

TECHNICAL NOTE

Job Name: Wokingham Borough Council M4 Corridor Modelling
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Subject: Car trip reduction due to Sustainability Measures in WBC and at Hall Farm SDL

1. Introduction

- 1.1. This Technical Note presents a review and recommendations of the potential mode shift, which could be applied to employment and residential highway trip rates in the transport modelling being undertaken for the proposed Hall Farm Strategic Development Location (SDL). The document also considers the borough-wide impacts of the policies adopted by the Council in the Local Transport Plan to promote mitigation measures to reduce the demand for travel on the highway network by private vehicle.

2. Borough-wide Impacts

- 2.1. The new 2021-2036 Local Transport Plan (LTP), which is being drafted, promotes a vision, which “will deliver and maintain a safe, reliable and joined-up transport system that connects new and existing communities, businesses, and commercial centres while providing leisure opportunities.” The vision will:
 - Future-proof the transport network for new and emerging technology
 - Reduce social exclusion
 - Improve network resilience
 - Tackle climate change, and
 - Reduce congestion and improve productivity.
- 2.2. The draft LTP promotes mitigation measures to reduce the demand for travel on the highway network by private vehicle. It is anticipated that the potential range of mitigation measures, which include improved walking and cycling links to public transport interchanges and improved information prior to journey, will result in a reduction of highway trips within Wokingham Borough and this document aims to quantify the impact alongside the impact of Hall Farm specific measures.
- 2.3. Many of these measures are delivered via My Journey, a borough-wide active and sustainable travel behaviour change campaign that aims to help and inspire Wokingham residents, employees and visitors of all ages to walk, scoot, cycle or use public transport. The programme includes a range of events, activities, training courses and resources. Some of the most popular training is part of the national Bikeability training scheme. The programme works with 100% of primary and junior schools in the borough, training over 80% of Year 6 students in Bikeability Level 1/2. The Level 3 programme is also rapidly expanding with 45% growth in the number of children trained in 2019/20 compared to 2018/19.

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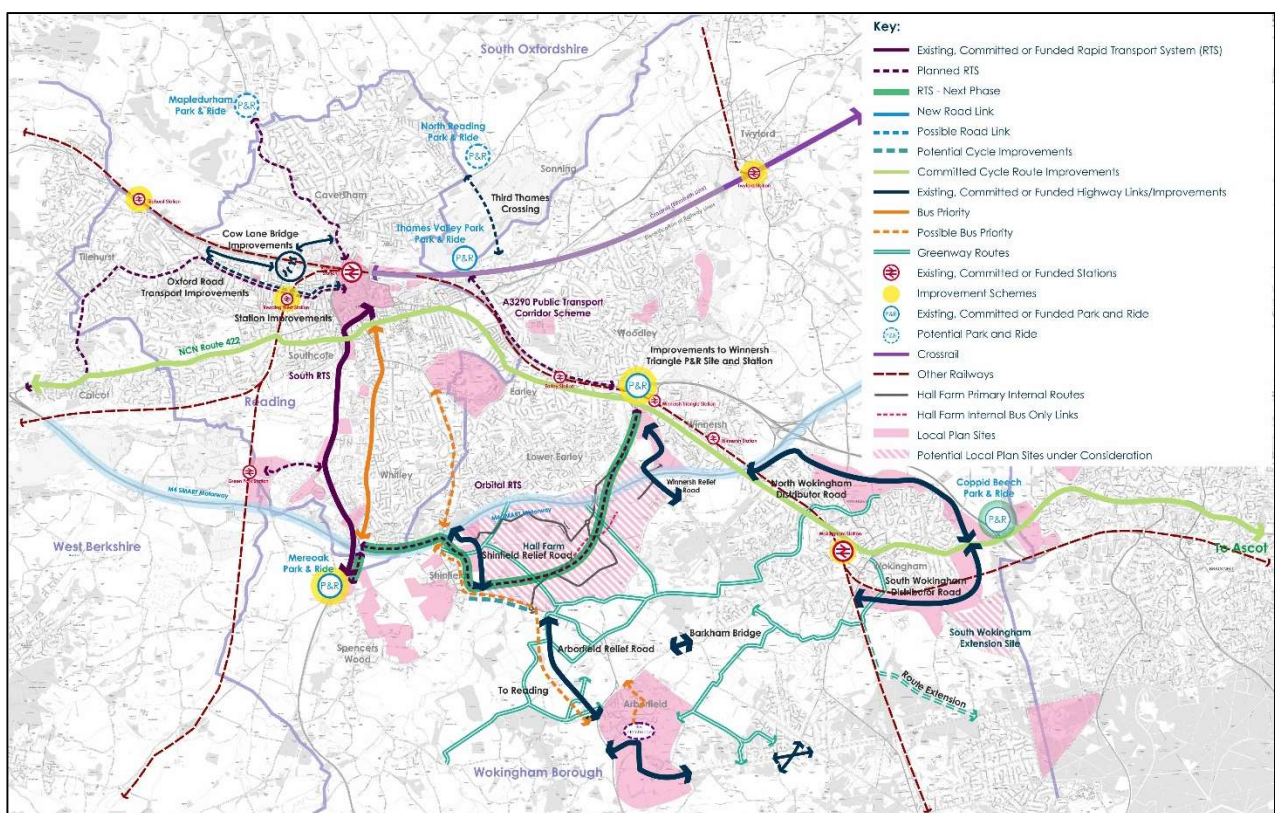
3. Hall Farm SDL Transport Context

- 3.1. The proposed residential development at Hall Farm will be well connected to planned employment development at the University of Reading's Four Valleys area to the west of the River Loddon and will also benefit from many facilities within its boundary, including primary and secondary schools, sports facilities, and retail. Consequently, it is envisaged that a substantial number of the vehicle trips associated with the development will be internalised. In many cases these will be completed using sustainable modes, taking advantage of a comprehensive range of sustainable modes as set out below:
- Option to generate a Rapid Transport System (RTS) link through the site connecting to destinations which could include the railway stations at Green park, Winnersh Triangle, Wokingham and Reading.
 - Introduction of local bus services to surrounding local towns and key locations
 - Comprehensive walking and cycling routes, including a new direct route over the M4 to Earley
 - Introduction of green routes
 - On site facilities linked by the above to maximise internal trips by sustainable mode, including schools, local and district centres, and employment opportunities at Thames Valley Science Park
- 3.2. Despite an allowance for internalisation (detailed in the "Forecasting Assumptions Technical Note"), there will still be a demand for trips to be made between Hall Farm and other locations. This will reflect the needs of residents to access facilities not located on site, and for the facilities on site to be visited by people from elsewhere. To ensure that these external vehicle trips are kept as limited as possible, the sustainable transport infrastructure within the site will extend beyond the boundary.
- 3.3. Strong pedestrian and cycle connections to nearby areas including Shinfield and Lower Earley will enable users of active modes to gain convenient access to and from these locations. Within the development, new cycle infrastructure will be designed in line with LTN 1/20 guidance in order to make it as attractive as possible. Outside of the site boundary, new and improved cycle infrastructure will be designed to LTN 1/20 compliance wherever possible within constraints. The routes will tie in to routes being developed as part of the Borough's Local Cycling and Walking Improvement Plan.
- 3.4. Beyond these neighbouring areas, an RTS could be a conduit for medium and longer distance journeys. In order to make the RTS an attractive option for travellers and embed its use, it is strongly recommended that the network is delivered at the earliest opportunity. This will require a degree of subsidy for a period of time until the service is commercially viable.
- 3.5. The RTS will be a high quality, high frequency service which provides connections between the Hall Farm SDL and key destinations in the area. Initially, the RTS is likely to be provided as a bus-based system (currently known as Bus Rapid Transit), however, in due course it can evolve to utilise new technologies, for example autonomous shuttle vehicles. There is the opportunity for other bus services to interchange with the RTS within Hall Farm, at one of the Local Centres as a minimum.
- 3.6. Provision of car clubs on site can provide for people who use alternative modes the majority of the time but need to make occasional car journeys.

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- 3.7. Provision of additional lanes on existing roads and on new roads within the Hall Farm SDL, as well as vehicle triggered signal systems can be dedicated for the RTS over private car. This will assist in delivering a fast, regular RTS service to Reading, and key railway stations near Hall Farm, such as Winnersh Triangle and Reading Green Park. The direct connections to nearby railway stations open up further opportunity for multimodal trips to the destinations served across the National Rail network. Access to each of the stations via RTS could take as little as 10 to 20 minutes based under free-flow conditions and depending on where the journey within Hall Farm starts or finishes.
- 3.8. Individual businesses within Hall Farm and Four Valleys may also consider providing shuttle buses to Winnersh Triangle and/or Reading Green Park railway stations, until the RTS is in place or if, for any reason, the RTS is not delivered.
- 3.9. Future access and movement options are presented in Figure 1.

Figure 1 Hall Farm. Future Access and Movement Options.



- 3.10. The Infrastructure Development Plan (IDP) for the Hall Farm development includes between £6 to 7 million for Rapid Transit System (RTS) and local bus services and infrastructure, with additional funding for possible bus priority on and off site. This coupled with additional funding for walking and cycling and wider infrastructure improvements forms part of an IDP provision of around £107 million for highways and transport infrastructure.
- 3.11. A promotion of a range of travel modes will also help to manage the impact of the additional car trips on the network. For many years Wokingham BC has been running a successful 'My Journey' programme of sustainable transport measures, which provides a broader and a more comprehensive offer than any individual developer travel plan.

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- 3.12. The annual 'My Journey' programme includes projects that work with new development locations, schools, workplaces and communities across Wokingham borough. Measures that are promoted annually include 'Beat The Street' within new development areas, personalised travel planning sessions across the SDLs, transition projects for primary school children moving into Secondary education, Facebook & YouTube campaigns, new resident workshops and developing school travel plans.

Figure 2 Indicative My Journey Annual Programme of activities

Programme Area	Description of Activity
Workplaces Travel Planning & Business Engagement	WBC staff travel survey, analyses and reporting
	WBC Travel Plan Refresh
	Business Roadshow Events
	Electric car charging point map for WBC & wider borough
Residential Travel Planning	Develop and maintain communication links to new developments
	Community events in partnership with WBC community teams
	PTP at Montague Park and Mulberry Grove
	Travel Information Welcome Packs for new residents
	Community Roadshow Events
	Car club viability plan (existing areas and new development)
Active Travel & School Travel Planning	BEAT THE STREET – Walk around the world challenge within SDLs
	Sustainable Transport Transitions Project (Primary to Secondary School)
	Sustainable Transport Transitions Project (School Leavers)
	Adopt Modeshift scheme for WBC schools
Marketing, Communications and Consultation	Widen and reinforce content of My Journey brand
	Development of a mobile responsive My Journey website to support promotion and delivery of travel planning initiatives within new the new development sites.
	My Journey social media, website & newsletter communication forums
	Facebook & YouTube campaigns to promote PTP, Yomp, Beat The Street
	Video to promote A329 cycleway (Stage 2)
	Workshop with new residents to better understand their travel behaviour

- 3.13. As stated in the "Climate Emergency Action Plan" published by WBC in January 2020, by creating journey routes, providing travel advice, attending community events, organising cycle training, guided walks, and producing personalised travel packs for residents, from 2016-2018 My Journey has seen:

- An 8% increase in the number of residents indicating that they cycle at least once a week
- A 4% increase in the number of residents indicating they walk at least once a week, and
- From 2015-2018, 1,770 children were trained by Bikeability

- 3.14. And the 2021 update of the "Climate Emergency Action Plan" reports that Cycle September (a month-long competition from Love to Ride, which aims to get more people riding bikes) saw 238 residents taking part, which is 63% up on 2020, and combined 41,261 miles were cycled and in total, 1,305lbs of CO₂ was saved if those miles have been driven.

- 3.15. The modelling process is seeking to apply an appropriate trip rate reduction to the rates that are being used in the trip generation process due to sustainable travel strategy.

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- 3.16. This document is seeking to find accepted evidence for the expected reduction to external car trips that RTS systems and other sustainable initiatives can be expected to deliver. It should be noted that trips internal to the development are considered in a separate exercise and therefore not considered here.
- 3.17. In parallel to the provision of sustainable modes, the council will need to consider both parking restrictions on future development and a change in attitude to use of the car across the borough to meet national climate objectives. Within certain types of land use and development there will be scope to restrict onsite parking and reduce use of the car. In other locations where parking can be managed, but is not being restricted, it will be necessary to encourage the use of sustainable modes and the new working from home policies. This will allow provision of car but reduce its use for short or peak hour trips. All these changes will need to be supported politically, with a clear understanding that the existing status quo regarding car use and ownership in the borough must change and this location offers a real opportunity to deliver that change.

4. Empirical Evidence

- 4.1. As part of the development of an approach, research has been undertaken looking at options and empirical evidence for the application of reductions. This included:
- b. Sustainable Travel Reductions - Reporting is often based on a package of measures, often led by soft measures. The Sustainable Towns / Smarter Choices Research^{1 2} is often cited. The evidence provided from the sustainable travel towns research is also referenced in the *DfT TAG Unit M5.2 Modelling Smarter Choices*.
 - c. Evidence from other RTS Studies – Either RTS business cases or schemes that have been implemented and evidence has been collected on usage and indicative mode choice based on post opening studies.
 - d. Review of similar Stantec studies and Local Plan transport evidence base development

Sustainable Towns / Smarter Choices Research

- 4.2. Firstly, this research (which informed Department for Transport's Transport Appraisal Guidance (TAG) Unit M5.2 'Modelling Smarter Choices') focuses on three types of Smarter Choice initiatives:
- workplace travel plans
 - school travel plans
 - targeted marketing initiatives
- 4.3. The guidance acknowledges growing evidence about the effects of Smarter Choice initiatives and references a meta-analysis carried out by Möser and Bamberg (2008)³.
- 4.4. The Möser and Bamberg results, which are fairly typical of some other studies that had been conducted, are replicated in Table 1. The target population of this research are: employee arrivals for workplace travel plans, pupil arrivals for school travel plans and all people in the study area in receipt of targeted marketing.

¹ Cairns S, Sloman L, Newson C, Anable J, Kirkbride A & Goodwin P (2004) 'Smarter Choices – Changing the Way We Travel'

² *The Effects of Smarter Choice Programmes in the Sustainable Travel Towns: Research Report.* Lynn Sloman, Sally Cairns, Carey Newson, Jillian Anable, Alison Pridmore and Phil Goodwin. Report to the Department for Transport - March 2010

³ Möser, G., and Bamberg, S., 2008. The effectiveness of soft transport policy measures: a critical assessment and meta-analysis of empirical evidence. *Journal of Environmental Psychology*

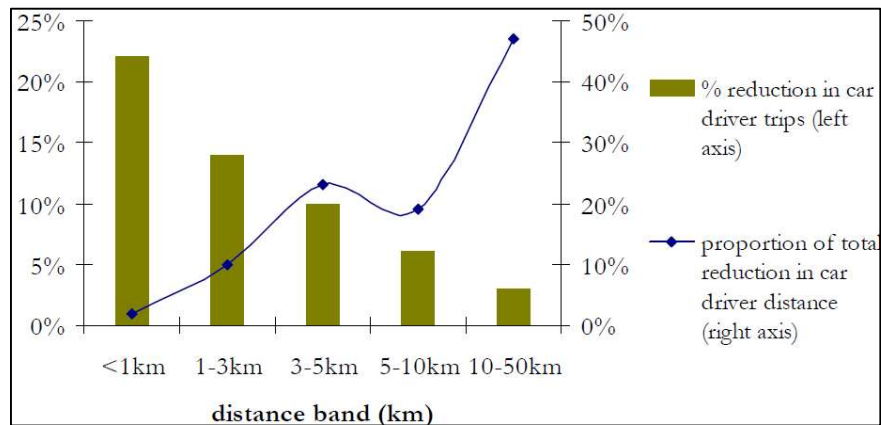
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Table 1 Summary of Smarter Choice Impacts (Moser and Bamberg, 2008)

Smarter Choice Measure	Reduction in Car Trips	Increase in Non-Car Trips
Workplace Travel Plan	18%	34%
School Travel Plan	10%	7%
Targeted Marketing	8%	14%

- 4.5. The guidance suggests that it may be reasonable to choose these values as upper limits and adjust the values pro-rata by considering the intensity of application. For example, if the workplace travel plans are to apply to 50% of the workforce in the study area, it may be reasonable to assume a 9% reduction in car commuting trips.
- 4.6. Secondly, a correlation with distance is noted as reproduced below from Figure 8 of the 2010 (Sloman et al) report. The analysis suggests that a higher reduction in car trips can be achieved for shorter distance trips.

Figure 3 Reproduction of Figure 8 from Sloman et al (2010) p41



RTS Studies

- 4.7. Limited research has been found on the impact of RTS schemes.
- 4.8. A useful reference was found citing a survey relating to the Kent Thameside Fastrack system in *Transit Supplement - Spring 2008 p12-13*⁴. This is a post-opening survey of the initial routes of the system (Routes A and B). "The survey showed that 19% of Fastrack users would have made their journey by car before the service began". It is noted that the Kent Thameside area was one of the four Office of the Deputy Prime Minister (ODPM) SE growth areas⁵. It is of considerable size and thus arguably more resources have been applied, meaning that the quoted percentage is potentially on the higher side and may not be directly comparable with Hall Farm.
- 4.9. Another evidence comes from the Leigh to Ellenbrook guided busway project in Greater Manchester⁶. This is a 4.5 mile dual track bus rapid transit system, which commenced running passenger services between Leigh-Salford and Manchester in April 2016. Since opening in April 2016, patronage figures on the guided busway have been a significant achievement. Surveys indicate that circa 220,000 trips are made using this service every year and circa 10% of those surveyed said they would have made their trip by car previously.

Stantec Local Plan Studies

⁴ http://www.landor.co.uk/transitxt/busrapid_transit.pdf

⁵ <https://publications.parliament.uk/pa/cm200203/cmselect/cmmodpm/77/77.pdf>

⁶ <https://www.bregroup.com/case-studies/ceequal-case-studies/leigh-to-ellenbrook-guided-busway/>

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- 4.10. The project team has also considered Local Plan work that Stantec has been involved in. Such projects have recently included Horsham District and Crawley and Brentwood Borough Councils. The recommendation for Hall Farm has considered approaches taken for these projects, and the acceptability to external stakeholders.
- 4.11. The first approach applied was distance-based reductions. These were applied within the Horsham, Brentwood and Crawley models based on values taken from the Sloman et al (2010) outlined in [Figure 3](#) and summarised in [Table 2](#) below. This method considers active travel and the impact resulting from development travel planning targets where the longer the distance the less likely one would be to use alternative modes.

Table 2 Trip Reductions Applied to Local Plan Sites

	Up to 1km	1 – 3km	3 – 5km	5 – 10km	10 – 50km	Over 50km
Car Trip Reduction	-22%	-14%	-10%	-6%	-3%	0%

- 4.12. The second approach is a corridor approach. For example, in Stantec’s work in Crawley, a high-quality bus corridor between new strategic developments, Crawley Town Centre and local employment zones was modelled with a 12% reduction, noting ‘*The 12% is seen as a proportionate estimate of mode shift away from the private car*’. This is reflective of RTS evidence provided from, for example, the Kent Thameside Fastrack system.
- 4.13. In all previous Local Plan Transport Evidence Base development work undertaken by Stantec, the approach was discussed and agreed with both the Local Highway Authority and National Highways. In addition, the Brentwood Local Plan has recently been through the Examination in Public and the Inspectors have very recently reported and found the plan to be sound and this should be adopted very soon (due late March 2022).

5. Hall Farm approach

- 5.1. Based on the evidence provided above and the successful approach adopted by Stantec elsewhere and agreed with the relevant highway authorities, the proposed approach, which will inform the Local and M4 Modelling Assessment is described below.
- 5.2. The potential range of mitigation measures promoted through the 2021-2036 draft LTP are aimed at reducing the number of car trips across the borough and the evidence from elsewhere suggests that this is likely to result in a reduction of car trips of up to 18% with targeted travel plans. For the purpose of this study an adoption of a conservative reduction of 5.5% for car trips within the borough is suggested⁷.
- 5.3. For trips to/from 2026 Strategic Development Location (SDL) zones a further reduction of 1.5% will apply to all car trips. This will reflect promotion of targeted sustainable travel measures via My Journey Programme. The additional reduction will apply to the existing and reference case development at Thames Valley Science Park within the Hall Farm red line⁸. Therefore, for trips to/from Hall Farm zones a combined 7% reduction will apply to all car trips and all land uses. This will reflect provision of high-quality sustainable travel infrastructure and promotion of sustainable travel measures via My Journey Programme.

⁷ This assumption is identical to the approach adopted for the 2026 Local Plan transport modelling work as described in the “Demand Forecasting Methodology” report 2009.

⁸ As above

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- 5.4. A further reduction in highway trips to/from Hall Farm can be achieved due to RTS, which would improve accessibility of the site by public transport to a wide area by providing links to such railway stations as Green Park, Winnersh Triangle, Wokingham and Reading. Evidence suggests that this reduction can be as high as 10%. A conservative estimate of 5% has been proposed for this study. However, this will not be tested due to unavailability of a multi-modal model for this study (only highway assignment model is used), which makes it difficult to identify origin-destination movements that may benefit from the introduction of RTS to apply the reduction.

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