

Greater Exeter – Local Plan Developments

Strategic Modelling Report
October 2023

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1. INTRODUCTION

1.1. Background

- 1.1.1. All four of the districts in the Greater Exeter area (Exeter, East Devon, Teignbridge and Mid Devon) are in the process of identifying suitable locations for additional development beyond the end of their existing Local Plan periods (all around 2030). To assess both the cumulative and individual District impacts of this proposed development, the Greater Exeter traffic model has been updated to 2040 by WSP to reflect these proposals. This builds upon the 2030 model created previously which includes all the development in the existing adopted Local Plans.
- 1.1.2. This report builds upon the vision set out in the Exeter Transport strategy. It is noted that not all of the policies in this document are applicable to the more rural Greater Exeter area but the main aims and vision should be considered across the wider region. These aims include:
- Greater Connectivity
 - Greater Places for People
 - Greater Innovation
- 1.1.3. This will be achieved by providing the following:
- Promoting shared mobility
 - Integrated ticketing on public transport
 - Improvements to active travel networks
 - Enhanced bus corridors and improved bus frequency

1.2. Development

- 1.2.1. East Devon, Teignbridge and Exeter have all held some level of public consultation on proposals and all sites likely to be included within their individual plans are included within the updated 2040 forecast models¹. Mid Devon is less developed and have not yet issued potential sites in the public domain. As such, the expansion of the Culm Garden Village has been included in the forecasting but no other point loaded development is included in the 2040 forecast model.
- 1.2.2. Details of the development of this 2040 model is included in the WSP Report: Greater Exeter– Model Update. This includes details of the development sites included within each district. This report also details the high level impacts of the additional development on the local highway network, with individual reports on each district on its own.

1.3. Modelling Background

- 1.3.1. The existing 2017 base model has not been updated but a comparison between 2017 (pre pandemic) and 2023 (post pandemic) has been carried out to show the model is still fit for purpose. However, flows were slightly higher in 2017 compared to 2023 so

¹ This was the status as of January 2023 when the modelling work started.

the model may slightly overestimate future traffic flows. Details of this are included in the WSP report.

- 1.3.2. The previous 2030 matrix forecasts have been changed slightly to be consistent with the methodology used for the 2040 forecast updates.
- 1.3.3. The networks are mostly the same between the 2030 and 2040 forecasts, but the 2040 scenarios also include the new road through the East Devon New Community as well as more detail of the roads through Cranbrook. Details of these are included in the separate reports.
- 1.3.4. Given the 2030 model includes all development allocated in the adopted existing Local Plans, this report only focusses on the impact of the 2040 development on top of the 2030 development and mitigations for this.
- 1.3.5. It should be noted that the modelling carried out to date has followed a more traditional predict and provide approach. The purpose of this was to identify the areas of the network which would be put under additional pressure and where developments would need to target a higher sustainable travel proportion in order to mitigate against severe congestion. This will also flag local junctions which may require improvement as part of the proposed development but being aware that DCC declared a climate emergency and as a result, large new highway junctions or roads are not likely to be the required solution.

1.4. Report Structure

- 1.4.1. The purpose of this note is to report more detail on the outputs and a mitigation strategy to overcome the issues this level of development and how certain areas of the network will be mitigated. It builds upon the Exeter Transport Strategy 2020-2030 and the three key themes of that which are:
 - Greater Connectivity
 - Greater Places for People
 - Greater Innovation

2. Development

2.1. Introduction

- 2.1.1. East Devon, Teignbridge and Exeter have all held some level of public consultation on proposals and all sites likely to be included within their individual plans are included within the updated 2040 forecast models². Mid Devon is less developed and have not yet issues potential sites in the public domain. The amount of additional development beyond the initial 2030 forecast is detailed below.
- 2.1.2. Details of the development of this 2040 model is included in the WSP Report: Greater Exeter– Model Update. This includes details of the development sites included within each district. This report also details the high level impacts of the additional development on the local highway network, with individual reports on each district on its own.

2.2. East Devon

- 2.2.1. In liaison with East Devon District Council, 6,919 dwellings and 34 hectares of employment have been allocated in East Devon in line with the Local Plan allocations. This takes account of the reduction in size of the allocation at North-East Axminster between the existing and emerging Local Plans.
- 2.2.2. The development levels in the proposed Local Plan were compared to those stated in NTEM (National Trip End Model) v8³. This showed that additional development on top of the Local Plan allocation is expected in East Devon up to 2040, so additional growth factors were applied across the district and outlined in Table 1 below. This is included in all development scenarios to make sure background growth assumptions are consistent.

Time Period	Factor
AM	5.0%
IP	8.9%
PM	5.2%

Table 1: Additional Windfall Development Factors for East Devon

2.3. Exeter

- 2.3.1. In liaison with Exeter City Council, 6,211 dwellings were included as part of the next Local Plan development. Some of the housing sites are on existing employment sites and these existing employment trips have not been removed as it is envisaged some of this will remain as part of the development. This is therefore considered an

² This was the status as of January 2023 when the modelling work started.

³ The National Trip End Model (NTEM) model forecasts the growth in trip origin-destination for use in transport modelling and the uplift for windfall sites is included to be consistent with other transport models.

acceptable and robust assessment. Further employment development, along with changes to proposed residential numbers will be reviewed as the plan develops.

2.4. Teignbridge

- 2.4.1. In liaison with Teignbridge District Council, 4,560 dwellings and 22Ha of employment have been allocated in Teignbridge in line with the Local Plan allocations.
- 2.4.2. In addition to modelling the impacts of the proposed Local Plan development on the network in and around Exeter, the development was also loaded into the Newton Abbot strategic model to assess the impacts on the town and local SRN junctions such as Drumbridges on the A38. Detailed information on this will follow when completed.

2.5. Mid Devon

- 2.5.1. To account for development in Mid Devon prior to a draft Local Plan emerging, the full build out of the Culm garden Village has been included in the 2040 scenario. This see the addition of 3,250 dwellings and 4ha of employment beyond the 2030 model.

3. Cumulative Impacts

3.1. Network Impact

- 3.1.1. The main increases in traffic flows are predicted to be on the M5, A30 and A38 but this is mainly because of the background growth factors applied to the SRN. On the Local Road Network, increases are expected around Cranbrook and the East Devon new community, the A379 around SW Exeter and towards Exminster and on the A3052. This is closely linked to the large development sites.
- 3.1.2. The difference delay plots within the main WSP report highlight areas where the delay will be worse with the proposed Local Plan developments. This highlights several minor roads around the north-west and south-east of the city because of these roads being given lower saturation flows to avoid strange routing of trips along unsuitable roads.
- 3.1.3. This does also highlight Bridge Road in Exeter and Clyst St. Mary roundabout which will need consideration as part of planning application process. It also highlights the M5 viaduct but this is likely to be from background growth as opposed to specific development sites.
- 3.1.4. Several junctions are already predicted to be over capacity within the city which is less of a concern to DCC because these are not really impacted by the additional development as shown in the delay difference plots. Sections of Alphington Road into Marsh Barton and around Cranbrook have more capacity issues in 2040, as do the M5 junctions 29 and 30 and junctions along the A38.
- 3.1.5. Bishop's Court Lane is flagged as being over capacity in future. This is because it has been modelled with a low saturation flow to avoid large volumes rerouting down this rural road.

3.2. Mitigation

- 3.2.1. The additional congestion around Cranbrook has been considered as part of a separate modelling exercise and the expansion of Cranbrook has been allocated outside of this Local Plan update. Therefore, these issues are not to be considered as part of this Local Plan exercise.
- 3.2.2. The airport junction on the A30 is predicted to be an issue in the AM peak as a result of trips between the East Devon New Community and Cranbrook Upgrades to the northern roundabout may be required and should be considered as the New Community site develops.
- 3.2.3. Alphington interchange roundabout at the A30 and Alphington Road will be an issue with the Markham's Farm development so close by and a mitigation strategy for this has been worked up for this site.
- 3.2.4. The V/C plots also show potential worsening at M5 J29 and J30 with the proposed development but this is more on the local road network as opposed to the SRN as shown by the delay increase plots. Junction 31 is also reaching capacity but not

exceeding it and this is likely because of the background SRN growth as opposed to the actual development.

- 3.2.5. DCC are in the process of finalising the LCWIP (Local Cycling and Walking Infrastructure Plan) for Exeter which identifies 22 routes across the city. In addition to this, DCC are also developing an LCWIP for the west end of East Devon with a particular focus around Cranbrook and links into Exeter. These will help reduce the reliance on private and offer a suitable alternative to encourage people to switch to walking and cycling for shorter distance trips.
- 3.2.6. Bus improvements are proposed within the city and the DCC BSIP (Bus Service Improvement Plan) has identified schemes on the Pinhoe and Heavitree Road corridors to make bus journey times more reliable and attractive on these routes and benefitting bus services connecting from the market towns in East Devon. There are also plans to improve the frequency of the Cranbrook service which will also help encourage trips to be made by bus.
- 3.2.7. The Exeter Transport Strategy details plans of new Park and Ride facilities; however significant changes to commuting patterns following the global pandemic has seen a significant reduction in passengers using these services. As such, the dedicated services have been replaced to make use of existing services using those corridors or having additional stops on existing services to serve more people, resulting in less frequent services. In recent years parking charges in the city centre have significantly increased and the Liveable Exeter plans include the potential to redevelop some of the car parks stock, which will have an impact on parking availability in the city centre. This is similar to other historic cities such as Bath, Oxford and Cambridge where the limited parking supply in the city centres has encouraged use of Park and Rides for accessing the city centre. Bus priority measures planned on the core bus corridors will increase the attractiveness of Park and Ride as a more cost effective and convenient option and encourage mode shift for people travelling in from outside the city in future.
- 3.2.8. There is also scope to modernise the bus offer and attract new users to public transport. Working in partnership with bus operators and with support from Government funding, there are plans to seek upgrades of the bus fleet to low emission vehicles and complemented by smart ticketing systems (i.e. tap on, tap off technology) to enable people to benefit from the best value fares. In recent years bus and rail operators have been working closely to offer integrated bus and rail services and there is scope to build upon some of the success stories from around the County where local connectivity, i.e. from market towns and villages to the core rail network has been substantially enhanced.
- 3.2.9. In recent years, mobility hubs and better multi-modal transport interchanges at rail stations has enabled people to change modes easily, with onward connections available by bus, bike hire or car clubs.
- 3.2.10. Improvements to the rail services within the area are also being proposed. The reopening of the Dartmoor Line between Okehampton and Exeter has seen high patronage levels and in turn increased the Crediton to Exeter frequency to half hourly.
- 3.2.11. The opening of the Okehampton east station just off the A30 in 2025 will offer an improved alternative option to travelling in by private car and help relieve congestion on the Alphington Road corridor. This, along with the recent opening of Marsh Barton Station will offer rail alternatives for people travelling into the city from the west of Devon or Teignbridge and help relieve potential issues at the Alphington Interchange.

Cullompton Rail Station is also at an advanced stage of development and could relieve pressure at M5 Jcts 29-30 as the limited public transport options between Cullompton and Exeter mean significant traffic volumes using the M5 corridor.

- 3.2.12. DCC are in the process of finalising an Electric Vehicle strategy which will support rollout of the required infrastructure to increase the uptake of electric vehicles. Although this will not improve congestion, it will reduce road pollution, helping tackle the climate emergency and improving air quality across the County.
- 3.2.13. Each development site will require a transport assessment to support the planning application and this will need to detail the impact it will have on local junctions including identifying impacts on the SRN network. However, it is not envisaged that major capacity improvements are required at these junctions to accommodate the development proposed in each of the district Local Plans.
- 3.2.14. Each development site will need to deliver new and existing walking and cycling links as well as provision for bus service improvements with appropriate priority measures to increase their advantage over other modes. In particular, the A3052 / A376 corridors are routes where we would seek to deliver ambitious bus priority measures which, in combination with priority measures in Exeter, would offer a competitive journey time compared to travel by car. Travel Plans for the larger sites will also be required to encourage people to use more sustainable transport modes and supporting efforts to reduce congestion.
- 3.2.15. Although these proposals have not been included in the strategic traffic modelling, the range of measures will provide suitable mitigation for the development proposed in the East Devon Local Plan. The vision for the transport strategy as set out above is to improve the choice of travel options and encourage modal shift by making the alternatives more convenient, more cost effective and faster, where possible, to the private car. Complementary measures in Exeter city centre to reduce the dominance of vehicles as part of wider development allocations in some locations and the potential to repurpose a limited number of car parks will encourage people to consider alternatives to the private car, as will reviewed parking charges. Together, this will support the recovery of Park and Rides, which will benefit from more reliable journeys on the back of bus priority measures delivered through the BSIP.
- 3.2.16. New development planned as part of Liveable Exeter will also support sustainable, low-car generation growth with key services and facilities being walkable or cyclable and located close to high frequency public transport routes. Continued investment in the rail network, including new stations east of Okehampton and at Cullompton and continued growth in patronage at new stations including Cranbrook (serving as an important interchange), Marsh Barton and Newcourt, further reducing the private car demand on the network. Work will continue to strengthen the integration of the transport system with bus operators working closely with local authorities through an Enhanced Partnership to improve local services and including improving connectivity to the rail network so that people can be less reliant on their cars for longer journeys. There are also ambitious local cycling and walking plans to incentivise short distance journeys to be made actively and achieve 50% of people walking and cycling in Exeter. By reducing those short distance journeys being made by car, it frees up capacity for those journeys being made from rural areas where the travel options may be limited.
- 3.2.17. Junctions along the SRN will see an increase in traffic as a result of the proposed development and DCC recognises the need to work closely with National Highways, although our mitigation approach will be as set out above to incentive use of

alternatives to the private car and encourage modal shift to low-carbon travel choices rather than expensive highway capacity infrastructure schemes which can have a negative impact on carbon.

4. Conclusion

4.1. Summary

- 4.1.1. This report summarises the modelling approach for the 2040 Greater Exeter forecast model and compares it to the 2030 model to predict the impact of the emerging Local Plan developments across the districts. This builds upon the WSP report and suggests the mitigation required to accommodate this growth.
- 4.1.2. The biggest issues are predicted to be at Alphington Interchange roundabout onto the A30 and the airport junction, mainly as a result of Markham's Farm development and the East Devon New Community. These two junctions will need detailed assessments as part of planning applications in addition to the above mitigation strategies.
- 4.1.3. Smaller issues could occur at the three strategic junctions along the M5 but these are likely to be less severe, with the majority of the delays experienced by the Local Road Network.
- 4.1.4. The area around Cranbrook is also predicted to be busier in future but the Cranbrook development sits outside of this emerging Local Plan allocation and is subject to more detailed local assessments.
- 4.1.5. Several junctions within Exeter will be over capacity with the current Local Plan development and will be mitigated by the improvements to sustainable travel in and around the city. Other delays and over capacity junctions are predicted around the north of the city on quieter roads and this is not considered an issue given the rural nature of this area.

4.2. Future Work

- 4.2.1. This report has detailed the impacts of the proposed Local Plan development across the Greater Exeter area. The above mitigation proposals are considered the vision for transport across the study area as part of a vision and validate approach.
- 4.2.2. It is proposed to carry out additional modelling scenarios to take account of the mitigation proposals detailed above to see the impact these will have on the forecast growth and impacts. This will help determine whether these proposals alone will be sufficient to mitigate the proposed development or identify additional infrastructure which may be required as the Local Plans come forward.