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Tiverton EUE Extension

Option Assessment Report
Final Draft
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CONTENTS

List of Figures

List of Tables

1. Introduction

1.1. Location and Description

1.1.1. Tiverton is the largest settlement in Mid Devon, with the largest economic concentration and level of social and commercial services and a population of 19,000.

1.1.2. Located in the centre of Mid Devon it has good connectivity being next to the A361 North Devon Link Road (NDLR) which connects North Devon and Torridge to the rest of the country. This road feeds into the M5 and the Strategic Road Network (SRN) at junction 27 just 5 miles to the east of the town.

1.1.3. The town has a high proportion of self-containment with 68% of residents working within the town (based on 2001 Census data), although this has reduced from previous years given the improved transport links to the rest of the county.

1.2. Purpose of this Report

1.2.1. This report is intended to present a sound body of analysis to provide evidence of the problems and challenges and need for intervention. It will define the future 'without intervention' scenario, considering potential scenarios. It will also clearly state the study or intervention-specific objectives and intended outcomes, and enough information to facilitate an understanding of the links between issues and context and the final statement of objectives.

1.2.2. Other information will include:

- A definition of the geographical area of impact to be addressed by the intervention;
- Documentation of the stakeholder engagement strategy adopted, including stakeholders involved and their role in informing the option development process;
- Documentation of the process of option generation, sifting, and assessment;
- Information on how the environmental considerations have been taken into account in this process, particularly during the initial sifting stage.

1.2.3. Ultimately this report will identify the better performing option(s) to be taken forward for further, more detailed appraisal as part of a Business Case submission to the Heart of the South West (HotSW) Local Transport Board (LTB).

1.3. Other Reports

1.3.1. This report forms part of a family of documents which will support the Value for Money (VfM) assessment of the scheme(s) recommended within this report. The reports (in chronological order) are as follows:

- **Option Assessment Report – identifies the need for scheme(s), their objectives and the process for generating options. Also provided is the methodology for assessing alternatives and the recommendations on the scheme(s) to be taken forward to detailed appraisal.**

- Appraisal Specification Report - compiled to inform decision makers and stakeholders on how the economic, environmental and operational assessments will be undertaken and how they will be supported by the traffic modelling work, taking account of budgetary, programme, political, environmental and spatial constraints.

- Report of Surveys – details the collection and analysis of all data supporting the study.

- Local Model Validation Report – provides the methodology and results for construction of the base year traffic model.

- Forecasting Report – documents the methodology and results of the construction of the future year traffic forecasts.

- Economic Assessment Report – details the approach taken to assess the monetised costs and benefits of the scheme. Benefits will include Transport Economic Efficiency (TEE) during construction, maintenance and under typical conditions; also reliability and accidents. Costs include costs associated with construction and maintenance.

- AST Report – The methodology for completing the AST tables and the source for all entries. This will also include an analysis of Social and Distributional Impacts (SDIs).

2. Current and Future Transport Issues

2.1. Description of the Transport Network

Walking and Cycling

2.1.1. The main walking and cycling links are currently along the Old Railway line and next to the Grand Western Canal, both of which are part of the national cycle network. This includes a mainly off-road cycle link between the town and Tiverton Parkway Station.

2.1.2. The 2001 Census data revealed that in Tiverton, 27% of people walk to work while 6% cycle. This is higher than the national average and reflects the high level of self containment within the town.

Bus

2.1.3. Tiverton is currently reasonably well served by bus, with a half hourly service to Tiverton Parkway which continues on towards Cullompton and Exeter as well as a half hourly service through Bickleigh to Exeter. In addition to this there are three town buses (243, 248/349 and 352/353) which operate hourly / half-hourly around Tiverton. A bus map of Tiverton is shown in Appendix 2. However, these services only carry 1% of the population to work according to the 2001 Census data.

Rail

2.1.4. Tiverton Parkway is located about 5 miles east of Tiverton and has regular services to Exeter, Plymouth, London and the north of England. Rail patronage has seen a steady rise over the last 10 years and was almost 0.4 million passenger trips in 2011/12 (Office of Rail Regulation) which is equivalent to about 1,000 per day.

Road

2.1.5. Tiverton is located about 5 miles west of the M5 with access off J27 and borders the A361 North Devon Link Road which connects North Devon and Torridge to the rest of the country.

2.1.6. The current highway network in Tiverton is good, with Heathcoat Way providing a fast north-south connection to the east of the town while Great Western Way and Lea Road are distributor roads passing to the south and north of Tiverton respectively. The main road to the east passes through the town centre with some tight corners and narrow roads.

2.1.7. Blundell's Road currently experiences air quality issues with the current levels approaching AQMA levels close to the roundabout with Great Western Way.

2.2. Current Transport Network Operation

2.2.1. The Tiverton transport network currently operates well with minimal constraints. Minor congestion occurs around Bolham road to the north west of the town during school drop-off time as well as commuters traveling home after work coming out of Lowman Way Business Park in the evening, but this usually clears within 10 minutes.

2.2.2. To the west, the NDLR is of dual carriageway standard along its length between Tiverton and Barnstaple. Traffic flows on this section are below capacity and there is sufficient capacity to accommodate growth for the foreseeable future.

2.2.3. J27 currently experiences large levels of delays during the summer months and bank holiday weekends where queues on the southbound off slip extend onto the main carriageway. A scheme of part time signals on both the M5 off slips was proposed to resolve this issue and has recently received funding from the Government through the Pinch Point Programme.

2.3. Future Development Growth

2.3.1. Being the largest settlement in Mid Devon, Tiverton was assigned a high proportion of the development for the district with the majority of this being located to the east of the town known as the Eastern Urban Extension (EUE). This is a mixed use development to the east of Tiverton that will consist of 1,550 to 2,000 dwellings, 95,000 to 130,000 square meters of employment floorspace as well as the associated infrastructure to support such development.

2.3.2. The development aims to create a sustainable mixed use community with high levels of internal commuting from Tiverton, and provide much needed jobs and homes for the Mid Devon area.

2.3.3. It is anticipated that the development will deliver community facilities such as a new primary school; enhanced transport connections for all modes of travel; and green infrastructure that will retain the existing wildlife, scenery and environment around the Grand Western Canal, railway cycle route and surrounding countryside.

2.3.4. The proposed development site will initially be linked to the existing town centre via Blundell's Road. This road used to be the main road connecting to North Devon before the construction of the A361 so has spare capacity along most of its length. The section leading up to the roundabout with Great Western Way is close to exceeding air quality levels and this road also bisects Blundell's School.

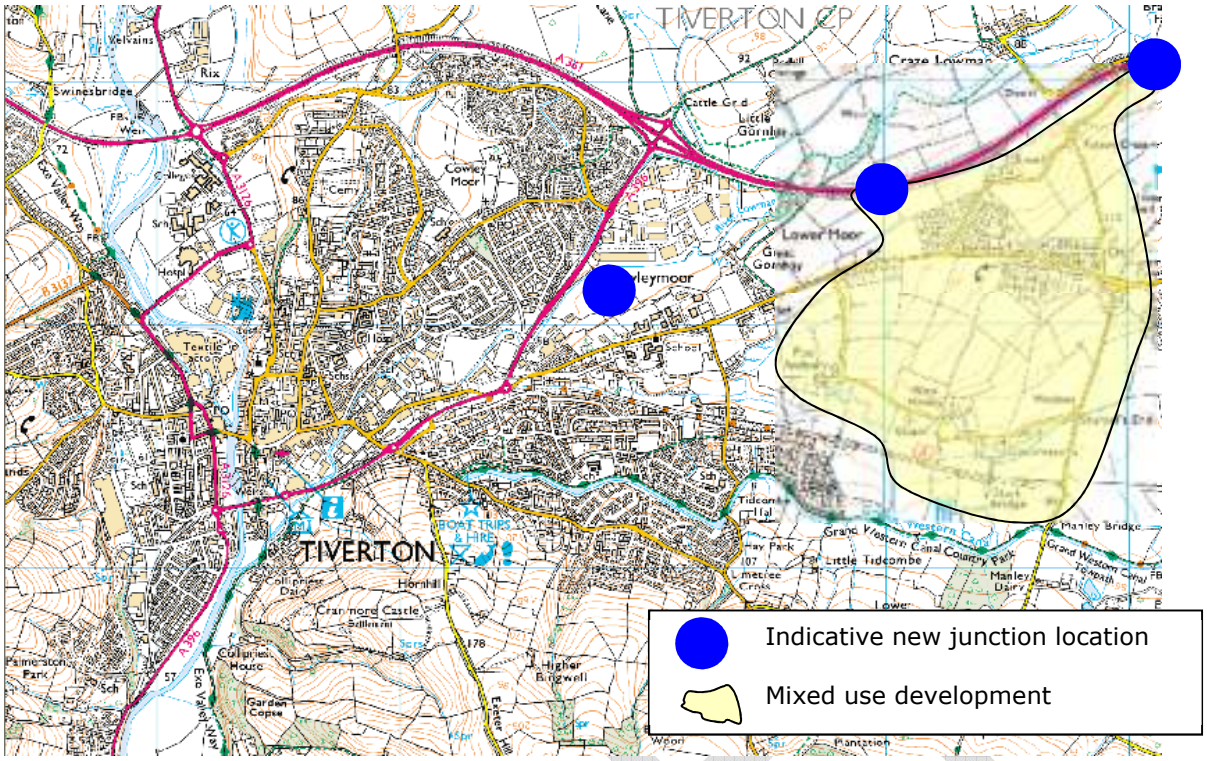


Figure 1: Map of development area and indicative junction locations

2.4. Future Transport Network Operation without Intervention

2.4.1. The successful delivery of sustainable growth is dependent on the provision of adequate transport infrastructure. The availability and quality of transport links play a key role in deciding where development takes place. The economic strength of the town, and the quality of life it has to offer, depend very much on the accessibility, speed, quality and cost of transport facilities. These are, in turn, constrained by the form and layout of the existing urban environment, the capacity of the infrastructure and by environmental and social considerations such as climate change, atmospheric pollution, health, safety, noise and vibration.

2.4.2. New development, in the form of the Eastern Urban Extension, would be likely to generate a number of car and goods vehicle trips. Given its location, opportunities for walking and cycling would be limited to the existing Tiverton town centre. The mixed use nature of the development is designed so as to maximise the opportunities for local movements within the site.

2.4.3. The current highway network works well, with minimal delays and congestion. However, access to the proposed development land is restricted. The main access is currently along Blundell's Road which has air quality issues at one end and bisects Blundell's School. This results in a high number of pedestrians crossing the road and a large number of pedestrian conflicts. The impact of increased traffic on this route has the potential to increase the number of conflicts with pedestrians and lead to significant accident problems.

2.4.4. A secondary access to the site is along Post Hill through Halberton from Sampford Peverell. This route was originally the main road connecting Tiverton to North Devon before the NDLR was constructed. Despite this, the capacity of the road remains limited. Through the village of Halberton there are a several single-width sections with give ways at either end. Some of the properties that front onto this road are made of Cobb and are affected by vibrations caused by heavy goods vehicles. These narrow roads and lack of footways have resulted in a number of accidents in recent years.

2.4.5. Without any infrastructure intervention, these two routes would come under serious pressure if the development were delivered. It is likely that the viability of the development would be affected as pressure on the transport network quickly increased. The site would become a less attractive place to live, work and do business. Ultimately, further development applications would be rejected beyond about 500 dwellings by the planning authority and there would be less appetite from developers to develop the land. The rising housing demand in the district and the lack of additional employment would put an economic strain on the community.

2.5. Objectives for Potential Improvements

2.5.1. The need to support the economy is critical and this means being able to move people and goods around the town efficiently as well as enable them easy access between the development sites and the SRN. In addition to that, the need to improve health levels and address air quality is also vitally important. The level of growth planned will put greater pressure on the highway network. Sustainable, low carbon transport solutions will play a vital role in providing improved choices for local trips and reducing congestion.

2.5.2. The main transport objectives for the potential improvements are:

- Deliver sustainable development at the EUE site;
- Minimise impact on the environment and in particular Blundell's School; and
- Minimise impact on the A361

Walking and Cycling

2.5.3. There is potential to improve walking and cycling links to and from the development. Given that the proposed development site is located close to the existing National Cycle Route, the best improvements is to allow easy access to this from the development. The masterplanning process will also outline the need for green links within the development site.

2.5.4. There is also potential to include a cycle lane along Blundell's Road which would offer cyclists a direct cycling route between the development and Tiverton town centre. This would become a more attractive cycling route if traffic calming measures are introduced on Blundell's Road.

Bus

2.5.5. The current bus network has spare capacity on it so minimal improvements are required. However, the currently half hourly service to Tiverton Parkway and Exeter needs to be maintained to make the bus a viable option for some people on these routes such as the elderly and people without access to a car.

2.5.6. A large investment in the bus service within the town has the potential to increase bus patronage but given that a very small percentage of people use the bus, the costs are always likely to exceed the benefits. The bus does not offer a competitive alternative to the private car and so investment in the bus service is not appropriate on its own to accommodate all the proposed development trips.

Rail

2.5.7. There is potential to change the timetabling of trains to Tiverton Parkway Station but given that this station is 5 miles from Tiverton, access to and from the station would be required. The most common form of transport for travelling to the station is by private car so rail improvements would fail to address the significant highway capacity issues brought about by construction of the development.

Road

2.5.8. The nature and location of the development, the properties of the existing highway network and given the high propensity to travel to buy car (almost 50% of the population drive to work within Tiverton), improvements to the road network are essential to cater for the EUE development, along with minor improvements to the sustainable travel modes as outlined above.

2.5.9. The Mid Devon District Council (MDDC) Allocations and Infrastructure Document (AIDPD) indicated two main options for accessing the site. The first of these was a new junction onto the A361 to the north of the site giving drivers easy access to the Strategic Road Network (SRN). Access into the EUE development is also mentioned in the Exeter and Torbay Local Transport Plan 3 (LTP3).

2.5.10. The second option would be an alternative access to Blundell's Road to allow the development traffic access to Tiverton town centre. If this option were implemented, Blundell's Road would be closed to through traffic and changed into a bus / cycle route.

2.5.11. According to the AIDPD both these options would be required for the EUE development to come forward but more detailed traffic work has been carried out which shows that only one of these options is required until the latter stages of development. Furthermore, current masterplanning work being carried out by the developers suggests that the level of development that can physically fit within the EUE site is likely to be less than the original allocation plan. If this is the case, then only one of the accesses may be required to accommodate the development traffic. However, the overall size of the development and its potential impact on the highway network will be continually monitored and the need for this secondary access will regularly assessed.

3. Stakeholder Engagement Strategy

3.1. Stakeholders to be Engaged

3.1.1. There are many stakeholders involved in this scheme and all have been consulted throughout the process. These include Mid Devon District Council (MDDC), landowners, the Highways Agency (HA), the Environment Agency (EA), the Local Transport Board (LTB), members of the public and ATLAS.

3.2. Stakeholder role in Informing the Decision Process

3.2.1. MDDC are the planning authority for the district the scheme is located within and they are responsible for the planning process of the EUE development.

3.2.2. Sir Ian Amory and Waddeton Park are the two major land owners of allocated land in the development plan and both own land required for the proposed A361 junction.

3.2.3. The HA are responsible for the M5 and J27 which is likely to be impacted by the EUE development.

3.2.4. There are a number of Scheduled Monuments are located close to the NDLR so the EA will be involved to assess the impacts on these.

3.2.5. The LTB are responsible for deciding which schemes receive funding.

3.2.6. Members of the public are being consulted about access options to the proposed development because it will affect many of them living in the local area.

3.2.7. ATLAS are a government funded company that provide an independent advisory service to support Local Authorities in dealing with complex, large scale housing lead projects.

4. Options

4.1. Overview

4.1.1. It has been demonstrated that the current transport network is unable to accommodate the full EUE development. In particular the development will lead to highway capacity issues which cannot be overcome without highway improvements. The highway improvement will comprise of alternative access(es) to the site. Given the location of the development site and the condition of the current highway network, three options were considered as well as a Do Minimum option.

a) New Access onto A361

b) New Access onto Heathcoat Way

c) Both new accesses

4.1.2. The traffic implications of these three options are summarised in Table 1 below. This is based on the distribution of 2,000 dwellings and 130,000m² of employment which is the maximum level of development outlined in the Mid Devon AIDPD. However, since then various surveys have been carried out on the development land and this amount of development is unlikely to be accommodated by the allocated site.

Option	Internal	Blundell's Road	Halberton	Access to Heathcoat Way	Access to A361
DM	400	2100	400	0	0
A	400	900	100	0	1900
B	400	0	100	2800	0
C	400	0	100	900	1900

Table 1: Distribution of EUE Development Trips 2-Way AM peak

Option	Internal	Blundell's Road	Halberton	Access to Heathcoat Way	Access to A361
DM	300	1800	400	0	0
A	300	800	100	0	1600
B	300	0	100	2400	0
C	300	0	100	900	1500

Table 2: Distribution of EUE Development Trips 2-Way PM peak

4.1.3. The Do Minimum scenario would have all the development traffic on the current network and the table above shows that this is not an option. It results in about 2000 additional vehicles along Blundell's Road per hour which would have serious safety issues outside the school. In addition to this, it adds a further 400 vehicles on the road through Halberton per hour which would cause delays through the village.

4.1.4. Option c was shown as a requirement by the AIDPD because it would allow direct access onto the SRN from the development site and offer an alternative direct route into the town centre other than Blundell's Road. This would then allow Blundell's Road to be closed to through traffic and be converted into a bus and cycle route. This would improve the journey time reliability of the bus services and improve safety for cyclists and pedestrians both travelling along the road and crossing the road outside the school. This option would result in the largest benefits to the transport network but given the size of the EUE development and the cost of both access routes, this is not considered to be an economically viable option.

4.1.5. Option b would provide direct access to Tiverton town centre from the EUE development site and avoid travelling through the middle of Blundell's school. However, this option is not ideal for traffic wishing to access the A361 and M5. It would increase the likelihood of vehicles using the road through Halberton and Sampford Peverall and this route is unsuitable for accommodating any significant increase in traffic.

4.1.6. Alternatively, the traffic could use the new road and join the A361 at Gornhay Cross. However, this would put extra pressure on Lowman Way Roundabout and would result in further delays and congestion along Heathcoat Way. This option is also likely to encourage town traffic to travel through Tiverton instead of using the A361, which has the potential to cause congestion within the town, particularly around the one way system in the town centre.

4.1.7. As well as not being ideal in relation to transferring traffic around the network, there are also serious engineering issues to be considered. The cost of this access would be excessive given that the road has to cross the River Lowman, with the majority of the route being constructed in the floodplain. The road would need to be built on a large embankment and a viaduct may be required.

4.1.8. The alignment of an access road to Heathcoat Way is also questionable as it would require land from third parties not linked to the EUE development, so could be subject to ransom. This route would somehow have to pass alongside / through the current dwellings on Gornhay Orchard where there is very limited space. Depending on the route alignment, the demolition of the newly built scrapyard building may be required which was allowed by the planning inspector despite DCC's recommended refusal.

4.1.9. Another aspect that requires consideration is how this junction connects onto Heathcoat Way. Given the large number of vehicles expected to use this route, a simple priority junction would not be acceptable. A roundabout would require additional land on both sides Heathcoat Way and there is minimal space for this. Therefore, signalising is the most likely option, but this would delay traffic on Heathcoat Way. A detailed junction model would be required to test this option.

4.1.10. An access through to Lowman Way Business Park from the EUE development has various wildlife and ecological issues crossing the River Lowman and would put extra pressure on Lowman Way roundabout, particularly in the PM peak which already suffers from congestion. This would require the demolition of at least one building on Lowman Way as well as additional land outside the EUE site. This cannot be purchased through a Compulsory Purchase Order (CPO) process because there is an alternative option.

4.1.11. Option a would be a new junction onto the A361 providing a direct link to the EUE development. Traffic calming would be required on Blundell's Road to reduce the capacity and speeds of vehicles along this route. It would allow all the proposed development to come forward and have a minimal impact on the current network. It could add up to 900 vehicles per hour along Blundell's Road but with traffic calming the impact would be reduced. The tables above only assess the distribution of traffic from the EUE development and do not include the redistribution of current traffic. The actual increase is predicted to be in the region of 500 vehicles per hour to the east of Tidcombe Lane, and about 300 additional vehicles past the school.

4.1.12. This option would improve the accessibility of the site with easy access onto the A361 and make it more attractive to businesses thinking of moving to the area, promoting economic growth within the town.

4.1.13. Table 3 below summarises these access options. It shows that the only realistic option for accessing the EUE development is via a new junction onto the A361, with a secondary access onto Heathcoat Way being required in the future if Tiverton continues to expand to the east after 2026. Full Early Assessment Sifting Tool (EAST) summaries of each of these options are located in Appendices 3 – 11.

Option	Strategic	Economic					Managerial	Financial
	Overview	Economic Growth	Carbon Emissions	Socio-Distributional Impacts	Local Environment	Well Being	Overview	Overview
Do Minimum	1	1	1	2	1	1	1	1
Access onto A361	4	5	4	4	4	4	3	3
Access onto Heathcoat Way	2	3	3	3	3	4	3	3
Both Accesses	5	5	5	5	4	5	4	1

Table 3: Summary of Access Options

4.2. Option Generation

4.2.1. Taking option a forward, the option of a new access onto the A361, various options for the location of this junction were assessed. A total of three locations were considered as shown in Figure 2 below. The costs of each option include 15% risk and 44% optimism bias and are based on a full movements, grade separated junction. However, it is plausible that other types of junction may be possible at these locations as discussed below.

Figure 2: A361 Junction Location Map

Lime Green Route (Existing Bridge near Craze Lowman)

4.2.2. This option would use the existing bridge over the NDLR on the road to Craze Lowman. A full movement grade-separated junction could be built at this location.

4.2.3. To facilitate an all movements junction onto the NDLR at this location there would need to be substantial earthworks undertaken on both sides of the bridge, there would likely be a 8% gradient on one slip road and the bridge would need widening to accommodate the anticipated traffic levels. Given that the current bridge is a post-tension structure, any modifications to it are likely to be expensive. A new grade separated junction at this location is likely to have a construction cost of between £12M and £19M.[1]

4.2.4. In addition to the difficult engineering issues surrounding this option the connection to the development and Tiverton is questionable. This option would require a large area of the developable land to be used as highway. Vehicles wishing to travel towards North Devon would need to head east through the development before going west on the NDLR, or travel along Blundell's Road and past the school into Tiverton before joining the A361 at Gornhay Cross.

[1] All costs are initial construction cost estimates and more detailed designs and additional survey work is required before a more accurate cost estimate can be achieved.

4.2.5. In order to connect to the road network within the development the Posthill hospital would require demolition or an alternative route found, and consideration would need to be given to nearby ancient burial mounds.

4.2.6. This option would also require land outside of the proposed area from a landowner not currently involved with the EUE development. This could cause land agreement issues and potentially prevent the junction from being built.

4.2.7. Due to the cost associated with the engineering required to facilitate this option, the length of highway required to connect to the NDLR, and the connectivity between the development site and Tiverton this route has not been given any further consideration.

Leaf Green Route (West of Lime Green Route)

4.2.8. This route is an alternative to the lime green route above; it places a new bridge over the NDLR and provides a full movement junction using on/off slip roads.

4.2.9. Large embankments and earthworks would still be required for this route, and careful consideration would need to be taken working near to an ancient burial mound.

4.2.10. The major advantage over the lime green route is the difference in cost due to reduced earthworks, length of highway to connect to the development and the use of new bridge dropped into place rather than demolishing and rebuilding a new bridge. The initial construction cost estimate of this is approximately £10M.

4.2.11. As with the Lime Green Route, this route would also require access to the current network either along the existing residential Post Hill, through the Posthill hospital site or via an alternative route. It will encourage vehicles travelling to North Devon to either travel further to access the NDLR or to go along Blundell's Road and back through Tiverton which would increase the environmental impacts.

4.2.12. There are further engineering issues associated with this option, mainly the 'weaving length' between the slip roads of this junction and the Gornhay Cross junction to the west.

Purple Route

4.2.13. The location of the purple junction onto the A361 was chosen to be close to the middle of the EUE development site so would reduce the environmental impacts of vehicles travelling further to access the SRN. The construction cost of a junction at this location would be similar to that of the leaf green route at approximately £10M.

4.2.14. Land to the north of the NDLR would be required for this and although this is outside the EUE development land, it is owned by Sir Ian Amory and he has specified that he would make this land available for the proposed junction.

4.2.15. Despite these issues, a junction in this location will have easy access to the heart of the EUE so will be taken forward to the next stage of the modelling process.

Conclusion

4.2.16. Table 4 below summarised the impacts of different locations of a junction onto the A361 with a full EAST form located in Appendices 3-11. The Purple route was chosen as the best location for access onto the A361 because it is close to the centre of the EUE development so reduces the environmental impacts as well as encouraging people to use this route rather than travel along Blundell's Road or through Halberton. It would also require less land inside the development site to be made available for highways resulting in more housing or employment land within the EUE improving the economy of the area.

Option	Strategic	Economic					Managerial	Financial
	Overview	Economic Growth	Carbon Emissions	Socio-Distributional Impacts	Local Environment	Well Being	Overview	Overview
Lime Green Route	3	5	3	4	3	4	3	3
Leaf Green Route	3	5	3	4	3	4	4	3
Purple Route	4	5	4	4	4	4	3	3

Table 4: Summary of Junction Location

4.3. Assessment of options

4.3.1. Following the decision on the most appropriate location for the new access, an assessment of the type of junction is required. Four possible options were investigated:

a) At Grade roundabout

b) Left in, left out

c) Compound with Gornhay Cross

d) Full movements Cloverleaf

At Grade Roundabout

4.3.2. The first option proposed was a roundabout at this location as shown in Figure 3. The construction cost of this would be less than a grade separated junction but there would be significant disruption to the A361 during construction, requiring large scale traffic management. Despite this, it is an option that would allow easy access to the future development and presents no issues with weaving distances between adjacent slip roads.

4.3.3. This option is likely to be able to provide adequate capacity for the EUE development traffic on a typical weekday in the morning peak, but junction assessments have shown significant queuing could result from the higher traffic flows experienced on Fridays and Saturdays in the summer, as well as some queuing in the PM peak. This is because roundabouts work best with equal flows on all arms. In this instance, the dominant movement would east-west traffic on the A361 with significantly less traffic on the EUE approach arm, resulting in few gaps in the traffic to allow this traffic to join the roundabout.

4.3.4. Even if the roundabout was able to accommodate the EUE development traffic, it would be put under significant pressure in the future and would not be suitable if Tiverton keeps expanding to the east, meaning a roundabout is not future-proof. Once the roundabout was in, it would be almost impossible and very expensive to improve its capacity to cater for future development.

4.3.5. The roundabout option would slow down traffic on the A361, resulting in more emissions and increased noise pollution close to the existing residents. This is because the vehicles have to decelerate and accelerate and is a particular issue with HGVs.

4.3.6. Slowing down journey times on the A361 goes against the objective of minimising the impact of the development of the strategic roads. DCC are currently drafting a plan for the A361, trying to improve various problematic junctions along the route to allow development in North Devon to come forward in both the short and long-term.

4.3.7. This started with receiving Pinch Point funding for improvements to J27 of the M5, which will be implemented by March 2015. Borners Bridge junction at South Molton is currently being looked at, with DCCs preferred option being grade separation of this junction. There is also a possibility of changing Bolham Roundabout into a hamburger-style junction to reduce delays for A361 traffic. More detail of these improvements can be found in the A361 strategy leaflet (when finished).

4.3.8. The A361 is one of the few remaining strategic links in Devon as stated in the recent Devon and Torbay LTP3. For this reason DCC are keen to keep this route as free flowing as possible and a roundabout would clearly cause increased disruption and delays.

4.3.9. The roundabout option is a relatively expensive scheme for a poor solution and other options offer better value for money. For all these reasons, a roundabout will not be considered further because it fails to meet the objectives outlined above.

Figure 3: Purple Option 7: Roundabout

Left In, Left Out

4.3.10. The second option considered was a left in, left out arrangement which would consist of an on and off slip on the southern side of the A361. This would allow vehicles from the M5 to access the site and people from the EUE could use the NDLR to access Tiverton. However, people from the EUE wishing to travel towards the M5 would first have to travel west and turn around at Gornhay Cross while people from Barnstaple and North Devon would have to continue using Blundell's Road to get to the development site.

4.3.11. While this option could accommodate some of the EUE development, the small roundabouts at Gornhay Cross would not be able to cater for the full level of development and junction assessments have shown that major delays would occur at this location. This option would also add a large amount of traffic to Blundell's Road which would increase vehicle / pedestrian conflict outside Blundell's School.

Compound with Gornhay Cross

4.3.12. Initial assessments of the options noted that a junction at this location with slip roads to the west would not achieve the minimum weaving distance of 1km so alternative options were considered. These included various ways of linking the two junctions together such as the one shown below.

Figure 4: Compound Junction Layout

4.3.13. This would allow the majority of movements to be undertaken at the purple junction location. The only exception to this would be vehicles travelling from North Devon to the EUE would have to depart the NDLR at Gornhay Cross and travel on the additional road to the south of the A361.

4.3.14. Despite these benefits, the road to the south of the A361 would pass through the floodplain and require additional land outside the allocated site. It would also not allow all movements at the purple location which would increase pollution from vehicles travelling further.

All Movements Grade Separated Junction

4.3.15. The final option for a junction at this location is to have the slip roads loop around under the bridge. Initial investigation suggested this could increase the weaving distances between the two sets of slips to about 700M. This is still below the recommended 1km set out in DMRB[2] but using the distance weaving calculation from DMRB Volume 6, Section 2, Part 1, TD 22/06 2.71, this would be adequate with predicted traffic flows and a departure from standards could be achieved. This option is detailed in Figure 5 below.

[2] Design Manual for Roads and Bridges. This states the Governments guidelines on all road geometries.

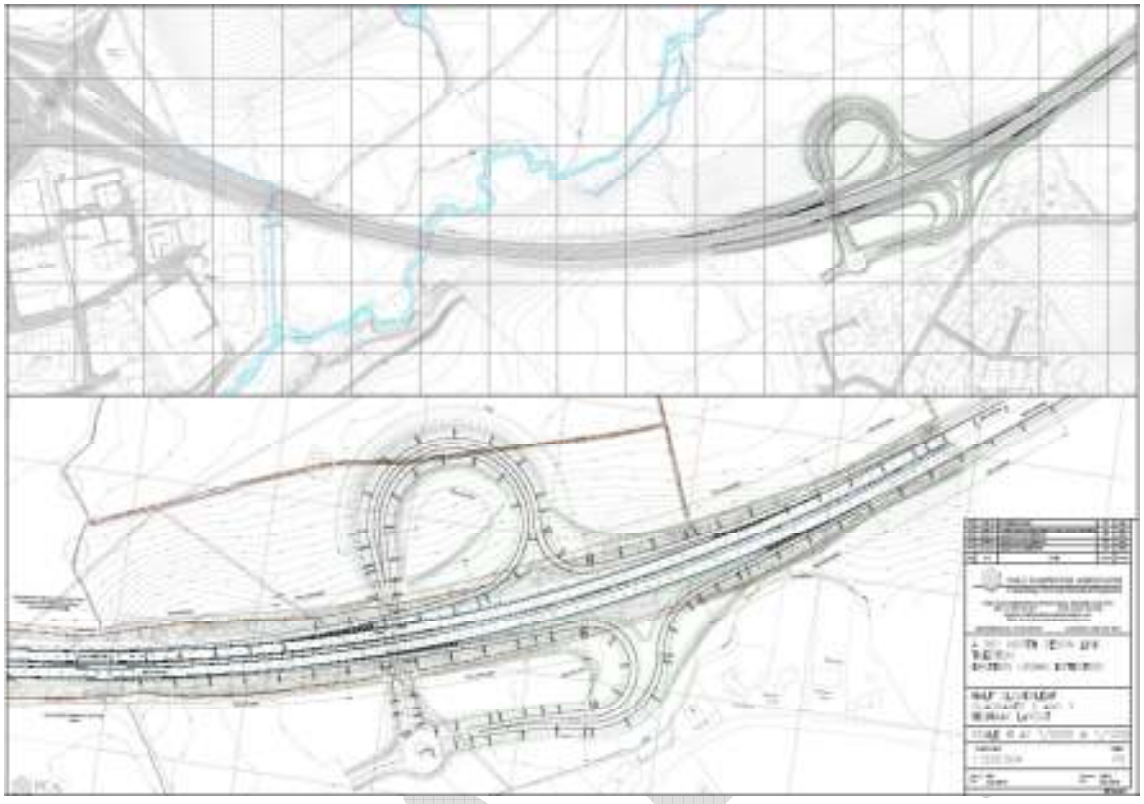


Figure 5: Cloverleaf Junction

4.3.16. This option allows easy access on and off the NDLR to the EUE development and has minimal impact on vehicles using this strategic link to access north Devon. It would not cause major disruption to the SRN traffic during the construction because the bridge could be lifted in overnight.

4.3.17. Table 5 below summarises the junction type options, with a full output in 3-11. The roundabout can be ruled out because of the delays it causes to vehicles on the A361 resulting in increased carbon emissions and impacts on the local environment. The left-in, left-out junction can only accommodate a small proportion of the proposed development so would not provide the specified economic growth.

Option	Strategic	Economic					Managerial	Financial
	Overview	Economic Growth	Carbon Emissions	Socio-Distributional Impacts	Local Environment	Well Being	Overview	Overview
Roundabout	3	3	1	2	1	2	2	5
Left-In, Left-Out	2	1	3	4	3	4	2	5
Compound Junction	4	5	4	4	4	4	3	2
Cloverleaf	4	5	4	4	4	4	3	3

Table 5: Summary of Junction Type

4.3.18. Given that this option meets all the objectives mentioned above, it is DCC's preferred option for accessing the EUE development site.

4.4. Scheme Assessment

Performance against Objectives

4.4.1. To allow Tiverton to expand to the east it is important that a suitable alternative access is provided. The proposed full movements junction onto the NDLR provides easy access between the EUE development site and the SRN. The junction is close to the centre of the development to minimise the environmental impact by reducing the distance vehicles are required to travel and allows vehicles access to the site without travelling into Tiverton. The scheme will also have minimal impact on the SRN even during construction because the bridge can be lifted in overnight.

Economic Case

4.4.2. The scheme is expected to have some labour supply impacts by providing access to employment land to encourage businesses to move to the area and reduce congestion in the town so it remains uncongested so can be easily visited by both local residents and tourists.

4.4.3. Transport User Benefits have been undertaken with the costs including the 44% optimism bias as stated in WebTAG. The benefit cost ratio of the scheme has been calculated at 6.6 as well as providing benefits of £45.8M from delivery of housing development.

Environmental Assessment

4.4.4. Carbon emissions will be reduced by minimising the distance travelled by cars and preventing congestion within the town. The scheme will also reduce the number of vehicles, particularly HGVs from travelling down Blundell's Road and through Halberton. This will help improve the environment of these locations, particularly around Blundell's School as well as improving the safety of these areas.

5. Conclusions

5.1. Schemes to be Taken Forward for Detailed Assessment

5.1.1. Taking all this information into account, a full movements, cloverleaf junction onto the A361 at the purple location is the scheme being taken forward for detailed assessment.

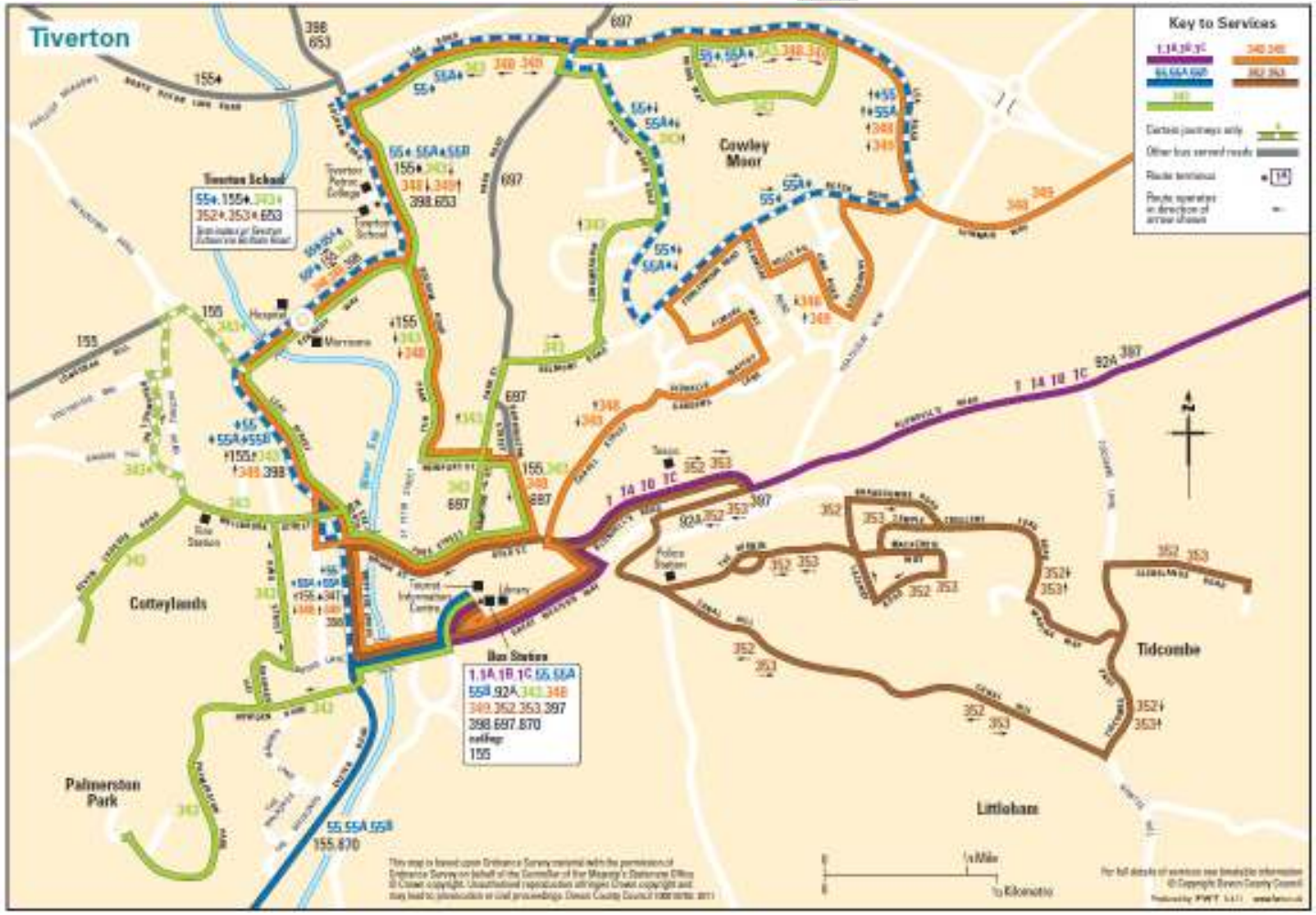
5.1.2. A do nothing scheme is an option but not a viable one because this would either cause major delays in the town if the development came forward, or, more likely, only a limited amount of development would progress.

5.1.3. A lower cost scheme would be just having a left-in, left-out junction on the southern side of the NDLR but this would require a large volume of U-turning traffic at Gornhay Cross and the small dumbbell roundabouts at this location would not be able to accommodate this. This would allow some of the development to come forward on the EUE site but not the full amount proposed in the Mid Devon plan.

6. Appendices

6.1. Appendix 1 – Overall Scheme Programme

6.2. Appendix 2 – Tiverton Bus Map



6.3. Appendix 3 – Do Minimum EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	Do Minimum 2	
Date	30/09/2013	
Description	Current highway network with no improvements	
Strategic		
Identified problems and objectives	Would cause a significant impact on the current road network, including increased traffic flows along Blundell's Road and unacceptable queuing delays at GWW/Blundell's Road roundabout resulting in air quality issues.	
Scale of impact	1. Small impact	Would have negative impact on Tiverton network
Fit with wider transport and government objectives	1. Low	Significant negative impact and safety issues
Fit with other objectives	1. Low	Significant negative impact and safety issues
Key uncertainties	Long-term impact on wider road network, capacity issues on current network likely to result in	
Degree of consensus over outcomes	4	
Economic		
Economic growth	1. Red	Will prevent housing and employment from being developed given capacity and safety issues.
Carbon emissions	1. Red	Increased stop-start traffic at roundabouts resulting in increased carbon emissions
Socio-distributional impacts and the regions	2. Red/amber	Increased bus travel times from increased traffic flows
Local environment	1. Red	Increased carbon emissions in already poor air quality area. Increased noise disturbance and impact on health particularly near to Blundell's School.
Well being	1. Red	Will not allow easy access to services in the EUE development, will increase journey times and will affect the air quality in the area.
Expected VfM category	5. Poor <1	Noi cost but negative benefits likely
Managerial		
Implementation timetable	1. 0-1 months	Do minimum
Public acceptability	1. Low	
Practical feasibility	1. Low	Impractical solution
What is the quality of the supporting evidence?	4	Advanced modelling using SATURN
Key risks		
Financial		
Affordability	5. Affordable	No work to be done
Capital Cost (£m)	01. None	No work to be done
Revenue Costs (£m)	02. 0-5	Minimal maintenance costs
Cost profile		
Overall cost risk	5. Low risk	
Other costs	Cost of moving development to another location within Mid Devon to meet housing quota	
Commercial		
Flexibility of option	1. Static	

Where is funding coming from?	No funding required	
Any income generated? (£m)	No	

6.4. Appendix 4 – A361 Purple Cloverleaf EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*		
Option Name/No.	Purple - Grade Separated	
Date	09/09/2013	
Description	"Cloverleaf" junction onto A361, providing direct access to heart of EUE development.	
Strategic		
Identified problems and objectives	Passes close to existing housing, however will allow the whole of the proposed development to be accomodated on the land. Reduces journey times and removes traffic from surrounding areas promoting safety. Requires land outside EUE development site but same land owner as	
Scale of impact	4	Will significantly improve network.
Fit with wider transport and government objectives	4	Improves economic growth and fits with environmental aspects.
Fit with other objectives	4	Fits well with local objectives, primarily strengthening and improving the public transport network with minimal impact to strategic road.
Key uncertainties	Public objections due to closeness to existing housing	
Degree of consensus over outcomes	4	First MDDC Masterplan public consultation held which included section on new access
Economic		
Economic growth	4. Green	All development can be accommodated on network, and further development areas can be unlocked by this.
Carbon emissions	4. Amber/green	Reduces journey times and distances although fairly significant construction work will be required.
Socio-distributional impacts and the regions	4. Amber/green	Improves access to development and removes traffic from Blundell's Road improving bus services and safety
Local environment	4. Amber/green	Will remove traffic along Blundell's Rd, thereby creating a safer and less polluted atmosphere, particularly at Blundell's Road roundabout
Well being	4. Amber/green	Will improve safety on the roads, particularly at the busy Blundell's School. There will be a reduction in traffic along this route, resulting in the encouragement of a more active lifestyle and fewer safety concerns about cycling and walking. Provides access to key infrastructure and creates more jobs through the entire EUE development being realised.
Expected VfM category	2. High 2-4	Offers benefits to current residents in the area as well as unlocking land for development
Managerial		
Implementation timetable	4. 1-2 years	Detailed surveys carried out in area
Public acceptability	2	The junction runs close by a current housing development which will cause public resistance.
Practical feasibility	5. High	A practical solution to the accessability issues. Minimal disruption to A361 during construction
What is the quality of the supporting evidence?	5. High	Detailed SATURN modelling of proposed scheme
Key risks	Public objection	
Financial		

Affordability	4	Part funded by developers but requires additional funding from LTB. Location of bridge chosen to minimise earthworks
Capital Cost (£m)	03. 5-10	Similar cost to leaf green route but requires less connecting road
Revenue Costs (£m)	02. 0-5	Minimal maintenance costs
Cost profile	Cost estimate includes construction cost with optimism bias	
Overall cost risk	2	
Other costs		
Commercial		
Flexibility of option	1. Static	Location of junction fixed because of weaving length issue and location of existing housing
Where is funding coming from?	LTB/Developers	
Any income generated? (£m)	No	

6.5. Appendix 5 – Heathcoat Way EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*		
Option Name/No.	Access onto Heathcoat Way	
Date	09/09/2013	
Description	Providing access to the EUE development from Heathcoat Way and closing of Blundell' Road to through tarffic, making it a bus and cycle corridor.	
Strategic		
Identified problems and objectives	Option will result in large volume of traffic at Gornhay Cross and offers poor access to A361. This reduces appeal of development land, particularly for businesses	
Scale of impact	3	Would remove traffic from Blundell's Road into EUE but would cause traffic problems and congestion elsewhere
Fit with wider transport and government objectives	2	Not all economic growth potential can be achieved. Would create environmental issues at Gornhay Cross.
Fit with other objectives	2	Would provide a safer cycle route to cover Devon's 'Naturally Active' objective, but would cause more problems in terms of access, journey times and traffic impact on the environment.
Key uncertainties	Some of road would be constructed in floodplain	
Degree of consensus over outcomes	3	Discussed during phase one of MDDC Masterplan public consultation
Economic		
Economic growth	3. Amber	Not all of the EUE development would be able to be accommodated.
Carbon emissions	3. Amber	Increased congestion at Gornhay cross may result in stop-start traffic which will increase carbon emissions. However traffic will be removed from Blundell's Road, allowing increased cycling and walking, plus increased bus journey time reliability.
Socio-distributional impacts and the regions	3. Amber	Will provide access to the EUE but residents will have to travel a long way round or through Halberton to access M5 motorway.
Local environment	3. Amber	Increased carbon emissions at Gornhay Cross and Lowman Way roundabout
Well being	4. Ambergreen	Will allow for a more active lifestyle down Blundell's Road through the removal of all through traffic.
Expected VfM category	4. Low 1-1.5	Increasing HGVs on Heathcoat Way increases journey times and carbon emissions
Managerial		
Implementation timetable	5. 2-5 years	Detailed survey work of River Lowman floodplain required. Additional land acquisition required outside EUE site
Public acceptability	2	The longer journey times to the M5 will likey provoke some public objections.
Practical feasibility	3	Whilst the option is feasable, it does not alleviate the problems.
What is the quality of the supporting evidence?	3	Some SATURN modelling
Key risks	Impact of road on floodplain. Acquisition of land currently owned by third party	
Financial		
Affordability	3	Affordable but access onto A361 offers better value for money
Capital Cost (£m)	04. 10-25	Depending on alignmment, viaduct over floodplain may be required

Revenue Costs (£m)	02. 04	Maintenance costs
Cost profile	Only includes construction cost with optimism bias	
Overall cost risk	2	
Other costs	Land	
Commercial		
Flexibility of option	3	Various alignment options
Where is funding coming from?	LTB/Developers	
Any income generated? (£m)	No	

6.6. Appendix 6 – A361 and Heathcoat Way EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	Both Accesses	
Date	09/09/2013	
Description	Primary access onto A361 with secondary access to Heathcoat Way	
Strategic		
Identified problems and objectives	Two accesses to link the NDLR and Heathcoat Way to the Tiverton EUE development. Would free up Blundell's Road to cyclists, pedestrians and busses only and would reduce journey time and improve access to Tiverton.	
Scale of impact	5. Significant impact	Protects A361 and reduces journey times and traffic through Halberton/Blundell's Road
Fit with wider transport and government objectives	5. High	Fits with environmental, social and economic objectives.
Fit with other objectives	5. High	Fits with environmental, social and economic objectives.
Key uncertainties	Affordability	
Degree of consensus over outcomes	3	Discussed in first MDDC Masterplan public consultation
Economic		
Economic growth	5. Green	Allows for all and future development on network with spare capacity on network to accommodate future development to east of Tiverton
Carbon emissions	5. Green	Reduced carbon impacts through removal of traffic and congestion into and around Tiverton, also encourages active and sustainable lifestyles with traffic-free and public transport routes along Blundell's Road.
Socio-distributional impacts and the regions	5. Green	Significant economic growth expected and accessability issues will be solved.
Local environment	4. Amber/green	Whilst this option requires more construction, in the long term this will be offset by more sustainable travel options created by this and less congestion in and around Tiverton.
Well being	5. Green	Will relieve air quality issues at Blundell's Road roundabout and will create a better environment through limiting traffic on Blundell's Road.
Expected VfM category	2. High 2-4	High construction costs but offers high benefits
Managerial		
Implementation timetable	6. 5-10 years	A phased approach of the highway infrastructure would be required over a longer time period
Public acceptability	4	Increased accessability and wellbeing is likely to cause very few public objections
Practical feasibility	4	Allows direct access form EUE to both A361 and Tiverton for traffic as well as direct bus/cycle route along Blundell's Road. Improves safety outide Blundell's School
What is the quality of the supporting evidence?	5. High	Detailed modelling using SATURN
Key risks	Affordability	
Financial		

Affordability	1. Not affordable	Given reduction in size of development taking into account site constraints make both access options economically unviable for the level of development proposed
Capital Cost (£m)	05. 25-50	Large construction costs. Could be slightly reduced depending on which location/alignment chosen for each access
Revenue Costs (£m)	03. 5-10	Potentially high maintenance costs
Cost profile	Optimism bias included in construction costs	
Overall cost risk	1.High risk	
Other costs	Land outside EUE site required for Heathcoat Way access	
Commercial		
Flexibility of option	4	Various combinations of A361 junctions and Heathcoat Way alignment routes
Where is funding coming from?	LTB/Developers	
Any income generated? (£m)	No	

6.7. Appendix 7 – Lime Green Route EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	Lime Green Route	
Date	09/06/2013	
Description	Existing bridge near Craze Lowman - the option would utilise the existing bridge over the A361 on the road to Craze Lowman. A full movement grade-separated junction could be built at this	
Strategic		
Identified problems and objectives	Option would provide a grade-separated junction onto the A361 to provide good access to the Tiverton EUE development. Significant landscape and engineering impacts/difficulties. Creates longer routes for commuters heading West on the A361 which would likely result in increased	
Scale of impact	3	Will slightly reduce traffic along Blundell's Road, will take up land for development because of longer road connecting junction to development and will have a larger carbon footprint.
Fit with wider transport and government objectives	3	Will improve accessability and connectivity to development but traffic will still use Blundell's Road leading to potential air quality and environmental issues.
Fit with other objectives	3	Allows sustainable development to come forward but encourages traffic to travel further distances that other options
Key uncertainties	Acquisition of land outside of the proposed area (see 4.2.6).	
Degree of consensus over outcomes	4	Preferred option from MDDC consultation but members of the public struggled to understand greater costs of this scheme
Economic		
Economic growth	5. Green	All proposed development can be accomodated on the network.
Carbon emissions	3. Amber	Reduces travel distance for EUE residents/workers but connector road has a larger carbon footprint. Option encourages some drivers to travel further than other options
Socio-distributional impacts and the regions	4. Amber/green	Will unlock access to employment and housing, site will contain a mix of affordable housing and housing for the elderly, creating better accessability for these groups with better bus routes and services.
Local environment	3. Amber	Removes traffic from Blundell's Road through poor air quality area.
Well being	4. Amber/green	Removes traffic from Blundell's Rd and through Halberton so encourages walking and cycling, improving quality of life
Expected VfM category	4. Low 1-1.5	Large construction costs because requires existing bridge to be demolished and rebuilt to accommodate predicted future traffic levels
Managerial		
Implementation timetable	5. 2-5 years	Additional work required on acquiring land outside EUE development site
Public acceptability	3	There may be some public resistance due to connector road running close to an ancient burial mound and also through a current ex-hospital site which would need demolishing
Practical feasibility	2	See 4.2.7
What is the quality of the supporting evidence?	4	Based on modelling and engineering designs
Key risks	Option would require land outside EUE development site owned by a third party	
Financial		

Affordability	2	Requires demolition of existing bridge and construction of a new one. Also requires large embankments and lond road connecting junction to development
Capital Cost (£m)	04. 10-25	New bridge and junction ~£12-19m
Revenue Costs (£m)	02. 0-5	Minimal maintenance of road and bridge
Cost profile	Only construction costs with optimism bias included as all schemes likely to have similar	
Overall cost risk	3	
Other costs	Land acquisition	
Commercial		
Flexibility of option	1. Static	Location of junction fixed by existing bridge.
Where is funding coming from?	LTB/Developers	
Any income generated? (£m)	No	

6.8. Appendix 8 – Leaf Green Route EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	Leaf Green Route	
Date	09/06/2013	
Description	Option places a new bridge over the A361 close to the existing bridge at Craze Lowman and provides a full movement junction using on/off slip roads.	
Strategic		
Identified problems and objectives	Large embankments and earthworks required for this route, workings are close to an ancient burial mound, weaving length between junction and Gornhay Cross at minimum standards.	
Scale of impact	3	Provides access to the EUE development site, however traffic will still likely use Blundell's Road to access Tiverton which would increase environmental and safety impacts.
Fit with wider transport and government objectives	3	Better accessability, but overall likely detrimental to environmental and air quality.
Fit with other objectives	3	Fits in with MDDC and active Devon objectives and will improve bus services. Will likely cause environmental and air quality issues, particularly along Blundell's Road.
Key uncertainties	Acquisition/demolision of Posthill Hospital site for access road. Possible departre from standards of weaving distance between slip roads	
Degree of consensus over outcomes	3	Public accepted need for new junction onto A361 to serve development
Economic		
Economic growth	5. Green	All proposed development can be accomodated on network.
Carbon emissions	3. Amber	Encourages vehicles to travel further to access the A361 than other options or to travel along Blundell's Road and back through Tiverton which would increase the environmental and safety impacts.
Socio-distributional impacts and the regions	4. Amber/green	Removes traffic along Blundell's Road but not as much as other options. The link would provide accessability and a better public transport infrastructure along Blundell's Road and through Halberton.
Local environment	3. Amber	Likely to be detrimental to environment and air quality locally.
Well being	4. Amber/green	Environmental and air quality impacts, however the route will hopefully encourage a more active lifestyle by removing traffic from Blundell's Road and making it more appealing to pedestrians and cyclists
Expected VfM category	3. Medium 1.5-2	Construction costs less than lime green route with similar benefits
Managerial		
Implementation timetable	5. 2-5 years	Further work required to acquire additional land outside EUE development site
Public acceptability	3	Likely to be public objections due to link running close to existing development and through site of decommissioned hospital. Link also runs alongside ancient burial mound which could cause some public objections.
Practical feasibility	4	Large earthworks and long connecting road but junction at this location could be built to standards
What is the quality of the supporting evidence?	4	Modelling and designs created to review option
Key risks	Proposed link passes close to existing development (Post Hill) and/or through the Posthill Hospital site requiring demolition likely to result in public objection	

Financial		
Affordability	3	Large earthworks required but cheaper than lime green option
Capital Cost (£m)	04: 10-25	Substantially cheaper than the Lime Green option
Revenue Costs (£m)	02: 0-5	Minimal maintenance costs
Cost profile	Only includes construction costs with optimism bias	
Overall cost risk	2	
Other costs	Requires land outside of EUE site from third party	
Commercial		
Flexibility of option	3	Route is reasonably flexible as junction location not fixed.
Where is funding coming from?	LTB/Developers	
Any income generated? (£m)	No	

6.9. Roundabout EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*		
Option Name/No.	Purple Route - Roundabout	
Date	09/06/2013	
Description	At-grade 3-arm roundabout linking the A361 and the Tiverton EUE development.	
Strategic		
Identified problems and objectives	Would place a roundabout on a strategic route slowing all traffic on the road. Potential congestion during busy summer holidays and could result in increased accidents. Stop-start nature of roundabout increases vehicle emissions.	
Scale of impact	3	Would significantly increase accessability for residents of the EUE and Tiverton, providing fast access to the NDLR. However, the potential for congestion cancels out the majority of the benefits associated with the option
Fit with wider transport and government objectives	3	This option creates good access to heart of development and the potential to alleviate traffic on Blundell's Road. However, the environmental impacts and that of safety on the roundabout would mean that the roundabout does not fit well with the government objectives.
Fit with other objectives	2	The option would create an opportunity for a more active lifestyle along a traffic-alleviated Blundell's Road. However, there would be significant environmental impacts on the region which would cause a detriment to quality of life. Slows down traffic on strategic network
Key uncertainties	Amount of disruption to the NDLR during construction - likely to be much greater than the other proposed options.	
Degree of consensus over outcomes	3	After reasons explained, majority of public understood that roundabout not an acceptable option
Economic		
Economic growth	3. Amber	Majority of EUE development can be achieved but could lead to some delays.
Carbon emissions	1. Red	Will cause stop-start traffic at roundabout, greatly increasing carbon emissions in the immediate (local) area.
Socio-distributional impacts and the regions	2. Red/amber	There would be a significant disruption to traffic flows, particularly over the summer months when the area relies heavily on tourists - whom ultimately will cause the congestion on the road. Although the link will increase accessablity to the EUE development, the environmental impacts will have a detrimental effect on quality of life. It is likely to result in vehicles using Blundell's Road
Local environment	1. Red	Carbon emissions from queuing and stop-start traffic will likely cause high levels of carbon emissions in the local environment. The increased liklihood of accidents on the roundabout will also create a detrimental local environment and has potential to increase congestion.
Well being	2. Red/amber	Environmental impacts will outweigh the active lifestyle encouraged by the alleviation of traffic along Blundell's Road.
Expected VfM category	4. Low 1-1.5	Large journey time disbenefit from delaying all traffic on A361
Managerial		
Implementation timetable	4. 1-2 years	Will result in delays to traffic during construction and possible road closures
Public acceptability	2	It is highly likely that there will be significant public objection given the amount of congestion projected at the site.
Practical feasibility	2	The practicality of the roundabout is little, mainly given the projected congestion once it is built. The anticipated disruption with the construction also makes this option impractical.

What is the quality of the supporting evidence?	5. High	Advanced modelling using SATURN and ARCADY, traffic counts and future forecasting.
Key risks	Potential for high levels of congestion in peak periods such as summer holidays	
Financial		
Affordability	5. Affordable	This is the cheapest proposed option.
Capital Cost (£m)	03. 5-10	Low construction cost but large amount of TM required during construction
Revenue Costs (£m)	02. 0-5	Minimal maintenance costs
Cost profile	Cost estimate includes construction cost with optimism bias only.	
Overall cost risk	5. Low risk	
Other costs	Journey time disruption during construction	
Commercial		
Flexibility of option	3	Location of roundabout flexible as no weaving length standards to be met
Where is funding coming from?	LTB/Developers	
Any income generated? (£m)	No	

6.10. Left-In, Left-Out EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*

Option Name/No.	Purple Location - LILO	
Date	09/06/2013	
Description	Left in, left out juncion on south side of A361 at the purple location.	
Strategic		
Identified problems and objectives	Limited amount of development can be accommodated, congestion will build up along Blundell's Road and at Gornhay Cross. Any traffic from EUE to M5 J27 will have to travel a long way around or through Halberton. There will be no reduction in trip length for some journeys, limiting	
Scale of impact	3	The link road will create much better access for residents and employees of the EUE Tiverton development. However, this is mitigated by the increase in journey times for many residents having to travel through Tiverton to reach the NDLR in the first place. Many vehicles will by U-turning at Gornhay Cross causing congestion and decreasing the safety of the road. HGV's may not be able to make this manoeuvre
Fit with wider transport and government objectives	2	Will improve accessability but will cause an increase in congestion at certain points, possibly causing a decrease in environmental and air quality. Option does remove the majority of traffic from Blundell's Road and in doing so encourages active travel by cyclists and pedestrians but only allows a small proportion of development to be built
Fit with other objectives	2	Within a local context, this option would prevent some of the EUE development being accomodated, thus creating fewer jobs and houses.
Key uncertainties	Amount of development available on the EUE site, reduction in trip length and congestion levels brought on by the junction.	
Degree of consensus over outcomes	3	First stage public consultation for MDDC Masterplannign carried out which included junction type and location
Economic		
Economic growth	1. Red	Limited amount of development can be accommodated.
Carbon emissions	3. Amber	Minimal carbon savings, no reduction in some journey lengths.
Socio-distributional impacts and the regions	4. Amber/green	Removal of traffic from Blundell's Road encourages walking and cycling. Accessability and bus routes improved by a direct link to from A361 to heart of EUE development
Local environment	3. Amber	Possible congestion at Gornhay cross resulting in increased vehicle emissions. Potential for large volume of traffic to use Halberton road to reach M5
Well being	4. Amber/green	Encouraging walking/cycling in Blundell's Road.
Expected VfM category	3. Medium 1.5-2	Can only cater for limited size development
Managerial		
Implementation timetable	4. 1-2 years	
Public acceptability	2	Junction located close to existing housing so likely to have large public resistance
Practical feasibility	2	Reasonably practical, but departure from standards required for weaving length between slip roads and only allows part of development
What is the quality of the supporting evidence?	5. High	Detailed assessment carried out using SATURN model
Key risks	Weaving lengths, amount of traffic removed on Blundell's Road, increased congestion	

Financial		
Affordability	5. Affordable	No major constructiuon costs
Capital Cost (£m)	03. 5-10	
Revenue Costs (£m)	02. 0-5	Minimal maintenance costs
Cost profile	Construction cost with optimism bias included	
Overall cost risk	4	
Other costs		
Commercial		
Flexibility of option	1. Static	Location of junction fixed with slip road distance on one side and existing housing on the other
Where is funding coming from?	Developers	
Any income generated? (£m)	No	

6.11. Compound Junction EAST Form

Early Assessment and Sifting Tool (EAST) - *Expanded Print View*		
Option Name/No.	Compound Junction with Gornhay	
Date	27/09/2013	
Description	This option would have east-facing slips at the Purple junction location with an overbridge and	
Strategic		
Identified problems and objectives	Would require additional land outside EUE development site as well as the demolition of a building on the corner of Lowman Way business park The road to the south of the A361 would need to cross the River Lowman and floodplain	
Scale of impact	4	Protects A361 and reduces journey times and traffic through Halberton/Blundell's Road.
Fit with wider transport and government objectives	4	Fits with environmental, social and economic objectives.
Fit with other objectives	4	Fits with environmental, social and economic objectives.
Key uncertainties	Affordability, Land required outside EUE site	
Degree of consensus over outcomes	2	Minimum public consultation over this type of junction
Economic		
Economic growth	5. Green	Allows full EUE development to come forward
Carbon emissions	4. Amber/green	Reduced carbon impacts through removal of traffic and congestion into and around Tiverton, also encourages active and sustainable lifestyles with traffic-free and public transport routes.
Socio-distributional impacts and the regions	4. Amber/green	Significant economic growth expected and accessability issues will be solved
Local environment	4. Amber/green	Whilst this option requires more construction, in the long term this will be offset by more sustainable travel options created by this and less congestion in and around Tiverton.
Well being	4. Amber/green	Will relieve air quality issues at GWW roundabout and will create a better environment through limiting traffic on Blundell's Road. Will result in increase of vehicles at Gornhay Cross
Expected VfM category	3. Medium 1.5-2	Offers large benefits but also has large construction costs as most of additional road lies within the River Lowman floodplain
Managerial		
Implementation timetable	5. 2-5 years	Detailed survey of floodplain area required
Public acceptability	4	Increased accessability and wellbeing is likely to cause very few public objections
Practical feasibility	2	Additional road will reduces size of development land and require demolition of building on Lowamn Way
What is the quality of the supporting evidence?	3	Some SATURN modelling of option
Key risks	Affordability, Land	
Financial		
Affordability	2	Given the high construction cost of building a road through the floodplain as well as additional land required the scheme is considered economically unviable
Capital Cost (£m)	04. 10-25	Initial cost estimates are high taking account additional land and construction in the floodplain
Revenue Costs (£m)	02. 0-5	Minimal maintenance costs
Cost profile	Cost includes optimism bias	

Overall cost risk	2	
Other costs	Loss of development land	
Commercial		
Flexibility of option	3	Location of bridge and new slip roads flexible
Where is funding coming from?	LTB/Developers	
Any income generated? (£m)	No	