ATKINS

Chippenham Site Allocations Plan

Supplementary Transport & Accessibility Evidence: Part 2a - Assessing Alternative Development Strategies

Wiltshire Council

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Document history

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1. Introduction

Context

1.1. This Evidence Paper has been commissioned by Wiltshire Council to provide supplementary transport and accessibility evidence associated with the Chippenham Site Allocations Plan, supplementing the Part 1 and Part 2 evidence submitted to the Examination in 2015 (CEPS/04 and CEPS/05). The supplementary assessments are part of the Schedule of Work that has been agreed with the Inspector, in order to align the transport evidence with the revised Sustainability Appraisal and Site Selection Report methodologies[1].

1.2. Supplementary transport and accessibility evidence has been prepared in two parts (Part 1a and 2a). Part 1a assesses fourteen 'Strategic Site Options' in terms of their overall transport and accessibility attributes, using the same method as the original Part 1 assessment (CEPS/04). Part 1a informs Step 4 (Sustainability Appraisal of Strategic Site Options) and Step 5 (Policy Review of Strategic Site Options) of the Schedule of Work. The outputs of Part 1a are reported in a separate Evidence Paper (CEPS/04a).

1.3. Part 2a supplements the Part 2 assessment (CEPS/05) by assessing a set of 'Alternative Development Strategies' using the Chippenham Transport Model. Alternative Development Strategies have been created from individual Strategic Site Options, as defined by Step 6 in the Schedule of Work. Part 2a informs Step 7 (Sustainability Appraisal of Reasonable Alternative Development Strategies) and Step 8 (Selection of a Preferred Development Strategy) of the Schedule of Work.

1.4. The benefits that the additional transport and accessibility evidence will provide to the Examination are:

- Allowing transport and accessibility differences within the larger Strategic Areas to be reported in a more transparent manner, with analyses undertaken on a finer geographical scale to inform the Sustainability Appraisal and Site Selection Report; and
- An ability to identify how Strategic Site Options and Alternative Development Strategies that are ultimately selected for inclusion in the Plan perform, in transport and accessibility terms.

Purpose of Evidence Paper

1.5. This Evidence Paper reports on the outputs from Part 2a, which has involved forecasting the highway network impacts for a set of Alternative Development Strategies using the Chippenham Transport Model[2].

1.6. The following tasks have been undertaken to inform the contents of this Evidence Paper:

- Code the Alternative Development Strategies into the Chippenham Transport Model. The forecast year, 2026, is aligned to the end of the Plan period, although commentary on potential impacts of further development post-2026 is provided in this Evidence Paper.
- Create 'with wider highway improvement' versions of the Alternative Development Strategies. In three of the Alternative Development Strategies this includes completing an Eastern or Southern Link Road with a new crossing of the River Avon. The 'with wider highway improvement' versions also include further measures from the draft Chippenham Transport Strategy[3], aimed at minimising delay and reducing congestion throughout the town (details of these measures are provided in Section 2).

[1] The Schedule of Work forms Appendix 1 to the letter from Wiltshire Council to the Inspector dated 04 December 2015.
[2] Background information on strategic transport modelling and the Chippenham Transport Model was submitted to the Examination in 2015 – document references CTRAN03, CTRAN06, and CTRAN07.
[3] The draft Chippenham Transport Strategy submitted to the Examination in 2015 – document reference CTRAN08.

- Review the forecast highway performance of each Alternative Development Strategy in 2026, with and without the wider highway improvements, relative to the situation in 2015. The review considers forecast changes in average journey times, change in delay, and changes in traffic flow across the entire Chippenham highway network.

1.7. The conclusions of the Part 1 evidence (CEPS/04), submitted to the Examination in 2015, provide a context for the way in which the 'with wider highway improvement' versions of Alternative Development Strategies have been prepared for this Evidence Paper. Paragraph 7.11 in CEPS/04 stated that "a dispersed development scenario without full [Eastern or Southern] link roads is forecast to lead to the most congested conditions on the Chippenham highway network." The basis for the 'wider highway improvements' versions is therefore to complete either an Eastern or Southern Link Road where possible. Comparison between the 'with' and 'without' wider highway improvement versions also allows the benefits of a completed link road to be articulated.

Structure of Evidence Paper

1.8. The remainder of this Evidence Paper is structured as follows:

- Section 2 sets out the Alternative Development Strategies that have been modelled, including the locations and quantum of development, and the potential highway measures for the 'with wider highway improvement' strategies.
- Section 3 presents the forecast changes in average journey times and delays across the entire Chippenham highway network for each of the Alternative Development Strategies, both with and without wider highway improvements. It also presents the forecast changes in traffic flow within Chippenham town centre, and the forecast traffic re-routeing impacts of the Eastern and Southern Link Roads.
- Section 4 summarises the key findings of Part 2a of the supplementary transport and accessibility evidence, in the form of a Red / Amber / Green assessment table.

2. Alternative Development Strategies

Overview

2.1. This section sets out the Alternative Development Strategies that have been modelled using the Chippenham Transport Model. It includes the locations and quantum of development, and provides a brief description of the potential highway improvements for the 'with wider highway improvement' strategies.

2.2. The Chippenham Transport Model allows for comparative assessments between the Alternative Development Strategies, in a consistent and objective manner. Model outputs have been used to assess the **relative differences between strategies** at a Chippenham-wide level, rather than focusing on specific roads or junctions. Specific junction performance would be highly dependent on development site access arrangements, for which sufficient detail is not currently available. The way in which model outputs have been used, to make relative rather than absolute comparisons between options, is therefore appropriate.

2.3. The 2015 model, against which the 2026 scenarios are compared, includes the following developments and transport schemes:

- The travel demands associated with dwellings that have been already been built, that were under construction, or which had planning permission (as at 2012), are included in line with the Core Strategy modelling undertaken on behalf of Wiltshire Council during 2013. This equates to demand associated with approximately 1445 additional dwellings since 2006.
- Additional travel demands associated with developments that were expected to take place between 2012 and 2015 were built into the model as part of an update to the Chippenham Transport Model in 2012. This includes the Market Quarter development on Cocklebury Road.
- A350 north of Chippenham pinch-point scheme, which was completed in March 2015.
- A350 Chippenham Bypass Improvements (dualling) at the Bumpers Farm and Brook Roundabouts, completed in February 2016.

2.4. All 2026 modelled scenarios for the Alternative Development Strategies include the following additional committed developments and transport schemes:

- A new development of 750 dwellings and 2.7 hectares of employment land at North Chippenham, accessed from a new single-carriageway link road connecting the A350 at an enlarged Malmesbury Road Roundabout to the B4069 Maud Heath's Causeway. The link road is an integral part of the North Chippenham development site.
- A new development of 450 dwellings at Hunters Moon, to the south-west of Chippenham, accessed via Methuen Park.
- New employment land (equivalent to 6 hectares) as part of the redeveloped Langley Park site, adjacent to the B4069.
- Full dualling of the A350 Chippenham Bypass as far south as the Chequers Roundabout (A350/A4). Construction on the next stage of dualling is expected to commence during 2017.

Alternative Development Strategies

2.5. Four Alternative Development Strategies have been specified by Wiltshire Council. Each strategy assumes that development is already committed at the North Chippenham and Hunters Moon sites[4]:

- **Strategy 1 – Eastern**: Comprises further development to the east of the town, at Strategic Site Options B1 and C4;
- **Strategy 2 – Southern**: Comprises further development to the south of the town, at Strategic Site Options D7 and E5;

[4] Strategic Site Option references and locations are set out in the Part 1a Evidence Paper (CEPS/04a).

- **Strategy 3 – Submitted**: Further development as previously proposed at the start of the Examination in Public in 2015, at Strategic Site Options B1, C1 and E2; and
- **Strategy 4 – Mixed**: Further development at Strategic Site Options B1 to the east of the town and E5 to the south.

2.6. Each Alternative Development Strategy has been assessed in two scenarios:

- **Without Wider Highway Improvements**: In this scenario, suitable highway access arrangements have been provided to connect Strategic Site Options to the nearest existing roads, but without wider highway improvements to deal with the wider traffic impacts of development; and
- **With Wider Highway Improvements**: In this scenario, additional highway improvements have been included to attempt to reduce the impacts of Strategic Site Option development on the existing highway network.

2.7. For transport modelling purposes and ease of reference each Alternative Development Strategy has been given a short reference code, ADS1 to ADS4, with a '0' added to the end to indicate 'without wider highway improvements' and a '1' to indicate 'with wider highway improvements'. The references used throughout this Evidence Paper are therefore ADS10, ADS20, ADS30, and ADS40 for the 'without wider highway improvements' scenarios, and ADS11, ADS21, ADS31, and ADS41 for the 'with wider highway improvements' scenarios.

2.8. The quantum of housing and employment land development for each of the four Alternative Development Strategies remains unchanged between the 'without' and 'with' wider highway improvements scenarios, as shown in **Table 2-1**. The quantum of development, both numbers of dwellings and employment land area in hectares (ha), has been specified by Wiltshire Council.

2.9. Schematics showing the approximate location of development for each of the Alternative Development Strategies are in **Figure 2-1**.

Table 2-1 Housing and employment development levels at 2026

Strategic Site Option	Strategy 1 (ADS10 & 11)		Strategy 2 (ADS20 & 21)		Strategy 3 (ADS30 & 31)		Strategy 4 (ADS40 & 41)	
	Dwellings	Employment	Dwellings	Employment	Dwellings	Employment	Dwellings	Employment
B1	650	5.0ha	-	-	650	5.0ha	650	5.0ha
C1	-	-	-	-	850	5.0ha	-	-
C4	1350	16.0ha	-	-	-	-	-	-
D7	-	-	1050	10.5ha	-	-	-	-
E2	-	-	-	-	1000	18.1ha	-	-
E5	-	-	1400	18.1ha	-	-	1400	18.1ha
Totals	2000	21.0ha	2450	28.6ha	2500	28.1ha	2050	23.1ha
Post-2026 additions	-	-	-	-	-	*+15.0ha*	-	-

Without Wider Highway Improvements

2.10. The four Alternative Development Strategies are shown schematically in **Figure 2-1**. This shows the assumed highway access arrangements to each Strategic Site Option in 2026, without wider highway improvements. **The 'without wider highway improvements' scenario has been devised for transport assessment purposes only and should not be taken to imply any form of acceptability or policy position at this stage.**

2.11. Highway access to each Strategic Site Option, when built out to 2026 levels, is assumed as follows in the 'without wider highway improvements' scenario:

- **Strategic Site Option B1** can be accessed from the B4069 to the north-west via Parsonage Way and a new bridge over the railway line, and from the south-west via a new link to Darcy Close and

Cocklebury Road. These two access points are connected within the development site, providing a through route known as the Cocklebury Link Road. The existing New Road / Station Hill junction is assumed to be upgraded to signal control to allow for safe access and egress.

- **Strategic Site Options C1 or C4** can be accessed only from the south via a new junction on London Road, in the same approximate location as the current Stanley Lane junction.
- **Strategic Site Option D7** can be accessed only from the north-east by connecting a fourth arm into the existing A4 Pewsham Way / Canal Road roundabout.
- **Strategic Site Options E2 or E5** straddle the B4528 and are adjacent to the A350, allowing access in three different ways. The employment land part of E2 and E5 lies between the A350 and B4528, with access assumed via a new roundabout on the A350. The remaining residential development areas can be accessed via a new roundabout and new priority junction along the B4528 / B4643.

With Wider Highway Improvements

2.12. The Alternative Development Strategies, with wider highway improvements to deal with the wider traffic impacts of development, are shown schematically in **Figure 2-2**. The 'with wider highway improvements' scenario contains the same level of housing and employment development, but includes additional highway improvements as set out in **Table 2-2**. Measures 3 to 7 are taken from the draft Chippenham Transport Strategy, as submitted to the Examination in 2015. **The 'with wider highway improvements' scenario has been devised for transport assessment purposes only and should not be taken to imply any form of acceptability or policy position at this stage.**

Table 2-2 Potential wider highway improvements

#	Measure	Description	Assumed in 'with wider highway improvement' scenario			
			ADS11	ADS21	ADS31	ADS41
1	Eastern Link Road	Completing a link road to the east of the town, via a new crossing of the River Avon. Assumed as a 30mph single-carriageway road. Included when development occurs in Strategic Site Options C1 or C4 in addition to Strategic Site Option B1.	✓	-	✓	-
2	Southern Link Road	Completing a link road to the south of the town between the A350 and A4 Pewsham Way, via a new crossing of the River Avon. Assumed as a 30mph single-carriageway road. Included when development occurs in Strategic Site Option D7.	-	✓	-	-
3	Malmesbury Rd Rbt	Capacity enhancements at the A350 / B4158 Malmesbury Rd Roundabout, including additional lanes, further enlargement, and full signalisation. Potentially required if the roundabout becomes the northern end of the completed Eastern Link Road.	✓	-	✓	-
4	Little George signals	Replacing the existing 4-arm mini-roundabout with traffic signals to increase capacity. Right turn from the B4069 to the B4158 banned. Potentially required to deal with increased traffic flows under all future development scenarios.	✓	✓	✓	✓
5	Marshfield Rd / Park Lane / Audley Rd signals	Replacing the existing priority junction and mini-roundabout with a signalised junction to increase capacity. Potentially required to deal with increased traffic flows under all scenarios.	✓	✓	✓	✓
6	A4 / B4643 signals	Replacing existing mini-roundabout with a signalised junction to increase capacity. Tight left turn onto A4 and tight right turn onto B4643 banned. Included when development occurs in Strategic Site Options E2 or E5.	-	✓	✓	✓
7	A350 Chequers – Lackham dualling	Continuing A350 Chippenham Bypass full dualling south from Chequers Rbt (A350 / A4) to Lackham Rbt (A350 / B4528). Included when development occurs in Strategic Site Options E2 or E5.	-	✓	✓	✓

Figure 2-1 Alternative Development Strategies, without wider highway improvements

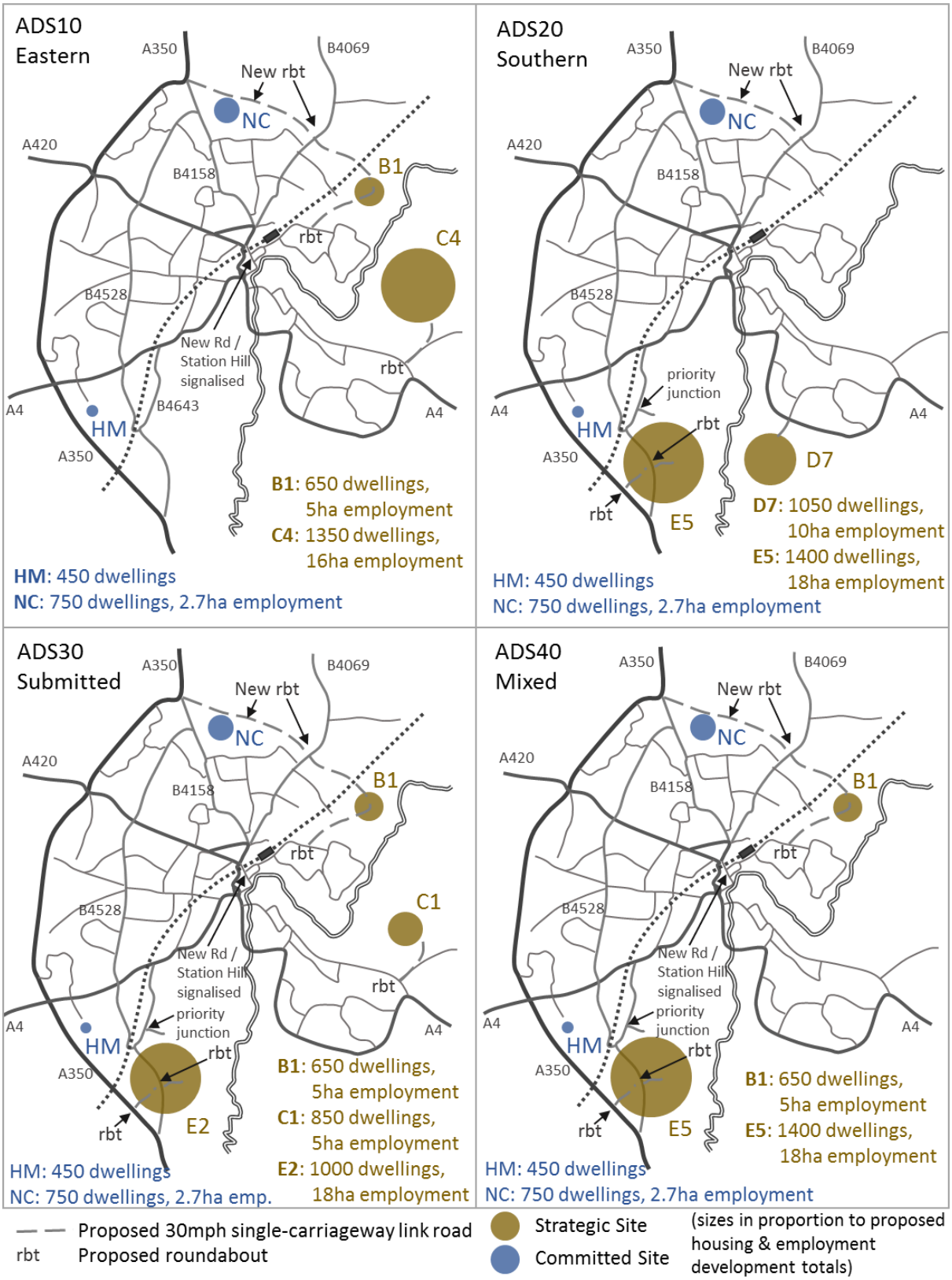
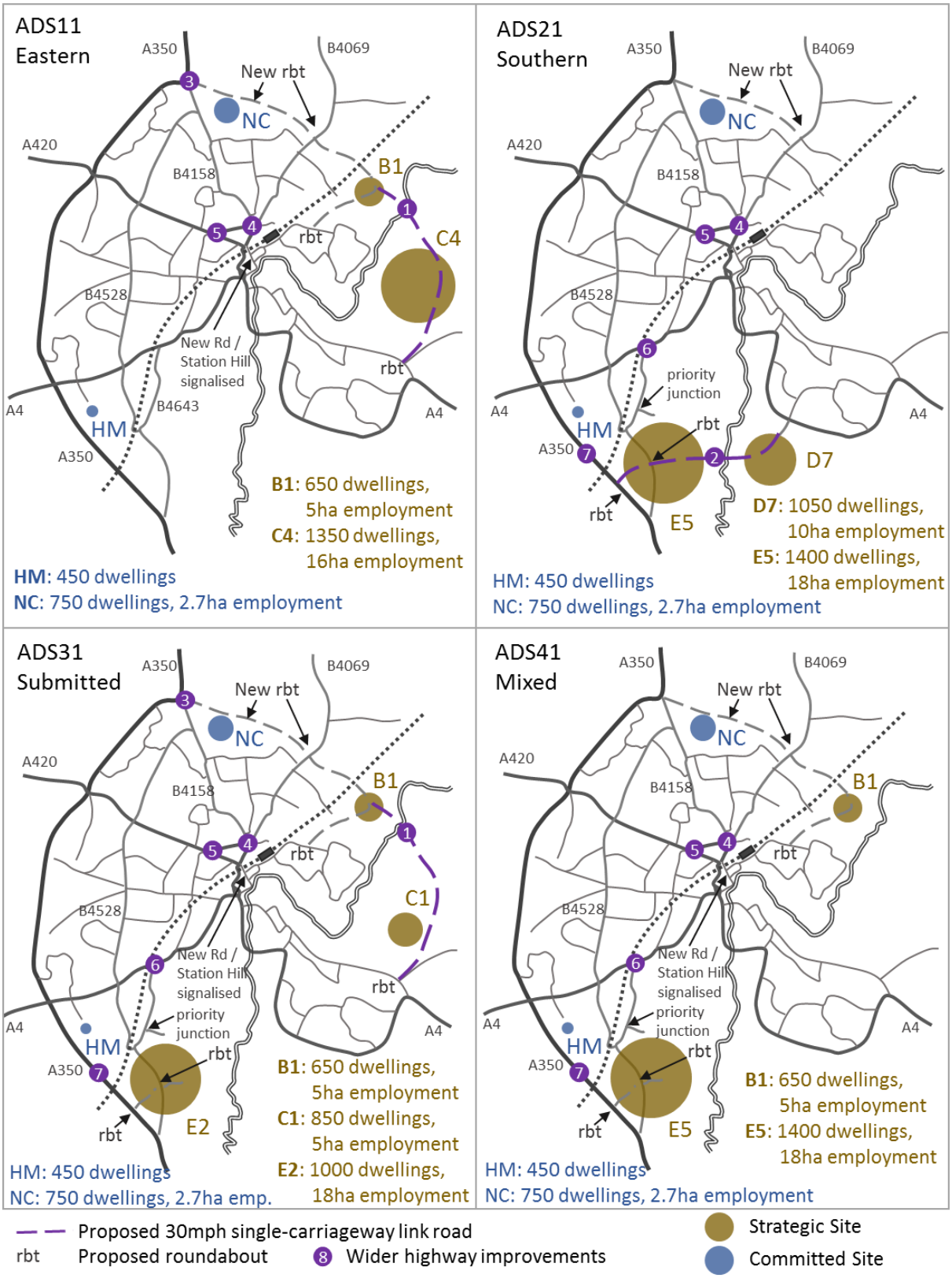


Figure 2-2 Alternative Development Strategies, with wider highway improvements



3. Forecasts

Overview

3.1. This section presents the headline forecasts obtained from the Chippenham Transport Model, across the entire Chippenham highway network, for each of the Alternative Development Strategies, with and without wider highway improvements. Forecasts for three indicators are presented:

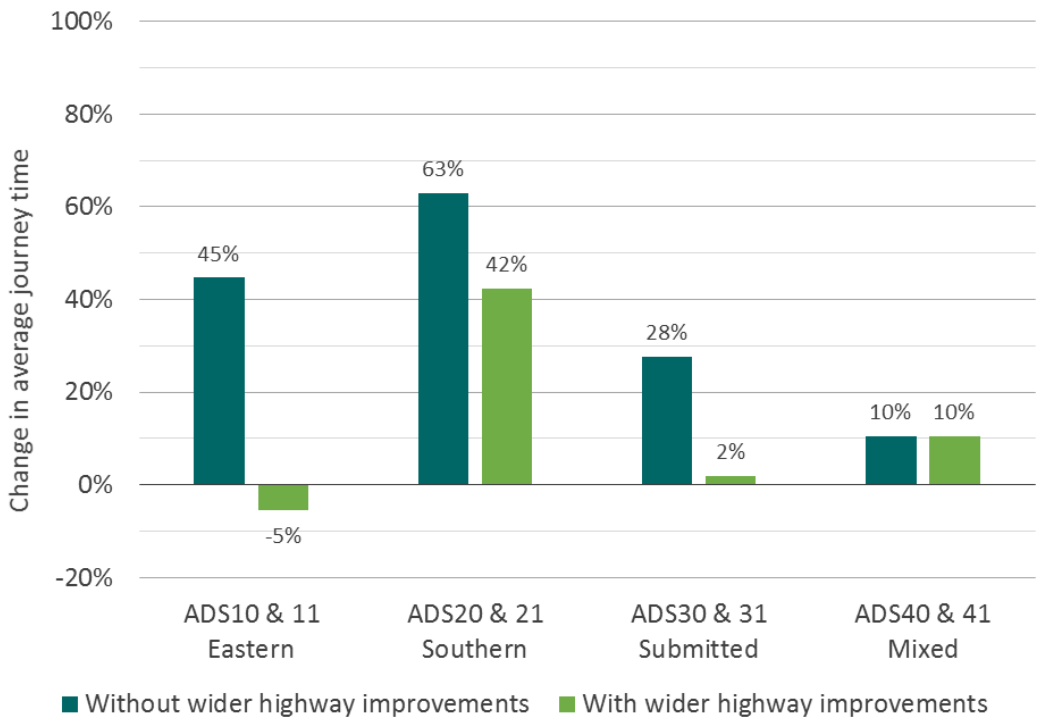
- **Average journey times**: Forecast percentage change in average peak period journey times for vehicles travelling on the Chippenham highway network, comparing 2026 to 2015;
- **Delay distribution**: Forecast spatial distribution of increased or reduced delays during the peak hours across the Chippenham highway network, comparing 2026 to 2015; and
- **Town centre traffic conditions**: Forecast percentage change in traffic flow within Chippenham town centre during the peak hours, comparing 2026 to 2015.

Average Journey Times

3.2. The Chippenham Transport Model forecasts average journey times for all trips that take place on Chippenham's highway network, regardless of whether the trips actually start or end in Chippenham. This means that all possible journeys are included, for example local trips made entirely within the town, trips made to locations outside Chippenham, trips into Chippenham from outside the area, and 'through trips' which neither start nor end in the town. However, only the portion of the trip made on the Chippenham highway network is included in the average journey time calculation[5].

3.3. The forecast percentage change in average peak period journey times[6] (average for the 0700-1000 and 1600-1900 periods), for each Alternative Development Strategy, is shown in **Figure 3-1**.

Figure 3-1 Forecast percentage change in average AM and PM peak period journey times 2015-26



[5] For example, for a journey between Bath and Chippenham town centre along the A4, only the portion of the trip that takes place on the Chippenham highway network between the approach to the A350/A4 Chequers Roundabout and Chippenham town centre would be included in the average journey time calculation.
[6] For example, if current average journey times were taken to be 7 minutes, then a 45% increase would mean average journey times increase to just over 10 minutes. This is likely to be a noticeable increase.

3.4. The following key points can be identified from Figure 3-1:

- Without wider highway improvements (such as a completed Eastern or Southern Link Road), Strategy 4 (ADS40, Mixed) is forecast to increase average peak period journey times by the lowest percentage – a 10% average journey time increase, compared to 28%-63% for the other three strategies.
- With wider highway improvements in place, Strategy 1 (ADS11, Eastern) is forecast to lead to a slight improvement (5% reduction) in average peak period journey times compared to the 2015 situation. The 'with wider highway improvements' scenario for Strategy 1 includes the completed Eastern Link Road.
- The other strategy which includes the completed Eastern Link Road is the 'with wider highway improvements' version of Strategy 3 (ADS31, Submitted). This is forecast to lead to only a slight increase (2%) in average peak period journey times compared to the 2015 situation.
- Strategy 2 (ADS20 & 21, Southern) is forecast to lead to the greatest increase in average peak period journey times, for both the 'without' and 'with wider highway improvements' scenarios. The Southern Link Road is not forecast to be as effective as a completed Eastern Link Road for dealing with the overall traffic congestion impacts of development.
- For both Strategy 1 (ADS11, Eastern) and Strategy 3 (ADS31, Submitted), the proposed wider highway improvements, which include a completed Eastern Link Road, are appropriate in scale for dealing with the forecast impacts of development. Much more extensive highway improvements than is provided by the Southern Link Road would be required for Strategy 2 (ADS21, Southern), in order to mitigate the traffic impacts of development. Figure 3-1 shows that, even with the Southern Link Road (as part of wider highway improvements), average journey times are forecast to remain 42% longer than in 2015.

3.5. The four Alternative Development Strategies specified by Wiltshire Council (Table 2-1) have different proposed development levels to 2026. However, there is no direct relationship between the overall quantum of development proposed as part of an Alternative Development Strategy and the forecast change in average peak period journey times. The highest level of development is contained in Strategy 3 (ADS30 & 31, Submitted), although the forecast increase in average peak period journey times is not as high as Strategies 1 and 2, which both have lower development levels. It can therefore be implied that the location of development and the accompanying highway infrastructure measures will be an important influence on highway network performance.

Delay Distribution

3.6. Forecast average peak period journey time is a relatively straightforward indicator of how the highway network is expected to perform, although it masks spatial variations. There will be some locations where journey times are forecast to increase or decrease to a greater extent than other locations. By reviewing the Chippenham Transport Model outputs in more detail, it is possible to identify general areas where delays on the highway network are forecast to increase or decrease to the greatest extent.

3.7. The schematics in **Figure 3-2** to **Figure 3-5** show the areas in Chippenham where delays are forecast to increase or decrease to the greatest extent[7], comparing 2026 with the situation in 2015.

3.8. The spatial distribution of forecast changes in delays are shown separately for each of the Alternative Development Strategies:

- 'Without wider highway improvements' (ADS10, ADS20, ADS30 and ADS40) for the AM peak hour (0800-0900) in Figure 3-2, and for the PM peak hour (1700-1800) in Figure 3-3; and
- 'With wider highway improvements' (ADS11, ADS21, ADS31 and ADS41) for the AM peak hour (0800-0900) in Figure 3-4, and for the PM peak hour (1700-1800) in Figure 3-5;

[7] Increases or decreases in delay have been highlighted in the schematics where they are forecast to change by more than approximately 30 seconds per vehicle on the majority of 'links' in the road network within the highlighted area. A 'link' is a transport modelling term for a section of road between two modelled junctions. In an urban environment, delays on links will usually be caused by capacity constraints at downstream junctions. Areas where delays currently exist and where there is little or no forecast change in this delay between 2015 and 2026 are not shown in the schematics.

Figure 3-2 Forecast change in delay 2015-2026, without wider highway improvements, AM peak hr

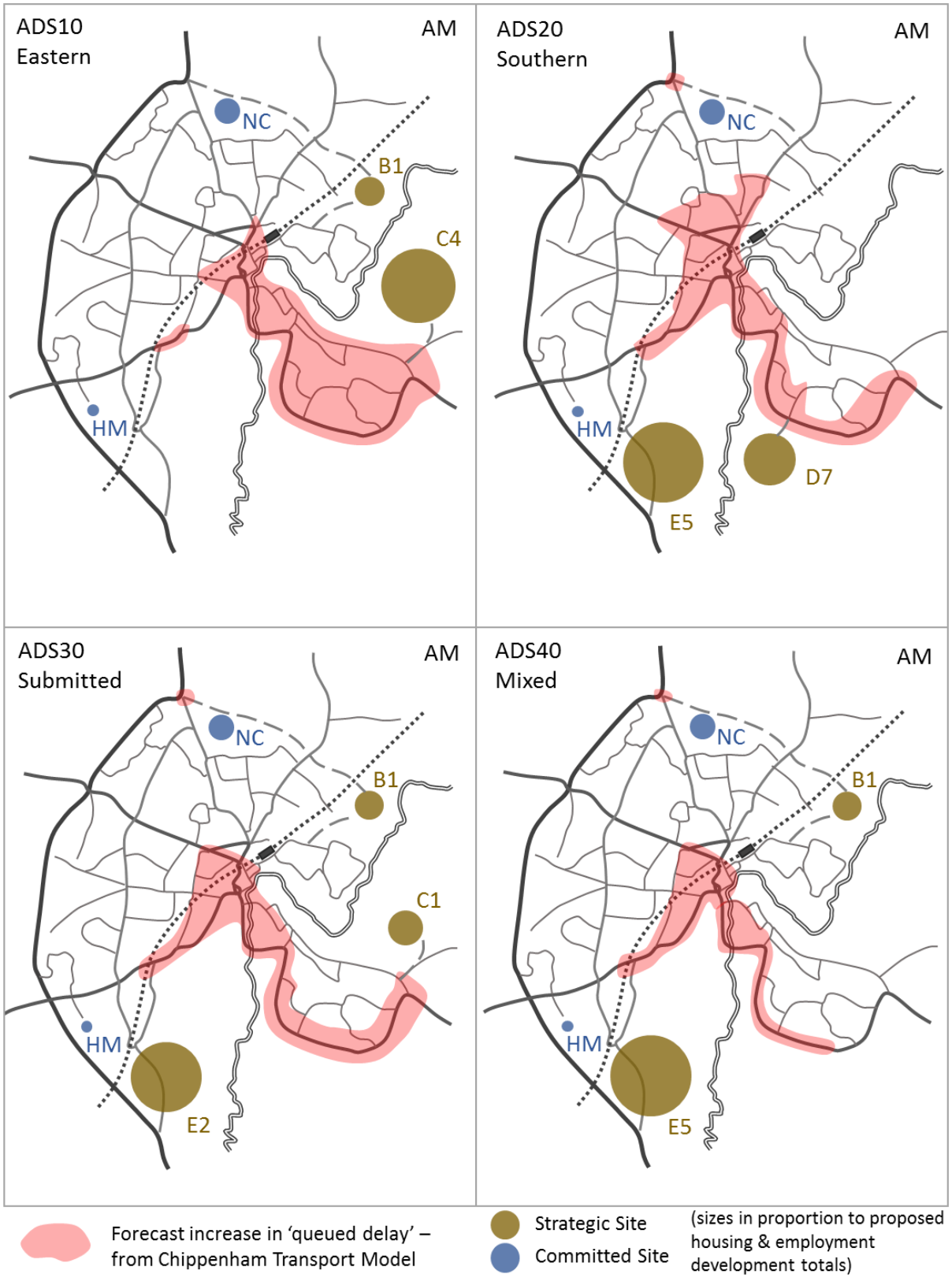


Figure 3-3 Forecast change in delay 2015-2026, without wider highway improvements, PM peak hr

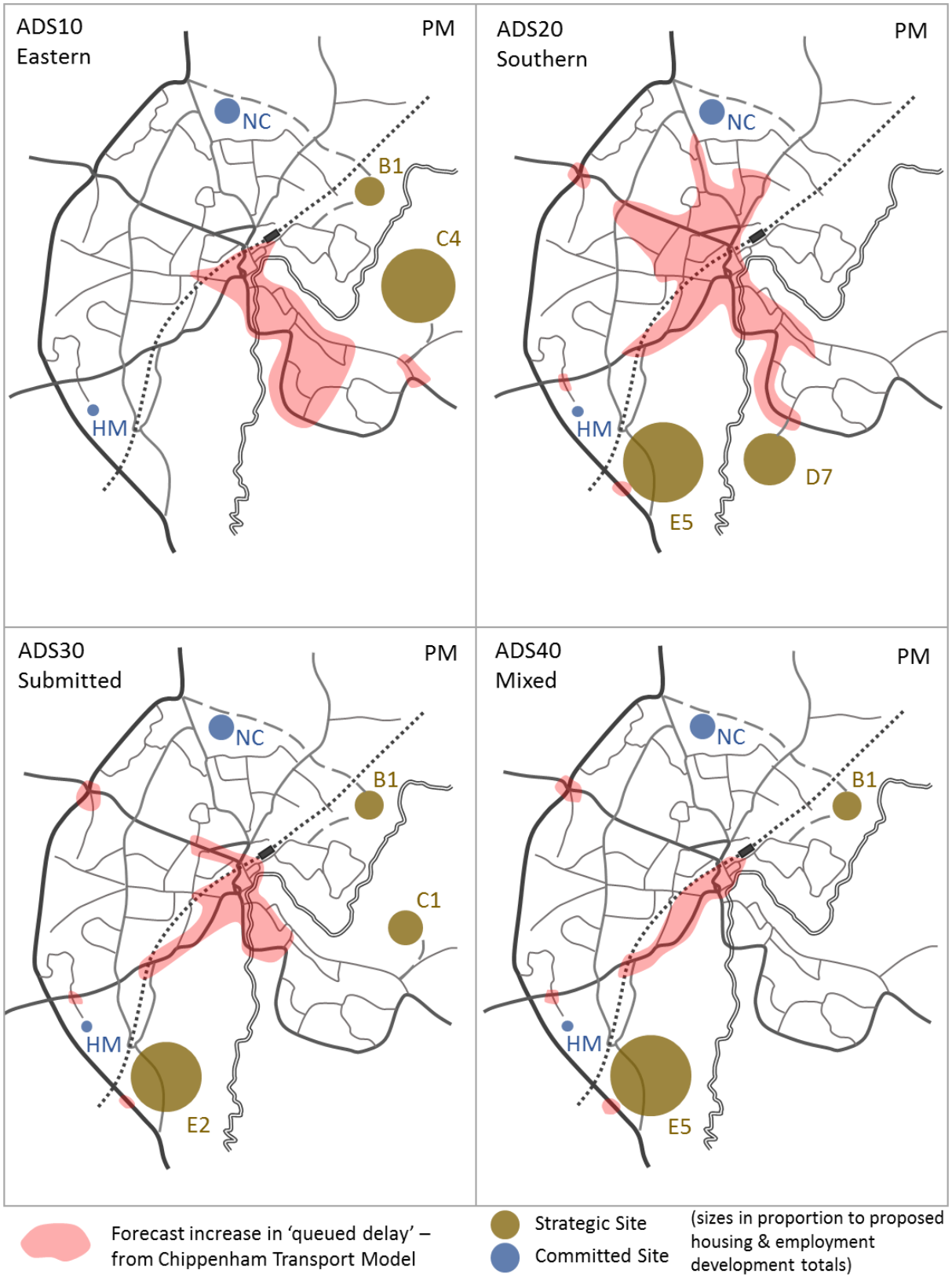


Figure 3-4 Forecast change in delay 2015-2026, with wider highway improvements, AM peak hour

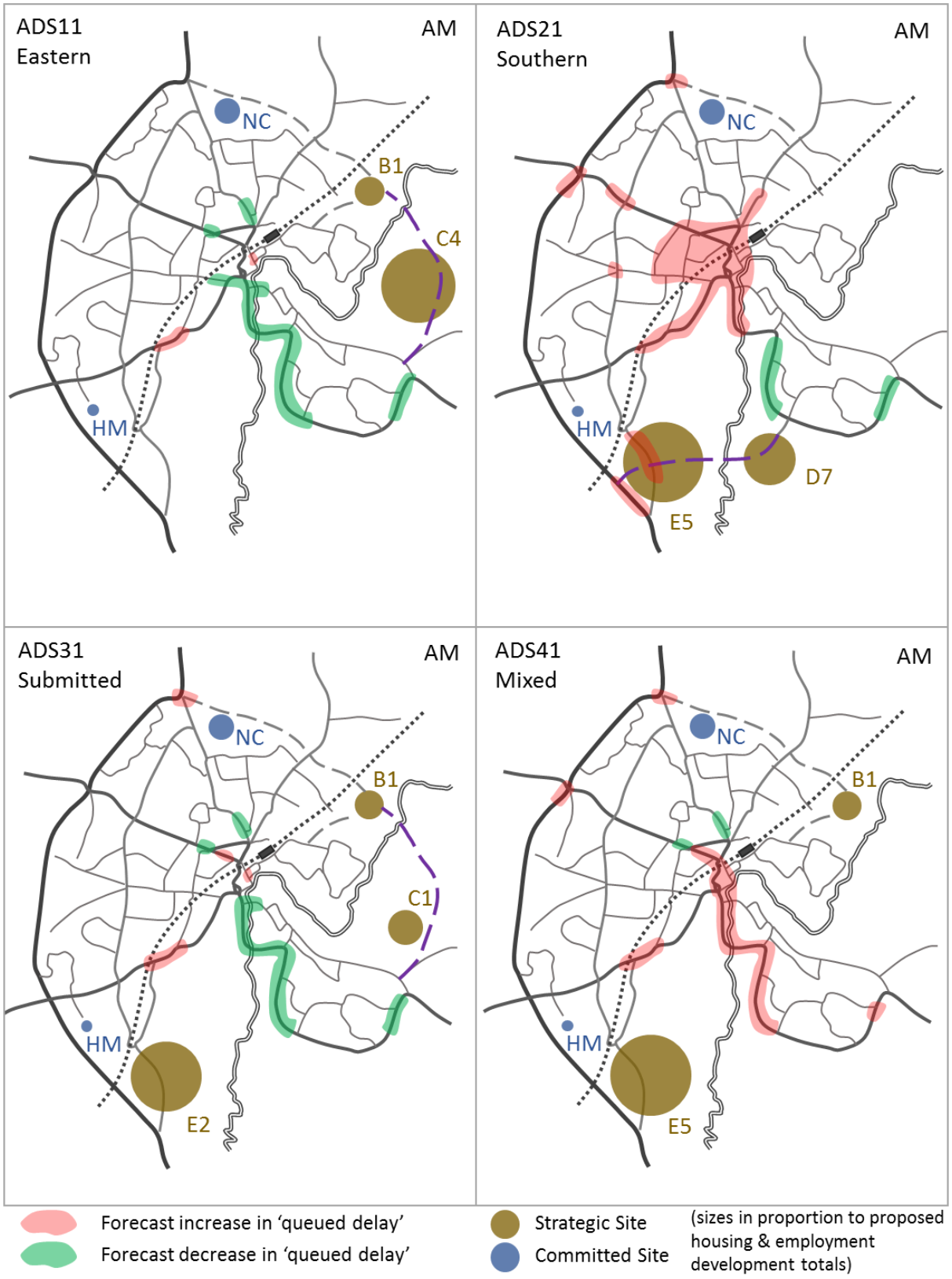
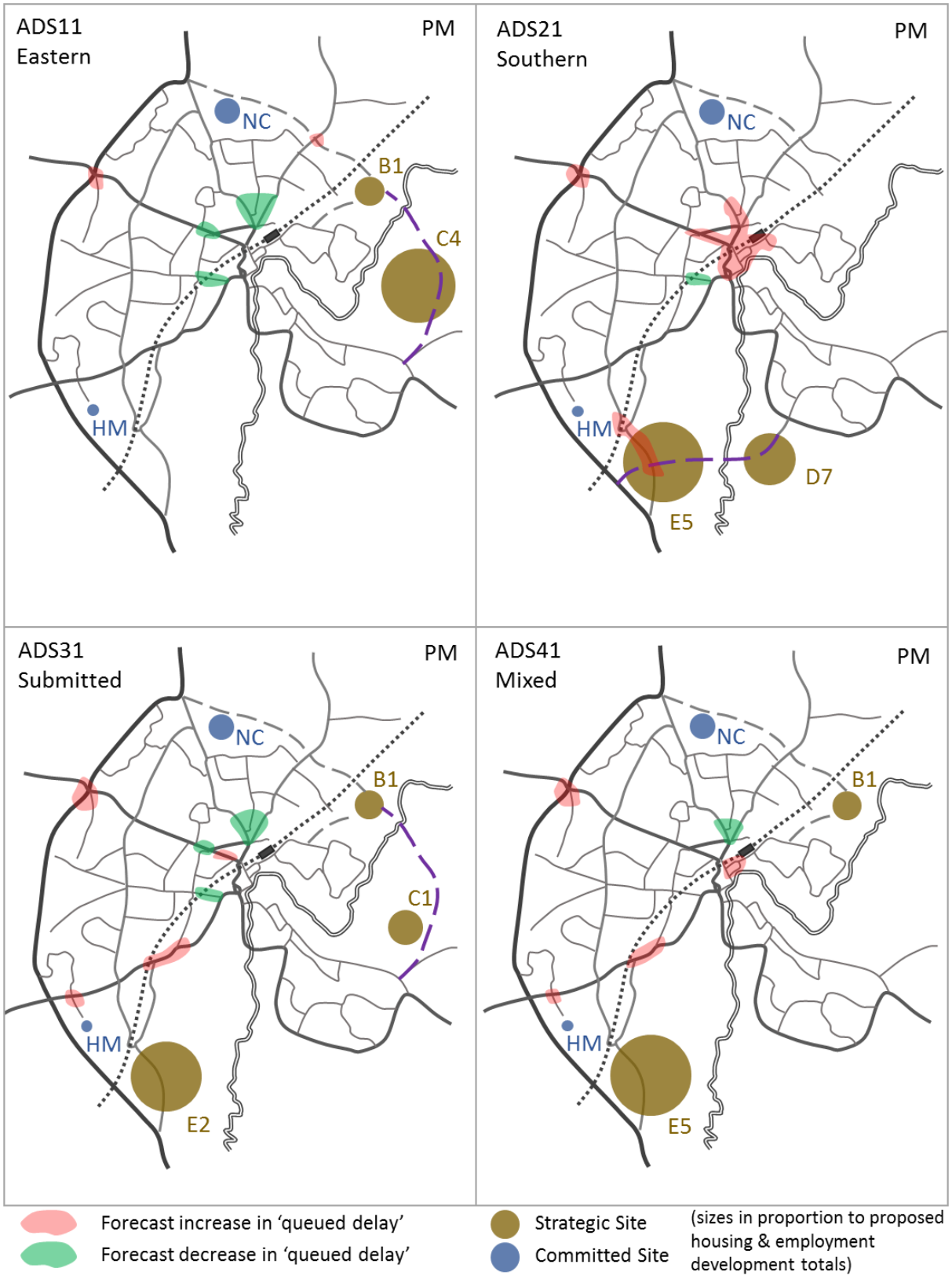


Figure 3-5 Forecast change in delay 2015-2026, with wider highway improvements, PM peak hour



3.9. The following key points can be identified from the 'change in delay' schematics:

- Without wider highway improvements, increased delays are forecast to be least geographically extensive for Strategy 4 (ADS40, Mixed) in both the AM and PM peak hours. For this strategy, increased delays are forecast to affect primarily the A4 Bath Road corridor between Rowden Hill and the town centre, and the A4 towards Pewsham.
- Without wider highway improvements, increased delays are forecast to be most geographically extensive for Strategy 2 (ADS20, Southern), followed by Strategy 1 (ADS10, Eastern). This is to be expected given that these two strategies are forecast to have the largest percentage increase in average peak period journey times (Figure 3-1) without wider highway improvements. Strategy 2 (ADS20) is forecast to have a greater impact on areas to the north and north-west of the town centre when compared to Strategy 1 (ADS10).
- With wider highway improvements, both Strategy 2 (ADS21, Southern) and Strategy 4 (ADS41, Mixed) have more extensive areas where increased delays are still forecast to occur. For Strategy 2, increased delays are still forecast for the town centre area, while for Strategy 4 the increased delays are focused on the A4 corridor between the town centre and Pewsham.
- With wider highway improvements, reduced delays are forecast to be more prevalent for Strategy 1 (ADS11, Eastern) and Strategy 3 (ADS31, Submitted), with little discernible difference between the two strategies. Both of these strategies include a completed Eastern Link Road.

Town Centre Traffic Conditions and Traffic Re-routeing

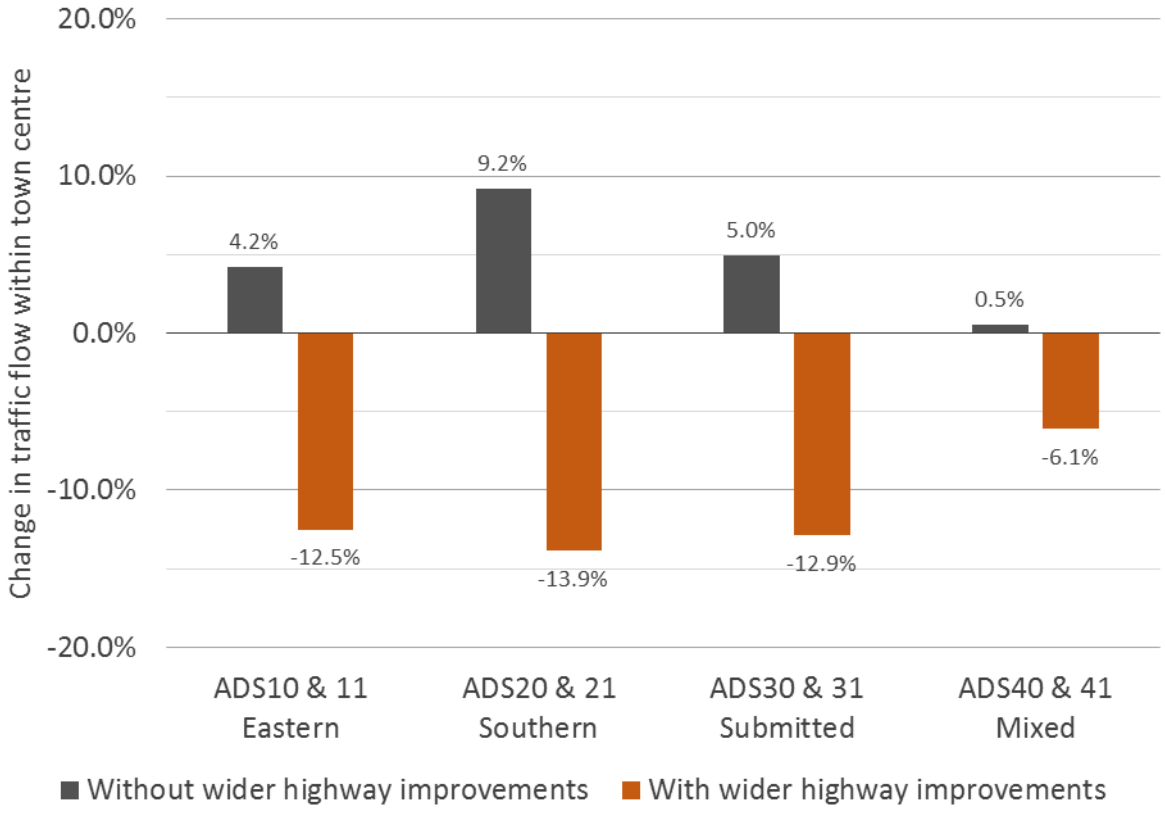
3.10. The third headline forecast which can be used to compare the Alternative Development Strategies is the extent to which traffic flows within the town centre increase or decrease, comparing 2026 to the situation in 2015. A town centre cordon has been defined in the Chippenham Transport Model, shown in **Figure 3-6**, with total forecast traffic flows crossing the nine cordon entry and/or exit points compared in **Figure 3-7**.

3.11. Given the complex layout of the road network in Chippenham town centre, an overall reduction in traffic flows within the cordon will not necessarily translate into a reduction in delay in the same area. This is because flows approaching or leaving the town centre will have different impacts on delay depending on their specific entry or exit point. It can also be difficult to distinguish the cause of any forecast traffic flow reductions, which could be a direct result of a new more attractive route option becoming available (such as a new Eastern or Southern Link Road), or partly as a result of increased congestion in the town centre area, which reduces traffic throughput and makes other route options comparatively more attractive.

3.12. Change in traffic flow within the town centre is a useful indicator of how the highway network is performing, but is not considered to be the most important.

Figure 3-6 Chippenham town centre cordon

Figure 3-7 Forecast change in average peak hour traffic flows within town centre cordon 2015-26



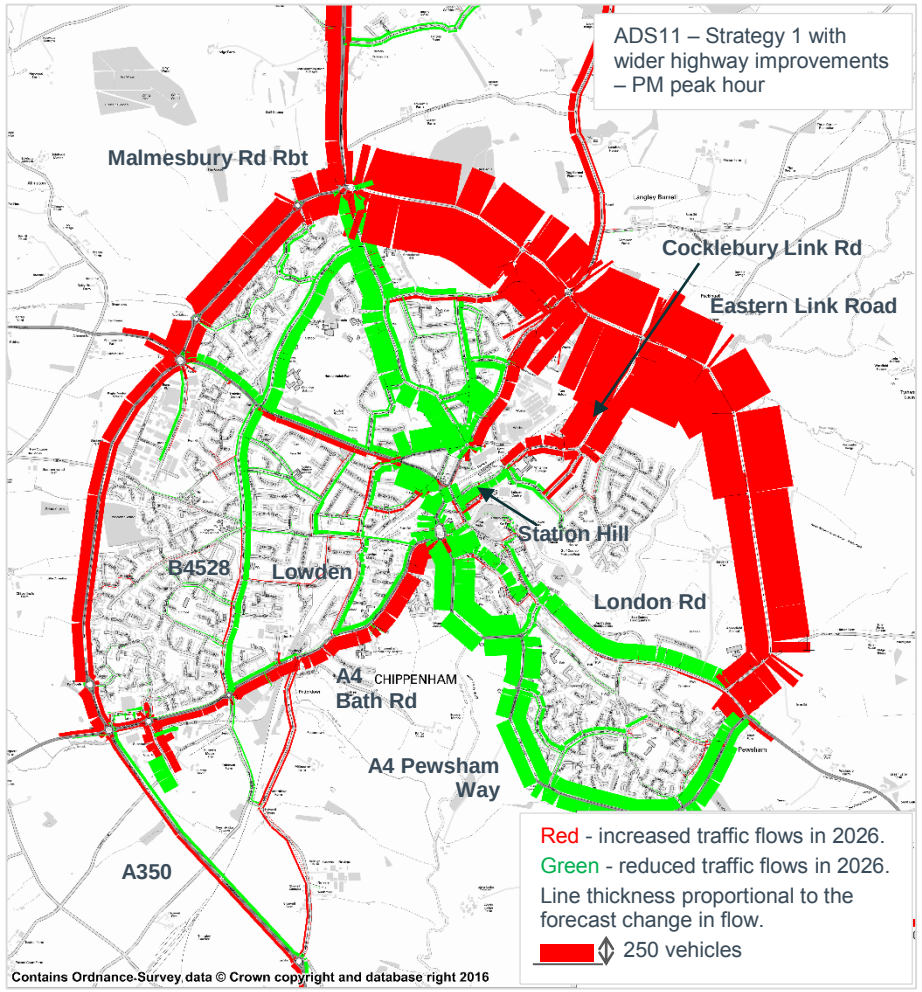
3.13. The following key points can be identified from Figure 3-7:

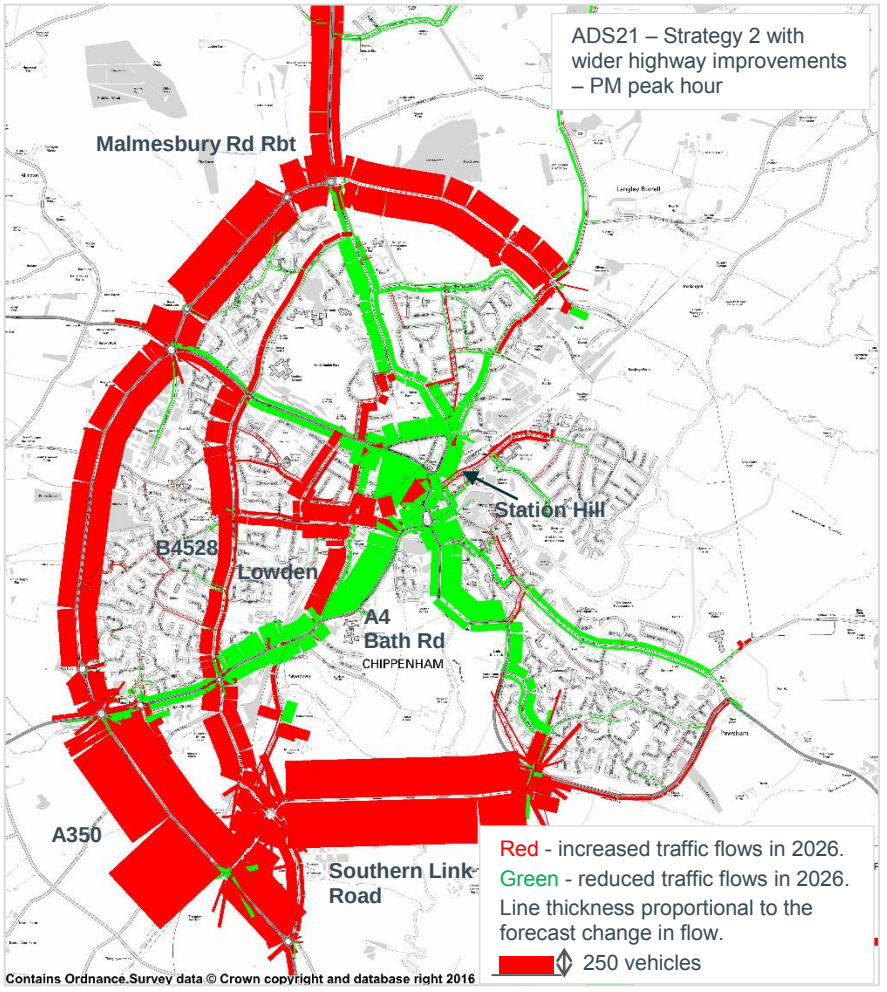
- Without wider highway improvements, all four Alternative Development Strategies are forecast to lead to increased traffic flows within Chippenham town centre during peak hours. The increase is most noticeable for Strategy 2 (ADS20, Southern) and least noticeable for Strategy 4 (ADS40, Mixed).
- With wider highway improvements, all four Alternative Development Strategies are forecast to lead to reduced traffic flows within Chippenham town centre during peak periods. The decrease is broadly similar and most noticeable for Strategies 1, 2 and 3 (ADS11, 21 & 31) all of which have either a completed Eastern or Southern Link Road. Strategy 4 (ADS41) does not include a completed link road.

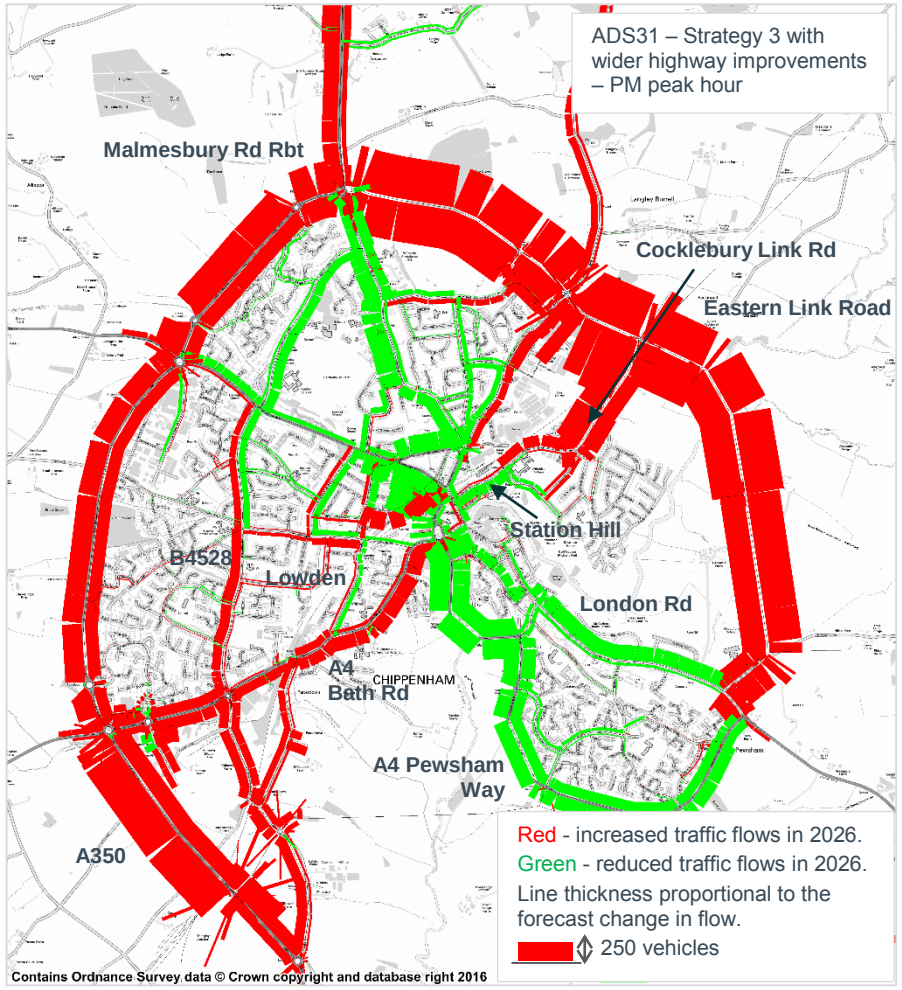
3.14. Given the similar reductions in traffic flows within Chippenham town centre which are forecast as a result of either an Eastern Link Road or Southern Link Road, the question of where traffic is re-routeing should be considered. **Figure 3-8** shows the forecast change in PM peak hour (1700-1800) traffic flows, for each Alternative Development Strategy 'with wider highway improvements', compared to the situation in 2015. The impacts of Strategy 2 and Strategy 3 can be considered on a like-for-like basis as they have similar total levels of development, while Strategy 1 and Strategy 4 have a lower level of development.

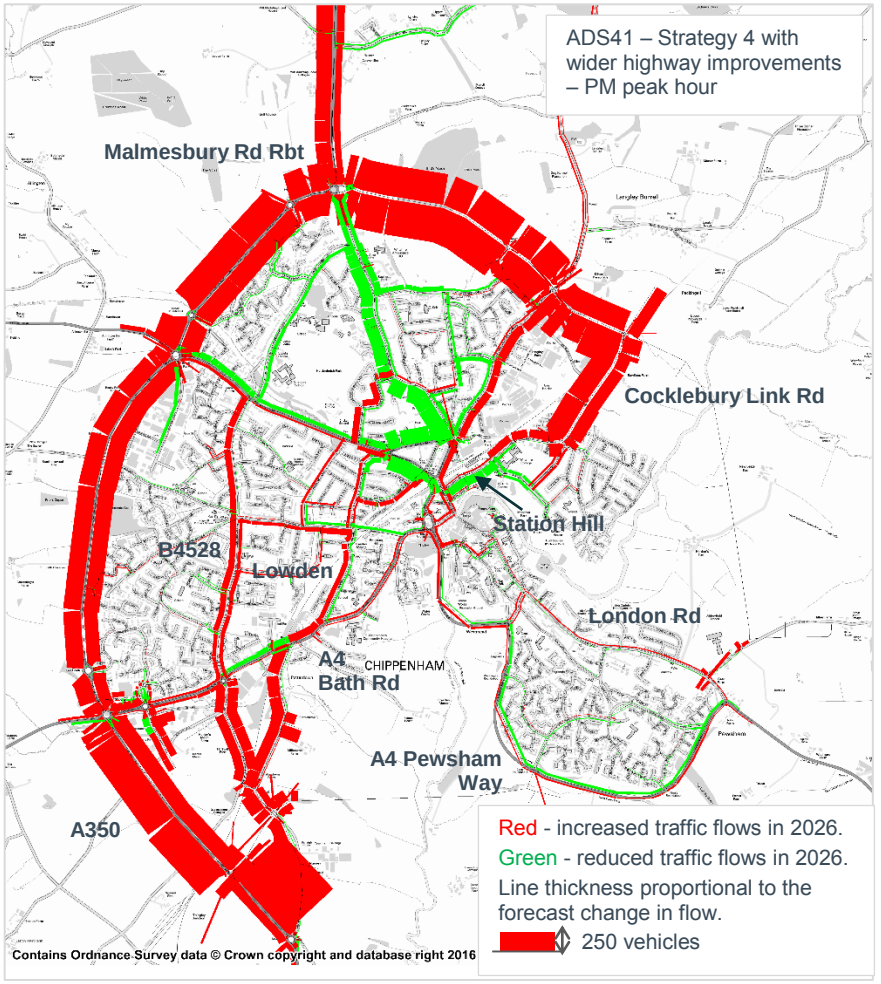
3.15. Transport Briefing Note 1 (CTRAN/04), which was prepared for the Examination in Public in 2015, presented percentage reductions in traffic flow within the town centre for an eastern-focused development scenario with the Eastern Link Road, a southern-focused development scenario with the Southern Link Road, and the proposed Plan. The original assessment was based on different levels of development in different locations (as documented in CTRAN/11) compared to the more detailed Alternative Development Strategies presented in this Evidence Paper. Junction layouts for both the Eastern and Southern Link Roads have also been refined in the Chippenham Transport Model to improve link road traffic flow, and additional highway improvements have been included, as listed in Table 2-2. The forecasts contained in this Evidence Paper are therefore not directly comparable to the forecasts presented previously.

Figure 3-8 Forecast change in PM peak hour traffic flows 2015-2016






ADS31 – Strategy 3 with wider highway improvements – PM peak hour
Malmesbury Rd Rbt
Cocklebury Link Rd
Eastern Link Road
Station Hill
B4528
Lowden
London Rd
A4
CHIPPENHAM
Bath Rd
A4 Pewsham Way
A350
Red - increased traffic flows in 2026.
Green - reduced traffic flows in 2026.
Line thickness proportional to the forecast change in flow.
250 vehicles
Contains Ordnance Survey data © Crown copyright and database right 2016


ADS41 – Strategy 4 with wider highway improvements – PM peak hour
Malmesbury Rd Rbt
Cocklebury Link Rd
Station Hill
B4528
Lowden
London Rd
A4
CHIPPENHAM
Bath Rd
A4 Pewsham Way
A350
Red - increased traffic flows in 2026.
Green - reduced traffic flows in 2026.
Line thickness proportional to the forecast change in flow.
250 vehicles
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3.16. The traffic flow forecasts in Figure 3-8 demonstrate that:

- Strategies 1 and 3, with an Eastern Link Road, encourage traffic to re-route away from the town centre (including Station Hill), London Road and the A4 Pewsham Way onto the Eastern Link Road. Strategy 2, with a completed Southern Link Road, is expected to encourage traffic to re-route away from the town centre and the A4 Bath Road onto the Southern Link Road.
- In Strategy 2, with a completed Southern Link Road, traffic flow increases of approximately 200-250 vehicles per hour are forecast along the B4528 (Saltersford Lane and Hungerdown Lane), through the residential areas on the western side of the town. This scale of increase is likely to be noticeable to residents in this area of town. Increased flows are also forecast on Lowden and Lowden Hill.
- In Strategies 1 and 3, with a completed Eastern Link Road, traffic flows through the residential areas on the western side of town are not forecast to increase to the same level as in Strategy 2. However, traffic flows on the A4 Bath Road are forecast to increase by approximately 150-200 vehicles per hour.
- There is a forecast 'conflict' of heavy traffic flows at the southern end of the A350 Chippenham Bypass under Strategy 2. This occurs because A4 'through traffic' travelling east-west, and traffic travelling between the A4 at Pewsham and M4 J17, is being encouraged to use at least part of the A350 Chippenham Bypass as a result of re-routeing onto the Southern Link Road. In turn, this conflict is one of the contributory factors to the increased flows along the B4528, as drivers seek alternative routes which avoid the A350.
- Without a completed Eastern or Southern Link Road, as in Strategy 4, forecast traffic re-routeing impacts are shown to be much reduced. There is a forecast 'conflict' of increased traffic flows at the southern end of the A350 Chippenham Bypass under Strategy 4, but to a lesser extent than when a Southern Link Road is present (Strategy 2).
- In Strategies 1 and 3, with a completed Eastern Link Road, the forecast traffic turning movement 'conflict' at the northern end of the A350 Chippenham Bypass (Malmesbury Road Roundabout) is likely to be exacerbated. This would require further enhancement to the Malmesbury Road Roundabout, as included in the 'with wider highway improvements' scenario when the Eastern Link Road is complete (Table 2-2).

Implications for Development Beyond 2026

3.17. The assessments in this Evidence Paper focus on the forecast impact of development on the highway network by 2026, the end of the Plan period. However, the forecasts demonstrate that some Alternative Development Strategies are likely to provide a more resilient highway network for the next phase of development which will inevitably need to take place beyond 2026.

3.18. Figure 3-1 shows that, with a completed Eastern Link Road (a key part of the 'with wider highway improvements' scenario), average journey times in 2026 under Strategies 1 and 3 (ADS11 and ADS31) are expected to be broadly similar to the situation in 2015. Furthermore, Figure 3-4 and Figure 3-5 show that delays are expected to reduce in a number of locations, as result of the wider highway improvements in Strategies 1 and 3. The implication is that both Strategies 1 and 3 are likely to provide a more resilient highway network post-2026.

4. Summary

4.1. This section summarises the key findings of Part 2a of the supplementary transport and accessibility evidence, focused on the forecast highway network impacts of four Alternative Development Strategies, in the form of a Red / Amber / Green assessment.

4.2. Each Alternative Development Strategy has been assessed in a 'without wider highway improvements' and a 'with wider highway improvements' scenario. The 'without wider highway improvements' scenarios provide suitable highway access arrangements to connect Strategic Site Options to the nearest existing roads. The 'with wider highway improvements' scenarios incorporate additional highway infrastructure improvements to attempt to deal with the wider traffic impacts of Strategic Site Option development.

4.3. The main highway network impacts of each Alternative Development Strategy are summarised in **Table 4-1**. **This summary should be read alongside the summary from the transport and accessibility Part 1a Evidence Paper**, so that the full set of sustainable access, highway network, and wider transport opportunities strengths and limitations are understood for the component Strategic Site Options.

4.4. The proposed wider highway improvements, such as an Eastern Link Road or Southern Link Road, are designed to address some of the forecast highway impacts of development (this is demonstrated in Figure 3-1). The highway impacts of Alternative Development Strategies 1 (Eastern), 2 (Southern) and 3 (Submitted) are likely to be unacceptable in the absence of a completed link road, as a result of forecast substantial increases in average journey times, a widespread increase in delay, and increased traffic flows within the already congested town centre area.

4.5. In terms of forecast highway network performance, and in a scenario without a completed Eastern or Southern Link Road, Alternative Development Strategy 4 (Mixed) is expected to have less of an impact compared to Alternative Development Strategies 1, 2 and 3. However, because Alternative Development Strategy 4 (Mixed) does not provide an opportunity to complete either an Eastern or Southern Link Road, mitigating the traffic impacts of development would be more challenging.

4.6. **A strategy that includes an Eastern Link Road remains preferable in terms of highway network performance**, with Alternative Development Strategies 1 and 3 (including an Eastern Link Road) also likely to provide a more resilient highway network post-2026. Alternative Development Strategy 2 (including a Southern Link Road) is least preferable as it is clear that further substantial highway measures would be required to mitigate both the impacts of traffic growth and the traffic re-routeing impacts of a Southern Link Road.

Table 4-1 Alternative Development Strategies, forecast highway network impacts summary

Alternative Development Strategy	Without wider highway improvements			With wider highway improvements			
	Average peak period journey times	Geographic extent of increased delay	Peak hour traffic flow through town centre	Average peak period journey times	Geographic extent of increased delay	Peak hour traffic flow through town centre	Comments on completed link roads
1. Eastern (Strategic Site Options B1, C4)	+45%	Large: town centre & entire Pewsham area including A4 and local distributor roads	+4%	-5%	Delays reduced on A4 Pewsham corridor & junctions close to town centre	-13%	Eastern Link Rd provides traffic relief to town centre & Pewsham areas, but does not address increased flows on A4 Bath Road. Traffic flow conflict at Malmesbury Rd Rbt
2. Southern (Strategic Site Options D7, E5)	+63%	Large: A4 Bath Rd corridor (Rowden Hill to town centre), A4 towards Pewsham, and areas to the N and W of town centre including A420	+9%	+42%	Large: town centre and areas to the W. A350 / B4528 to the SW of the town.	-14%	Southern Link Rd provides traffic relief to town centre & A4 Bath Rd, but leads to increased flows on the B4528 through the residential areas to the west of town. Traffic flow conflict at southern end of A350 Chippenham Bypass.
3. Submitted (Strategic Site Options B1, C1, E2)	+28%	Large: A4 Bath Rd corridor (Rowden Hill to town centre), A4 around Pewsham, and areas to the W of the town centre	+5%	+2%	Delays reduced on A4 Pewsham corridor & junctions close to town centre	-13%	Eastern Link Rd provides traffic relief to town centre & Pewsham areas, but does not address increased flows on A4 Bath Road. Traffic flow conflict at Malmesbury Rd Rbt.
4. Mixed (Strategic Site Options B1, E5)	+10%	Moderate: focused on A4 Bath Rd corridor (Rowden Hill to town centre) & A4 towards Pewsham	+1%	+10%	Moderate: A4 towards Pewsham	-6%	N/A

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