Appendix 3

Transportation Strategy
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1. INTRODUCTION

1.1. Richard Jackson Limited have been instructed by Meridian Strategic Land Ltd to consider the Transportation issues arising from a development of approximately 1500 dwellings at Land North of Witney, Oxfordshire. The site extends to some 55 Ha and this report is to indicate the potential impact of the development and measures for the mitigation of that impact.

1.2. This report will review the potential impact of traffic generated from a development of the scale noted. It is anticipated that further detailed work would be required at a future stage to support a planning application. This report will follow with the iterative approach recommended by the Department for Transport's 'Guidance on Transport Assessment' that will commence the process of a transport assessment and assess the maximum potential impact of the development. Further mitigation is possible and hence this report will deal with the anticipated worse case scenario.

1.3. The site is shown on Figure 100 with an Ordnance Survey coordinate location of 436150, 211590. The site is bounded by Hailey Road (B4022) to the west, New Yatt Road and the A4095 Woodstock Road to the east. To the south lies the conurbation of Witney along Vanner Road and Eastfield Road and partly to the north, Downhill Lane. The site covers 55.24 Ha (136.5 acres) and has a general topography with the higher ground to the north and land falls south towards Witney Town.

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2. POLICY CONSIDERATION

National Policy

2.1. Planning Policy Guidance Note 13 – Transport (PPG 13), places emphasis upon sustainable development, to make it easier and safer for more people to access a range of facilities by public transport, cycle or on foot. This remains at the heart of Government policy.

2.2. The Government recognises that land use planning has a key role to play in delivering its integrated transport strategy and that by shaping the pattern of development and influencing its location the planning process can help to reduce both the need to travel and the growth in the length and number of motorised journeys.

2.3. Planning Policy Statement 3 – Housing (PPS3), key objectives is to provide a high quality market housing that includes addressing shortfalls in the supply market.

2.4. The Government’s policy is to ensure that housing is developed in a suitable location that offers a range of local facilities and good access to job key services and influences.

2.5. The draft National Planning Policy Framework was published in July 2011. This document also encourages sustainable development, but also balances this with the need to encourage economic growth.
3. EXISTING CONDITIONS

3.1. The proposed development site lies to the north of Witney and immediately abuts the existing urban fringe. The site extends from the B4022 Hailey Road to the west to the B4095 Woodstock Road to the east. A further highway, New Yatt Road passes through the site.

3.2. Witney itself is geographically divided by the River Windrush which flows west to east and is crossed by Bridge Street. To the north of the River the highway network includes the B4022 to the northwest, the B4095 to the north east and the B4022 to the east and the A40. The A40 bypasses the town to the south.

3.3. To the south of the River the highway includes the B4095 Burford Road to the west and Hill Street to the south. The major connection to the A40 is via Burford Road and the A415 Tower Hill to the south.

3.4. The A40 provides access to Oxford in the east and Cheltenham to the west. Access to the A40 is from the A415 interchange which allows all movements to the south of the town. To the east access bound only can be achieved at the B4022 interchange. To the west eastbound access can be achieved via the B4477. Further west a roundabout exists at the B4037 junction.

3.5. The highway network of North Witney is typical of such a medium sized town. To the west, Hailey Road is a single carriageway with adequate footways. To the east Jubilee Road is again a single carriageway with adequate footways. New Yatt Road is a smaller single carriageway which has been provided with traffic calming. Again it is provided with adequate footways. All three roads are currently bus routes.

3.6. A number of local facilities already exist near to the site as follows:

**LOCAL FACILITIES**

The King's School New Yatt Road, OX29 6TA – Christian School: Primary School ages 5 – 11 and secondary school ages 11 – 16; also run pre-school ages 2 ½ - 5; (the school is situated on the edge of the site and it is used as a reference point).

Witney Community Primary School, on Hailey Road, OX28 1HL.

Wood Green School, on Woodstock Road, OX28 1DX, ages 11 – 18, located approximately 1.3km from the site;

Springfield School, Cedar Drive, OX28 1AR, school that provide for pupils with learning difficulties ages 2 – 16; approximately 2km;

Madley Brook CP School, Nursery & Primary school 3 – 11; on Cedar Dr, OX28 1AR, approximately 1.5km from the site;

Creche: Petit Enfant, on Northfield Farm Ln, OX28 1UD; approximately 1.5km from the site.

The Nuffield Practice, on Welch Way, OX28 6JQ; approximately 1.8km from the site;

Rowlands Pharmacy located within Nuffield Practice;

High St Dental Practice, High St, OX28 6HT, approximately 1.8km from the site;
Londis Convenience Store, Hailey Road, OX28 1HJ, approximately 1.3km from the site;

Sainsbury's Supermarket, on Witan Way, OX28 6FF, approximately 2.6km from the site;

Public House: The Three Pigeons, on Woodgreen, OX28 1DG, approximately 800m from the site;

Restaurant, Thai Bangla, High St, OX28 6JA approximately 1.8km;

Windrush Leisure Centre, Witan Way, OX28 4YA, approximately 2km from the site;

Place of Worship: Welcome Evangelical Church, on High St, OX28 6HL, approximately 1.6km from the site.

Post Office, on the High Street;

Banks are located on the High Street

PUBLIC TRANSPORT

3.7. As noted above the highway network adjacent to the development site form part of the local buses services. These services are as detailed below.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Service</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stagecoach in Oxfordshire</td>
<td>11 Oxford - Eysham - Long Hanborough - Witney</td>
<td>Mon to Friday: 10 daily services from 0909 to 1918 towards Witney Centre and 10 daily services from 0614 to 1620 towards Oxford. Saturday: 8 daily services from 1011 to 1848 towards Witney Centre and 9 daily services from 0745 to 1620 towards Oxford.</td>
</tr>
<tr>
<td></td>
<td>213/214 Witney: Market Square - Woodgreen - Cogges - Market Square</td>
<td>Mon to Saturday: 6 daily services bus 213 (clockwise) and 4 daily services bus 214 (anticlockwise).</td>
</tr>
<tr>
<td></td>
<td>242/242A Woodstock - Witney</td>
<td>Mon to Friday: 13 daily services from 0824 to 1914 towards Witney Centre and 11 daily services from 0718 to 1823 towards Woodstock. Saturday: 11 daily services from 0833 to 1914 towards Witney Centre and 11 daily services from 0736 to 1823 towards Woodstock.</td>
</tr>
<tr>
<td>RH Transport</td>
<td>X9 Witney - Chipping Norton</td>
<td>Mon to Friday: 11 daily services from 0745 to 1755 towards Chipping Norton and 14 daily services from 0742 to 1952 towards Witney. Saturday: 13 daily services from 0800 to 2320 towards Chipping Norton and 14 daily services from 0845 to 2252 towards Witney.</td>
</tr>
</tbody>
</table>

There are therefore some reliable bus services that exist near and around the site. It would be beneficial for the development that 1 or 2 services are diverted through the development.

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TRAFFIC DATA REVIEW

3.8. To understand the existing travel patterns and conditions on the highway network a number of traffic counts have been undertaken as follows:

1. Woodstock Road and Jubilee Way (Ghosted Right Turn)
2. Oxford Hill and Jubilee Way (Traffic Signals)
3. Bridge Street and West End (Double Mini-Roundabout)
4. Hailey Road and West End (Mini-Roundabout)
5. Buford Road and Mill Street (Traffic Signals)

3.9. These surveys as provided in full in Appendix? The counts provided sufficient data for the current performance of these junctions to be modelled by appropriate software, Arcady for roundabouts, Picady for priority junctions and Linsig for traffic signals.

3.10. Current junction capacity is considered later in this report.

4. PROPOSED DEVELOPMENT

4.1. At the current time the development proposals is for 1500 residential units. It is envisaged that this proposal will change over time to include other facilities such as a small retail centre which would reduce the need of residents to travel beyond the site boundary. At present, to ensure a robust assessment we have not considered any reduction of trip generation for such use provision.

HAILEY ROAD TO BURFORD ROAD LINK (WEL-WEST END LINK).

4.2. The Draft West Oxfordshire Core Strategy consultation of January 2011 safe guards land for a new link across the River Windrush floodplain to the west of Bridge Street. This proposal has been in considoration since 1991 although it does not currently form part of the integrated transport strategy for Witney.

4.3. The restraints passed by the existing single bridge linking the two parts of Witney are such that it is considered that the WEL should be provided to support these proposals. The provision of the WEL allows a redistribution of traffic through northern Witney to make use of the additional link to the south. The form of the bridge itself and associated works is considered elsewhere however this report does review the size of the proposed link and its connection points to the highway network.

4.4. The WEL is proposed to provide an 8.3m wide carriageway consisting of two 3.65m running lanes with a 0.5m wide hardstrip. Beyond this are a 3m footway cycleway to one side to allow pedestrian and cycle use and a 1.0m hard verge for drivers of broken down vehicles to use in emergency. This scale of provision is adequate for this type of new link and is adequate for the proposed use.
SITE ACCESS

4.5. The development site stretches between the Hailey Road and Woodstock Road. The extent of the proposals is given in Figure 100. A new highway through the development site to act as a 'spine' access road and bus route is proposed. This spine road will be connected to the highway network via new roundabout junction at each end.

4.6. The Hailey Road junction is a 40m ICD 3 arm junction set to the east of the existing carriageways, the general arrangement is shown on drawing no. 43163/C/006 which is provided in Appendix B. It is anticipated that this junction can be provided within land under the control of the highway authority and the developer. It is envisaged that this junction will also link with existing footways that exist to the south.

4.7. The Woodstock Road junction is also a 40m ICD 3 arm junction. This is set to the west carriageway and south of the existing Harvest Way ghosted right turn priority junction. Again, it is anticipated that this junction can be provided within land under the control of the highway authority and the developer. The general arrangement is shown on drawing no. 43163/C/005 in Appendix B. The junction will also connect to existing pedestrian facilities which exist on Woodstock Road.

4.8. It is envisaged that a number of additional pedestrian and cycle access points will be provided to promote the use of these transport modes.

PARKING

4.9. The development proposal will provide adequate parking in line with Oxfordshire policy to ensure that there is no parking on the adjacent highway network.

5. TRAFFIC GENERATION AND DISTRIBUTION PROPOSED RESIDENTIAL DEVELOPMENT

5.1. The development will provide 1500 residential units. At this location it is envisaged that a mix of houses would be provided. We have estimated the likely traffic generation using TRIICS software. The results are provided in Appendix C. TRIICS has also been used to provide a modal split.

5.2. The development of 1500 units give a vehicular traffic generation as follows:

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Arrivals</th>
<th>Departures</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800 – 0900</td>
<td>234</td>
<td>603</td>
<td>837</td>
</tr>
<tr>
<td>1700 – 1800</td>
<td>545</td>
<td>320</td>
<td>864</td>
</tr>
<tr>
<td>Daily</td>
<td>3659</td>
<td>3780</td>
<td>7439</td>
</tr>
</tbody>
</table>
5.3. The modal split for the proposed development is as follows:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>60%</td>
</tr>
<tr>
<td>OGV</td>
<td>1%</td>
</tr>
<tr>
<td>Passenger in Car</td>
<td>19%</td>
</tr>
<tr>
<td>Cyclist</td>
<td>2%</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>15%</td>
</tr>
<tr>
<td>Public Transport</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

5.4. The total number of all trips per day for all transport modes is 12122.

**REDISTRIBUTION OF EXISTING TRAFFIC FLOW AND PROVISION OF WEL**

5.5. The construction of a second bridge link across the River Windrush will allow existing traffic to make revised route choices for their journeys. We have redistributed the existing flows based upon the existing turning proportions and with the benefit of a gravity model. The results are given in the traffic flow diagrams. These also consider the new link provided within the development.

**DEVELOPMENT TRAFFIC DISTRIBUTION**

5.6. The distribution of traffic has been undertaken using a gravity model. Such a model considers the population size and distance from the development site to provide a weighted level of attractiveness of the generated trips to the destination. The results are provided in Appendix D.

5.7. These trips are then assigned to the most likely route through Witney to provide the number of journeys through each junction. These are then assigned as turning movements which can be analysed. The results are provided in traffic flow diagram 7 and 8.

**COMBINED TRAFFIC DISTRIBUTION**

5.8. The combined traffic distribution from the reassigned back ground trips and generated trips are then combined to provide a complete set of turning counts for all the junctions in the scope of the assessment. The horizon year has been taken as 2022 which is as advised by the Guidance for Transport Assessment, this is some years after the likely planning application date to allow for phased construction.

5.9. In all assessment of the performance of junctions existing trips have been growthed from the 2011 counts to 2022 using the TEMPRO V6.2. The resulting completed flows for the AM and PM peaks are given in flow diagrams 9 and 10.
6. TRAFFIC IMPACT

6.1. The junctions that have been identified as having increased flows as a result of the redistribution of existing trips and the inclusion of further trips from the development have been assessed for their performance in 2022.

Woodstock Road and Jubilee Way

6.2. This junction is currently a priority junction with a ghosted right turn lane for southbound traffic wishing to enter Woodstock Road from Jubilee Way.

6.3. The form of the junction suggests that it has been constructed relatively recently and to current standards.

6.4. Picardy software was used to assess the performance of this junction in 2011. The results of this analysis that although the junction performed well during the traffic counting exercise with relatively little queuing that the junction is approaching capacity. This is as a result of a high proportion of turning movements.

6.5. When the predicted 2022 flows were run the junction was shown to be under capacity with very large queuing predicted. An improvement to this junction is therefore proposed. A simple reconfiguring of the priority was initially considered. This would facilitate the relatively high number of turning movements. However, the potential future construction of a new link to the south would be likely to increase the proportion of traffic remaining on Jubilee Way. Hence a 40m ICD roundabout is proposed. The general arrangement of this junction is provided in Appendix E on drawing 43163/C/004.

6.6. The performance of this roundabout was tested by Arcady and found to work within its capacity in the AM and the PM peaks. The information can be provided with the existing verges adjacent to the carriageways. The results of the testing of this junction is given in Appendix F.

Oxford Hill and Jubilee Way

6.7. This junction is a four arm traffic signal junction which provides two lanes on all approaches. Information on control of this junction was obtained from Oxford County Council. This data was used to construct a Linsig model for the junction. This model was then run for the 2011 and 2022 traffic movements and was found to be working within its capacity. It should be noted that our assessment did not consider the pedestrian stage being called on every cycle as the pedestrian counts suggest that the pedestrian flows are quite low. The results are provided in Appendix G.

Bridge Street and West End

6.8. This junction is currently a double mini roundabout arrangement. The form of the junction is quite constrained with building frontages up to the back of the footways in many cases.

6.9. The performance of this junction was modelled using the mini roundabout section of Arcady for the 2011 scenario. When this was compared to the observed queuing from the traffic counts a reasonable correlation was found.

6.10. A review of the 2022 traffic flows revealed that the flows at this junction would in fact reduce as a result of the construction of the WEL easing pressure on the only crossing of the River Windrush.
6.11. It is clear that the performance of this junction will be significantly improved by the development and hence no further analysis has been carried out on the 2022 scenario.

**Hailey Road and West End**

6.12. This junction is also a mini roundabout. Again the mini roundabout section of Arcady was used to assess the 2011 performance of the junction. The results show that there is adequate capacity currently.

6.13. This area will need to be reconfigured to allow for the northern end of the WEL to connect. A 4 arm compact roundabout is feasible and was initially proposed. However Arcady analysis of this roundabout showed that this arrangement would not have adequate capacity in 2022.

6.14. A four arm traffic signal junction is therefore proposed at this location. This is shown on drawing no. 43163/S/10, which is provided in Appendix H. A Linsig model of this junction has been produced which shows that the junction has adequate in 2022, the results are to be found in Appendix G.

**Burford Road and Mill Street**

6.15. This junction is currently a traffic signal control with two lane approaches on Burford Road and a single lane approach from Mill Street. We contacted Oxford County Council and acquired data on the operation of this junction. This was used to build a Linsig model which was tested for the 2011 scenario. The results reflected the observed queuing from the traffic counts.

6.16. This junction will need to be remodelled to allow the south end of the WEL to connect to the highway network. When the 2022 scenario was assessed it was shown to be at capacity with a single lane approach from the bridge.

6.17. A two lane approach with a left turn, straight on and right turn lane from Burford Road west and change to the southern approach to ban right turns would allow the junction to work with capacity. The results are to be found in Appendix G.

6.18. In summary, it is clear that all of the junctions assessed as part of this study would either operate below capacity in 2022 or could be improved such that they would do so.

7. **PUBLIC TRANSPORT**

7.1. As we noted above a number of existing bus services pass close to or beside the site. To ensure that the development is sustainable improvements to the frequency of these services should be provided. This would provide a very real choice for the residents of the development and facilitate model shift.

7.2. Currently service numbers 213 and 214 provide 6 services per week day. We propose that the frequency of these services be increased such that a 30 minute service exists Monday to Saturday between 0700 and 2000 hours. On a Sunday we suggest an hourly service between 0900 and 1800 would be provided.

7.3. The services could also be rerouted to pass through the development ensuring that all of the new houses are within recommended walking distances of the new bus stops.
8. CONCLUSIONS
8.1. It is proposed to construct a new development of 1500 houses to the north of Witney in Oxfordshire. The development would be accessed via new roundabouts from existing high standard urban roads at two locations.

8.2. A new spine road would be constructed through the development site. This will allow residents to gain access to the westbound A40 and also to all local facilities.

8.3. A suite of offsite highway improvements which include the provision of the following:
   - The West End link bridge over the River Windrush
   - A roundabout improvement at Woodstock Road and Jubilee Way
   - Traffic signal junctions to the north and south of the proposed bridge will allow the traffic generated by the new development to be accommodated on the highway network in 2022 the horizon year for this assessment.

8.4. Additionally the development site can be accessed by pedestrians, cyclists and with enhancements by public transport. Therefore the proposals are sustainable and therefore comply with existing and emerging national transport policy.

8.5. We are able to conclude that the development is achievable and deliverable.

9. LIMITATIONS
9.1. This report has been produced for the sole use of Meridian Strategic Land Ltd in conjunction with the development of Land North of Witney for residential development. Its contents should not be relied upon by others without the written authority of Richard Jackson Limited. If any unauthorised third party makes use of this report, they do so at their own risk and Richard Jackson Limited owes them no duty of care or skill.

9.2. All information provided by others is taken in good faith as being accurate, but Richard Jackson Limited cannot, and does not, accept any liability for the detailed accuracy, errors or omissions in such information.

9.3. All data has been collated for the purposes of the proposed development of approximately 1500 dwellings. Any amendment to this proposal or changes in the future will require reassessment to confirm capacity of the transportation system.
This map does not show routes which only run occasionally, such as school journeys or market day shoppers routes. For details of these services please contact Traveline.
Appendix 4

Costed Housing Trajectory
### Annual Numbers of Occupied Dwellings (Private Dwellings & Affordable Housing)

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>150</td>
<td>160</td>
<td>170</td>
<td>180</td>
<td>660</td>
</tr>
<tr>
<td>2014</td>
<td>190</td>
<td>200</td>
<td>210</td>
<td>220</td>
<td>840</td>
</tr>
<tr>
<td>2015</td>
<td>230</td>
<td>240</td>
<td>250</td>
<td>260</td>
<td>980</td>
</tr>
<tr>
<td>2016</td>
<td>270</td>
<td>280</td>
<td>290</td>
<td>300</td>
<td>1140</td>
</tr>
</tbody>
</table>

### Delivery of Affordable Housing by Annual Percentage

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td>70%</td>
</tr>
<tr>
<td>2014</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
<td>180%</td>
</tr>
<tr>
<td>2015</td>
<td>70%</td>
<td>80%</td>
<td>90%</td>
<td>100%</td>
<td>340%</td>
</tr>
<tr>
<td>2016</td>
<td>110%</td>
<td>120%</td>
<td>130%</td>
<td>140%</td>
<td>510%</td>
</tr>
</tbody>
</table>

### Construction Start Dates

<table>
<thead>
<tr>
<th>Stage</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Start 2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 2</td>
<td>Start 2014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 3</td>
<td>Start 2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 4</td>
<td>Start 2016</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>