. Section 17 Community Safety, Health and Safety, Risk Management, Equalities Impact Assessment, etc.

- 5.1 There are no other implications directly arising from this report.

6.0 Recommendations & Reasons for recommended action:

- 6.1 The Cabinet is requested to:
1. Note the progress on the development of options for Deep Lane Junction
 2. Approve Option B (D) as the Preferred Option to be further developed and included within the Eastern Corridor Major Scheme Bid
 3. Approve Option C as the Lower Cost Alternative option to be further developed and included within the Eastern Corridor Major Scheme Bid

Reasons:

1. A junction improvement scheme at Deep Lane is required in order to accommodate future traffic growth and traffic generated by the strategic residential and employment developments along the Eastern Corridor.
2. To enable the Council to proceed towards submitting a Major Scheme Business Case to the Department for Transport (DfT), in accordance with Central Government guidance for Programme Entry to the South West Regional Funding

Allocation, to fund transport improvements within Plymouth's Eastern Corridor, which in turn will support new sustainable development.

7.0 Alternative options considered and reasons for recommended action:

- 7.1 As part of the traffic modelling stage of the junction improvement assessment, "base" and "do-minimum" traffic scenarios were considered. This assessed how future traffic would be accommodated on the current highway network and the highways proposed as part of the Sherford development. This modelling showed that the Deep Lane Junction and its associated highways could not accommodate the likely growth in traffic and would lead to increased journey times, queues and delays. A junction improvement of some kind is therefore necessary.
- 7.2 A large series of alternative junction arrangements were considered when developing the four potential options which have been the subject of more detailed design work and traffic modelling. This technical work has led to the recommendations contained in this report.

Background papers:

1. Eastern Corridor Major Scheme Business Case Progress Report, Cabinet Planning, June 2009
2. Deep Lane consultation brochure, November 2009
3. Plymouth Eastern Corridor Junction Options at Deep Lane/Voss Lane Stage 1- Scheme Assessment Report, Report Number HHE 91730BF/07/03, March 2010

Sign off:

Fin	SDG/ CapF 9100 28.07 0510	Leg	JAR/10 /145	HR	N/A	Corp Prop	N/A	IT	N/A	Strat Proc	N/A
-----	---------------------------------------	-----	----------------	----	-----	--------------	-----	----	-----	---------------	-----

1.0 Background

- 1.1 The area to the east of Plymouth is planned to experience significant growth in the period up to 2026 as a result of strategic developments. The Secretary of State's proposed changes to the Regional Spatial Strategy has allocated the construction of 6,000 dwellings to the Sherford New Community and approximately 1,500 dwellings have been allocated to the Plymstock Quarry strategic development site in the adopted North Plymstock Area Action Plan. There are also proposals to provide an additional 130,000 m² of employment land at the Langage Strategic Employment site just to the north-east of Deep Lane Junction.
- 1.2 In the context of this level of development, and in order to provide sustainable transport choices and improve highway conditions for travel to Plymouth City Centre, Plymouth City Council (PCC), in partnership with Devon County Council (DCC) and the Highways Agency (HA), is developing a series of potential transport improvements along the Eastern Corridor as part of a Major Scheme Business Case (MSBC). These improvements include the introduction of a HQPT service, greater provision for pedestrians and cyclists and highway schemes to improve the efficiency of traffic flows.
- 1.3 Transport modelling analysis has shown that trip generation from 5,500 Sherford dwellings which has already secured outline planning approval and the application for 40,000 m² of the employment development at Langage, can be accommodated using the existing Deep Lane Junction arrangement, together with the improvements to the highway already secured through funding provided as part of the Sherford development and the original 1999 planning application for Langage. However, further improvements to Deep Lane would be required to mitigate the impact of the full 130,000 m² of development at Langage and the full development at Sherford. These improvements would provide a step change in highway capacity but because of being of strategic importance to the development of Plymouth as a whole would require additional funding from central government to supplement the contribution from developers.
- 1.4 PCC held a series of public consultation events on the options for the Eastern Corridor HQPT scheme in the Summer of 2008 and this included two outline designs for the Deep Lane Junction. The options at this stage were to improve the existing single over bridge arrangement or to provide a two bridge roundabout option. Since this consultation, further technical analysis has been undertaken to consider these potential junction improvements in more detail. This work has been taken forward by PCC, DCC and the HA and this report discusses the options which have emerged from this assessment work.

2. Option Development

- 2.1 Traffic modelling and junction design work was undertaken by Parsons Brinckerhoff, highway engineering consultants, commissioned by PCC, to consider potential options for junction improvements at Deep Lane. An appraisal of those options considered operational efficiency in terms of journey times, queue lengths and delays for both general traffic and public transport. The promotion of sustainable transport, environmental impact, network resilience, safety and cost were also considered. This technical assessment led to the emergence of four principal options, which are shown in Appendix A. These options focus on improvements to the junctions at Deep Lane

and/or the Voss Farm, which is the next junction on the A38 east of Deep Lane. A description of each option is provided below.

2.2 Option A - £35m (2009 price base)

Option A includes the complete replacement of all slip roads and the existing bridge across the A38 at Deep Lane with a gyratory system. It would also include the widening of Sandy Road, the signalisation of Ridgeway roundabout and the provision of a southern access road from Sandy Road into the area of the potential Langage Business Park expansion.

An assessment of Option A is provided below.

- This junction arrangement would provide the most highway capacity of all the four options being considered, resulting in generally free-flowing traffic conditions;
- This option would provide significant journey time savings to all users;
- It would not, however, provide an attractive route for pedestrians and cyclists due to the complexity of the junction arrangement and the number of lanes of traffic they would have to cross and therefore additional pedestrian and cycle facilities would need to be considered;
- This improvement would maintain the current reliance on a single direct access from the A38 into the Langage Business Park;
- This option requires the demolition of the existing infrastructure and would be challenging to construct whilst keeping the A38 and surrounding highways open;
- Overall this option would have a neutral or slightly adverse environmental impact;
- This is the most expensive of all the options; and
- The consultation demonstrated a lack of public and stakeholder support for this option.

2.3 Option B (N) – £31m (2009 price base)

Option B (N) includes an additional two-lane bridge over the A38 at Deep Lane, together with new A38 west bound slip roads. North of the A38, Sandy Road would be widened and Ridgeway roundabout signalised. It also includes the improvement of the existing Voss Farm Junction on the A38 to provide access to an expanded Langage Business Park with westbound on and off slips. The public consultation version of this option did not include the eastbound off slip from the A38 at Voss Farm. This has been included subsequently. It is this revised version that is referred to in this report.

An assessment of Option B (N) is provided below.

- This option would operate with significant spare highway capacity in both the AM and PM peaks at the Deep Lane and Voss Farm junctions;
- The journey times and queue lengths associated with this option would be broadly similar to those of the other options under consideration;
- This option would provide marginally better pedestrian and cycle access compared with Options A and C. However, the lack of a southern access road to Langage reduces the resilience of the road network available to access Langage Business Park as well as reducing the permeability of the Business Park for HQPT;
- As with other options, this option did not show a great level of detail for pedestrian and cyclist infrastructure, particularly between Sherford and Langage via Deep Lane. This will be addressed in future;

- This option would provide an alternative access from the A38 to Langage to improve network resilience;
- It could also be delivered incrementally in line with the roll out of development and as funds allow ;
- This option was assessed to have a neutral or minor adverse environmental impact;
- This option would affect the setting of a cluster of historic buildings at Voss Farm and the Lyneham Inn, but with careful consideration this impact could be mitigated;
- This option would be the second most expensive; and
- The public consultation demonstrated that this option lacked public support as the initial option did not include an eastbound off slip at Voss Farm. Since this time, the option has been amended to include this additional infrastructure.

2.4 Option B (D) - £23m (2009 prices)

Option B (D) includes minor improvements in the Deep Lane area together with the widening of Sandy Road, the signalisation of the Ridgeway roundabout and the lengthening of the westbound off slip from the A38. This also includes significant improvements to the Voss Farm Junction with slip roads allowing movements in all directions to provide access to the Langage Business Park. The consultation version of this option was amended to include an additional lane on the eastbound carriageway of the A38 from Deep Lane to Voss Farm. It is this revised version that is referred to in this report.

An assessment of Option B (D) is provided below.

- This option would operate with sufficient spare capacity in 2026 at Deep Lane and Voss Farm junction would also have spare capacity to accommodate future traffic;
- This option would provide broadly similar journey times and queue length to those of the other options;
- Given that this option has slightly less spare capacity than Options A and B (N), bus priority measures may have a more significant effect here in terms of relative journey times;.
- As with other options, this option did not show a great level of detail for pedestrian and cyclist infrastructure, particularly between Sherford and Langage via Deep Lane. This will be addressed in future;
- This option would provide an alternative access from the A38 to Langage to improve network resilience;
- This option was assessed to have a neutral or minor adverse environmental impact;
- This option would affect the setting of a cluster of historic buildings at Voss Farm and the Lyneham Inn. With careful consideration this impact could be mitigated;
- This option would require a departure from design standards regarding the distance between the A38 westbound slip roads. However, this type of departure is not uncommon and has been approved elsewhere by the Highways Agency;
- This option is estimated to be the second cheapest; and
- This option was that most favoured by the public and stakeholders. (It should be noted however that option B (N) has been amended since the consultation to provide for all movements at Voss Farm).

2.5 Option C - £19 million (2009 prices)

This option includes an additional bridge across the A38 at Deep Lane together with the widening of Sandy Road and the signalisation of the Ridgeway roundabout. Although this makes no provision for improvements to the Voss Farm Junction it does include a southern access road as in Option A to provide access from Sandy Road to the potential Langage Business Park expansion area.

An assessment of Option C is provided below.

- In this option Deep Lane junction would operate close to capacity in the AM and PM peaks. However, this would only be an issue following the complete development of Langage and Sherford;
- Option C would see the longest average journey times in both the AM and the PM peaks. Average journey times for buses are also amongst the longest;
- Queue lengths experienced on the network with this option are, on the majority of links, similar to those seen in other options;
- Given that this option does not always perform as well as the other options, buses are likely to be affected. This could mean that bus priority measures will have a significant effect in terms of reducing journey time and service reliability
- Additional consideration needs to be given to provision for pedestrians and Cyclists;
- This option maintains the existing reliance on a single junction for access north of the A38 for Plympton. Construction is likely to be more challenging than options focusing on Voss Farm;
- The environmental impact of this option is likely to be either neutral or minor adverse;
- This option is the cheapest;
- This option was demonstrated to be reasonably popular with the public and stakeholders, receiving the second largest number of positive comments;

A summary of the outcomes of the assessment work and their plans is included within the “Plymouth Eastern Corridor Junction Options at Deep Lane/Voss Lane Stage 1- Scheme Assessment Report, Report Number HHE 91730BF/07/03”. (Available on request)

3. **Financial Assessment**

3.1 An economic appraisal was undertaken for all four options which evaluated the costs and benefits of each option. Table 1 provides the Benefit to Cost Ratios (BCR) for each option.

3.2 Table 1: Benefit to Cost Ratios

Option	Cost (2009 prices)	BCR
Option A	£35.22 m	4.97
Option B (N)	£31.20 m	5.64
Option B (D)	£22.80 m	7.74
Option C	£19.13 m	8.07

This table demonstrates that Option B (D) and Option C would have the lowest costs and the highest BCRs of the four options, so offer the best value for money.

- 3.3 The costs of the Deep Lane junction improvements need to be considered in the context of the available budget for the wider Eastern Corridor as a whole. Currently, predicted potential available funding (from Regional Funding Allocation, Section 106 Agreements and the Plymouth Development Tariff) totals £102 million. If Options A or B (N) were selected, the scheme budget as a whole would not be sufficient to fund as well as part of the HQPT, the potential use of the disused railway parallel to the A379 as an offline uninterrupted busway. Although a decision has not yet been made regarding whether the offline busway is to be included within the overall HQPT scheme, selecting Option A or Option B (N) would effectively rule this out. As a result of this, together with the high cost and lower BCRs, these two options are not recommended financially.
- 3.4 Both Options B (D) and C have the lowest costs and highest BCRs and are therefore recommended from a financial perspective.

4. Environmental Assessment

- 4.1 As part of the design work, all options were subject to an environmental assessment process. All options fared similarly in terms of their impact on drainage, air quality noise and vibration, geology, and ecology. The assessed impacts of all four options on all these categories were at worst 'slight adverse' with many neutral impacts. Options B (D) and Options C make best use of the existing highway infrastructure and are thus likely to generate less demolition waste.
- 4.2 There were some issues surrounding the potential impact of Options B (N) and (D) on a cluster of listed buildings at Voss Farm and the Lyneham Inn public house. Although these options will not affect the buildings themselves, their settings could be altered. In order to understand whether this was considered to be a serious issue which could affect the feasibility of these options, meetings were held with the Devon County Council Historic Environment Service and the South Hams District Council Conservation Officer. The outcome of these meetings confirmed that these options are feasible subject to assurances that the buildings themselves would not be affected during construction and operation and that the necessary historic environment assessments are undertaken in due course.
- 4.3 All four junction improvement options are large scale highway schemes linking major residential and employment sites to the trunk road network. In this regard all four options will have a negative carbon impact in terms of construction and operational phases. However all options include significant provision for bus priority measures on a number of highways (particularly Sandy Road, Holland Road and the Ridgeway) while subsequent detailed design work will consider in greater depth the needs of pedestrians and cyclists. All options provide good access to the proposed Park and Ride site at Deep Lane and similar bus journey times.

5. Public Consultation

- 5.1 Following the emergence of four principal options for the junction improvements, a further consultation was held to gauge the views of the public and key stakeholders during November and December 2009. (Landowners were contacted prior to the consultation taking place). Consultation events were held in Ivybridge, Chaddlewood, Elburton and at Langage. Approximately 700 representations were received. South Hams District Council, Redtree LLP (2004) and Langage Energy Park Ltd (LEPL) were also consulted.

5.2 Although the consultation did not ask respondents to directly indicate which option they preferred, many people nevertheless expressed a view. In order to provide some additional idea of preferences, the number of people indicating that they liked or disliked certain elements of each option was counted. The number of people suggesting that they found nothing to like about an option was also included in this assessment. A summary of the consultation results is included in Table 2.

Table 2 - Assessment of Consultation Responses.

Option	% age indicating preferred option	Positive Comments	Negative Comments	Most Popular
Option A	8%	355	558	
Option C	7%	357	527	
Option B (N)	7%	448	502	
Option B (D)	78%	557	392	<input checked="" type="checkbox"/>

Table 2 shows that Option B (D) was the most popular.

5.3 The HA has been involved at all stages of the development of the four options. However, they have now stated that they are currently unable to support any of the options unless further sustainable transport measures are included within the design. It is the intention to review the sustainable transport measures at the next stage of design, in partnership with the HA, to address their concerns.

5.4 It should be noted that since the consultation, and as a result of further assessment work, Option B (D) has been amended slightly to include a “lane gain” on the eastbound carriageway of the A38 at Deep Lane followed by a “lane drop” at Voss Farm. Option B (N) was also amended to include an off slip from the A38 eastbound to allow movements in all directions at the Voss Farm junction. It is the revised versions of these options that are referred to in this report.

6 Conclusions

6.1 The Eastern Corridor Major Scheme Business Case (MSBC) needs to include both a “Preferred Option” and a “Lower Cost Alternative” for Deep Lane Junction. On the basis of the technical, financial and environmental assessments in this report, together with the responses to the public consultation, Option B (D) is recommended to be the Preferred Option to be further developed and included within the MSBC. This is on the basis that it is affordable within the overall Eastern Corridor funding envelope, has a high Benefit to Cost ratio and received the greatest level of support at the public consultation.

6.2 As Option C also provides good value for money and is the cheapest option, it is recommended that this is developed further and included as the Lower Cost Alternative within the MSBC. It is a requirement of the MSBC process, set out by DfT, to provide a low cost alternative option to enable assessment of the value for money of the preferred option. It should be noted that whilst Option C is the cheapest option and provides good value for money, it does not perform so well operationally. The junction would operate close to capacity at peak times and journey times for buses and general traffic would be greater than in other options. For these reasons it has not been chosen as the preferred option.

- 6.3 Assuming that these recommendations are approved by Cabinet, it is the intention to feedback the results of the consultation together with details of the proposed Preferred Option and Lower Cost Alternative, to the public in late June/early July 2010.
- 6.4 The submission of the Major Scheme Business Case is programmed for the first half of 2011.