

1 INTRODUCTION

- 1.1 Tetra Tech (TT) have been appointed by Hodgetts Estates to support of their outline planning application for a proposed development of upto 100,000sqm of employment uses and 150 space overnight lorry park (including an associated 400sqm amenity block) on land to the northeast of M42 Junction 10. The application was supported by a Transport Assessment (TA) prepared by Bancroft Consulting, Version C dated November 2021.
- 1.2 This modelling strategy note follows the meeting held between Warwickshire County Council (WCC), National Highways (NH), Bancroft Consulting, Hodgetts Estates and Tetra Tech (TT) on 15th March 2022. Minutes of the meeting are attached at Appendix A.

2 AGREED SCOPE OF NETWORK

- 2.1 At the 15th March meeting, it was agreed that further detailed modelling work to test the impacts of the proposed development are required for the following four junctions;
1. M42 Junction 10 Interchange (6 arm grade separated signalised roundabout)
 2. A5 Watling Street/ Site Access junction (proposed 3 arm signalised junction)
 3. A5 Watling Street/ Danny Morson Way (4 arm signalised junction, known as Birch Coppice)
 4. A5 Watling Street/ Meridian Drive (3 arm signalised junction, known as Core 42)
- 2.2 Junctions 1 to 3 above are the same as those previously agreed during scoping with Bancroft Consulting and are included in the Bancroft TA. Junction 4 has been included within the scope owing to its proximity to Junction 3.

3 CURRENT MODELS

- 3.1 As previously agreed with NH and WCC, the WCC Atherstone A5 WCC PARAMICS model operated by Vectos will be used to take account of the various network and development

changes in the local area. This model was used for the NWBC Local Plan Transport Assessment which has a future assessment year of 2031. The WCC Atherstone A5 PARAMICS model includes the junctions listed in section 2 above. NH and WCC advised that the strategic model should be used to export the traffic flow data for further assessments using detailed traffic signals modelling software such as LINSIG or TRANSYT.

- 3.2 The Bancroft TA has assessed junctions 1 to 3 in the list at section 2 using LINSIG software, however the junctions have been tested in isolation which therefore does not model queuing interactions between junctions, platooning of traffic flows, nor does it model blocking back and lane starvation effects effectively. Of particular note is the level of queuing shown in the current LINSIG models on the A5 and M42 northbound off-slip approaches which contradict the queuing reported from the Paramics model.

4 VALIDATED 2022 BASELINE MODEL

- 4.1 TT will model the network of 4 junctions using the TRANSYT 16 software program which models the interaction of queuing, lane starvation, and blocking back effects. The software can also model the effects of uncoordinated traffic signals and intermittent stages. In addition, a simulation mode is also available where individual vehicles are simulated so the queuing effects and lane starvation can be readily identified.
- 4.2 A 2022 validated baseline model of the existing operational performance of junctions 1, 3 and 4 will be prepared and will provide a sound basis for assessing the performance of the network in future years both with and without the proposed development.
- 4.3 Full manual classified counts of the three junctions are taking place on Wednesday 23rd March 2022 between the hours 07:00 to 09:30 and 16:00 to 18:30.
- 4.4 The signal green timings at each stop line will be recorded so that the average green splits, cycle times and offsets can be obtained and then used in the TRANSYT model.
- 4.5 In addition, cameras will be placed to record vehicles passing over the stop lines and record the saturated queues to enable accurate calculation of the saturation flows in accordance with TRL's Road Note 34. On each approach at least two lanes will be measured where applicable,

to establish the nearside and non-nearside lane saturation flow. The observed saturation flows will then be used for the adjacent lanes that were not measured. If the lanes are not fully saturated, TRL's RR67 prediction of saturation flow using geometrical parameters will be used.

- 4.6 Maximum queue lengths on each approach will also be recorded in 5-minute intervals. The observed queues will provide a useful tool to check the queuing results in the TRANSYT model.
- 4.7 A model validation note will be issued to WCC and NH for approval prior to running the opening and future year assessments discussed in more details in Chapters 5 and 6.

5 OPENING & FUTURE YEAR ASSESSMENTS – REFERENCE CASE

- 5.1 As discussed in the meeting an opening assessment year and future design year assessment is required for the reference case, i.e. without the Local Plan generated traffic and associated highway infrastructure. An opening assessment year of 2026 and future assessment year of 2031 has previously been agreed and will be the years used in the forthcoming TRANSYT modelling.
- 5.2 As agreed, the traffic flows used within the TRANSYT model will be taken from the WCC Atherstone A5 PARAMICS model, the information for this model has been separately circulated to NH and WCC.
- 5.3 The following scenarios will be modelled in the AM peak (08:00 to 09:00) and PM peak (17:00 to 18:00) periods;
- a) 2026 Reference Case - No Development
 - b) 2031 Reference Case - No Development
- 5.4 The traffic flows were extracted from the demand flows from the WCC Atherstone A5 PARAMICS model and for ease of reference Bancroft Consulting Figure 10 shows the AM peak flows for scenario a) and Figure 11 shows the PM peak flows also for scenario a) – both attached in Appendix C. Bancroft Consulting Figure 14 shows the AM peak flows for scenario b) and Figure 15 shows the PM peak flows also for scenario b) – both attached in Appendix C. It should be noted that the traffic flows for the Core 42 junction will be obtained from Vectos.

- 5.5 Each figure shows the total vehicles and HGV vehicles for each turning movement. To convert the flows into Passenger Car Units (PCU) a factor of 2.0 will be applied to the HGV flow value.
- 5.6 The proposed site access junction as shown at Bancroft Consulting Drawing F19123/07 Rev A attached at Appendix B will be coded into the TRANSYT model to assess the following scenarios;
- c) 2026 Reference Case – With Development
 - d) 2031 Reference Case – With Development
- 5.7 Bancroft Consulting Figure 12 shows the AM peak flows for scenario c) and Figure 13 shows the PM peak flows also for scenario c) – both attached in Appendix C. Bancroft Consulting Figure 14 shows the AM peak flows for scenario d) and Figure 15 shows the PM peak flows also for scenario d) – both attached in Appendix C. It should be noted that the traffic flows for the Core 42 junction will be obtained from Vectos.
- 5.8 Following the modelling work, if mitigation is required a scheme will be developed and the model adjusted to incorporate the necessary improvements.

6 FUTURE YEAR ASSESSMENT – LOCAL PLAN CASE

- 6.1 As discussed in the meeting, and as previously agreed during scoping discussions, a future design year assessment is required for the Local Plan case, which includes all the local plan allocations and associated highway infrastructure. A future assessment year of 2031 has previously been agreed with NH and WCC and will be the year used in the forthcoming TRANSYT modelling.
- 6.2 The Local Plan highways schemes and PARAMICS model includes a mitigation scheme at Junction 10 shown at Appendix D. It was agreed at the March 2022 meeting with NH and WCC that when assessing the network including the traffic associated with the Local Plan allocations, the scheme at Junction 10 must be included. TT require a CAD drawing of the proposed scheme to take accurate measurements to ensure the TRANSYT model will be updated to accurately reflect the potential highway works.

6.3 The following scenario will be modelled in the AM peak (08:00 to 09:00) and PM peak (17:00 to 18:00) periods;

e) 2031 Local Plan Case - No Development

6.4 The traffic flows were extracted from the demand flows from the strategic PARAMICS model and for ease of reference Bancroft Consulting Figure 18 shows the AM peak flows for scenario e) and Figure 19 shows the PM peak flows also for scenario e) – both attached in Appendix C. It should be noted that the traffic flows for the Core 42 junction will be obtained from Vectos.

6.5 The Local Plan Junction 10 improvement scheme has a segregated left turn slip road arrangement on the A42 southbound off-slip. This arrangement may not be suitable if the proposed site access junction is implemented, therefore an amended Local Plan proposal will be drawn up to remove the segregated left turn slip arrangement to incorporate the site access junction. This will then be coded into the TRANSYT model.

6.6 The following scenario will be modelled in the AM peak (08:00 to 09:00) and PM peak (17:00 to 18:00) periods;

f) 2031 Local Plan Case - With Development

6.7 The traffic flows were extracted from the demand flows from the strategic PARAMICS model and for ease of reference Bancroft Consulting Figure 20 shows the AM peak flows for scenario f) and Figure 21 shows the PM peak flows also for scenario f) – both attached in Appendix C. It should be noted that the traffic flows for the Core 42 junction will be obtained from Vectos.

7 TECHNICAL NOTE

7.1 A Technical Note will be produced detailing the modelling results for all scenarios discussed above. The note will be issued to WCC and NH for review.

Modelling Strategy Note
Land Northeast of M42 Junction 10



Client: Hodgetts Estates Limited

Date: 18 March 2022

APPENDIX A

Minutes Of Meeting



Job Number:	784-B033920
Title:	Land North East of M42 Jn 10
Name of Meeting:	J10 M42
Meeting Held At:	Microsoft Teams
Date and Time:	15 th March 2022 – 11:00 to 12:30
Minutes Taken By:	James Warrington and Gareth Wakenshaw
Attendees:	<ul style="list-style-type: none"> • Ben Simm – National Highways Development Management Lead • Moises Muguera – WCC Highways • Alan Law – WCC Highways • Tony Burrows – WCC Highways • David Hodgetts – Hodgetts Estates • Nick Bunn – Tetra Tech • Graham Wakenshaw – Tetra Tech • Chris Bancroft – Bancroft Consulting • Doug Hann – WSP • James Warrington – WSP
Apologies:	
Distribution:	All Attendees
Date of Next Meeting:	TBC
Date of Issue:	16 th March 2022
File Reference:	\\ds-dc-vm-101\Data\Projects\784-B033920 Land NE of M42 Jn10\40 Communications\42 Meetings

Action	
1	<p>1. Transport Modelling</p> <p>1.1. NB noted that the scoping response had requested that the WCC Paramics modelling be used and that the submitted TA had used LINSIG, that the model results min terms of queues/ delays for in the TA were markedly different to those from Paramics, that the WCC Paramics model had been agreed as part of the local plan process with NH. NB sought clarification on whether the TA could be based on the Paramics assessment.</p>

	<p>1.2. BS advised that Paramics should be used to assess the strategic view/ impacts and then export traffic data from those models (modelled and demand flows) to be used in the detailed capacity modelling software (LINSIG/ TRANSYT) as NH signals team would need to check the proposed signal timings.</p> <p>1.3. AL concurred – this would follow WCC modelling protocol (available online) and is the approach that all assessments take in Warwickshire. AL added that the traffic signals/design services team prefer LINSIG modelling.</p> <p>1.4. NB noted LINSIG has inadequacies which does not model queuing interactions between junctions (particularly on the A5 and M42 (S)), blocking back and lane starvation effects, and that TRANSYT is a much more sophisticated model which can model all of the above and produce signal timings. BS would accept TRANSYT models as part of the scheme process.</p> <p>1.5. AL advised that because WCC involvement was limited to the Trinity Way approach to Jn10 and that the rest of the network was SRN they would also be OK with TRANSYT.</p> <p>1.6. BS said that NH are not clear where the LINSIG model reference case data in the TA comes from and, at this point, the LINSIG modelling should be “<i>taken with a pinch of salt</i>” as NH need to see the Paramics modelling outputs in the first instance.</p> <p>1.7. NB advised that the flows in the LINSIG had come from the WCC Paramics model operated by Vectos.</p> <p>1.8. BS added that all parties need to develop and agree the modelling strategy/methodology after the meeting. ACTION – TT to produce Modelling Strategy / Methodology Note</p> <p>1.9. BS stated that the Modelling/ Strategy Methodology will be shared with Staffordshire County Council (SCC) as their roads (A5(W) in Tamworth) may be affected and BS is keen for them to be party to discussions. BS advised that Patrick Thomas who is the lead contact at NH for schemes west of J10 is part of BS’s team. ACTION – BS to pick up with SCC at upcoming meetings.</p> <p>1.10. BS advised that the future year is either 10 years from date of application or the end of Local Plan period (whichever is greater), and that an Opening Year assessment would also be needed.</p> <p>1.11. NB confirmed that as previously agreed the future year was 2031 as per the original TA given the application was submitted in 2021 and also 2031 was the assessment year used in the transport modelling for the Local Plan. Paramics modelling for 2031</p>
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	<p>Reference Case and 2031 Local Plan with and without development had been undertaken.</p> <p>1.12. NB advised that TT can take the flows from the Paramics models and input them to the LINSIG/ TRANSYT model. Identify where the mitigation is required and develop a scheme (drawing) and then assess the benefit of the scheme in the LINSIG/ TRANSYT model.</p> <p>1.13. BS and AL confirmed that there may not be a need to extract the signal timings and improvement scheme and re-run through the Paramics model. The signals team may accept the LINSIG/ TRANSYT models satisfactorily assesses the mitigation scheme.</p>
2	<p>2. J10 Improvement Scheme</p> <p>2.1. NB advised that the Paramics model for the Local Plan scheme includes an improvement at J10. NB shared the J10 improvement plan that had been provided by Vectos which has 4 lanes on the southern overbridge and a segregated left turn slip from the M42 (N) approach to the A5(E). NB also made reference to the Kier scheme (3 lanes on southern overbridge) provided with the McDonald's application adjacent to Tamworth MSA.</p> <p>2.2. BS clarified that the position remains that <i>"there is no improvement scheme identified at present for J10"</i> – BS appreciates there has been some confusion caused, particularly from the McDonald's scheme and Kier improvement scheme being published in the public domain.</p> <p>2.3. NB sought clarification as to whether: a) there is not a scheme and TT should look at an improvement scheme; or b) is there a pipeline scheme that could be used.</p> <p>2.4. BS advised that the pipeline scheme is too far-off and is a non-starter for assessing this application. BS is trying to clarify what is going on from various departments, but the position is to review the junction as it is now and assess what TT's mitigation strategy is.</p> <p>2.5. AL notes that as part of the modelling there is a requirement to undertake a Local Plan scenario assessment. From WCC's perspective, they require a Local Plan scenario and therefore the modelling must be run based on all the infrastructure included in the Infrastructure Delivery Plan, that is, the Local Plan J10 scheme - 4 lanes on the southern overbridge and a segregated left turn slip).</p> <p>2.6. BS agreed that there will need to be a reference case without the Local Plan and a Local Plan case including all Local Plan traffic and infrastructure schemes (including</p>

	<p>the Jn10 scheme) both cases to be assessed with/ without the proposed development.</p> <p>2.7. NB identified that the Vectos Paramics model currently has all these scenarios and the flows from the model can be presented and shared in the proposed methodology report. ACTION TT to develop and circulate proposed methodology on this basis.</p> <p>2.8. NB further noted that the proposed A5/Site access junction may have an effect on the segregated left turn slip in the Local Plan Jn10 scheme and TT would assess suitable alternative arrangements. ACTION TT</p>
3	<p>3. Site Access Junction</p> <p>3.1. BS advised that modelling and mitigation requirements needs resolving in the first instance as he considers that will have implications on proposed access junction. Therefore, BS has held off requesting WCHAR assessments and RSA's up to this point.</p> <p>3.2. BS added that NH are concerned by introducing a new signalised junction along the A5 as it is an important an exceptionally busy route.</p> <p>3.3. NB sought clarification whether the BS's view on the proposed access was of the principle of the access or the management of the implications.</p> <p>3.4. BS advised that having regard to the Circular (that trunk roads are not to be treated like motorways) that the issue was not of principle, but of managing the impacts. Modelling remains the key next step to ultimately understanding access requirements.</p> <p>3.5. AL added that a key concern for WCC would be that this development / access requirements does not prejudice potential future improvements for J10 and that a signalised junction near to J10 could present an issue. WCC have an indication of junction improvements from the IDP that would mitigate the Local Plan flows.</p> <p>3.6. AL advised that when HS2 proposals were being considered, some of the land HE/TT are looking at was included as part of potential improvements works (however not preferred options).</p> <p>3.7. NB Noted that Local Plan Jn10 scheme may need amendment to accommodate the access junction. He also noted that there were no firm proposals for the upgrade to Jn10 and that development shouldn't be prevented for "potential" future schemes.</p> <p>3.8. DWH pointed out that HE owns the whole frontage north of the A5 between Jn10 and the edge of Dordon (as well as land south of the A5 in this location) and so there is</p>

	<p>plenty of land available that could be utilised as part of future potential mitigation package of works.</p> <p>3.9. BS concluded that NH would much rather we reached an agreement on highways and mitigation requirements to avoid an appeal scenario.</p> <p>3.10. NB identified that TRANSYT modelling will model the queuing back effects from the site access junction to J10 and so the impact of the new junction can be assessed to a high level of certainty.</p>
4	<p>4. Other Points</p> <p>4.1. NB mentioned there is currently a 50mph zone in the vicinity of Birch Coppice and Core 42 accessed and queried whether there is potential to extend the speed limit to Jn10? BS not aware of any such discussion but will check with colleagues. ACTION BS</p> <p>4.2. BS advised that if a further meeting is required to give him as much notice as possible.</p>
5	<p>5. Key Actions</p> <ul style="list-style-type: none"> • TT/ WSP to circulate meeting notes • BS to raise the application / proposals with Staffordshire County Council at upcoming meeting. • TT to submit a modelling Methodology Strategy Note. • BS to check with colleagues the possibility of speed reduction on A5.

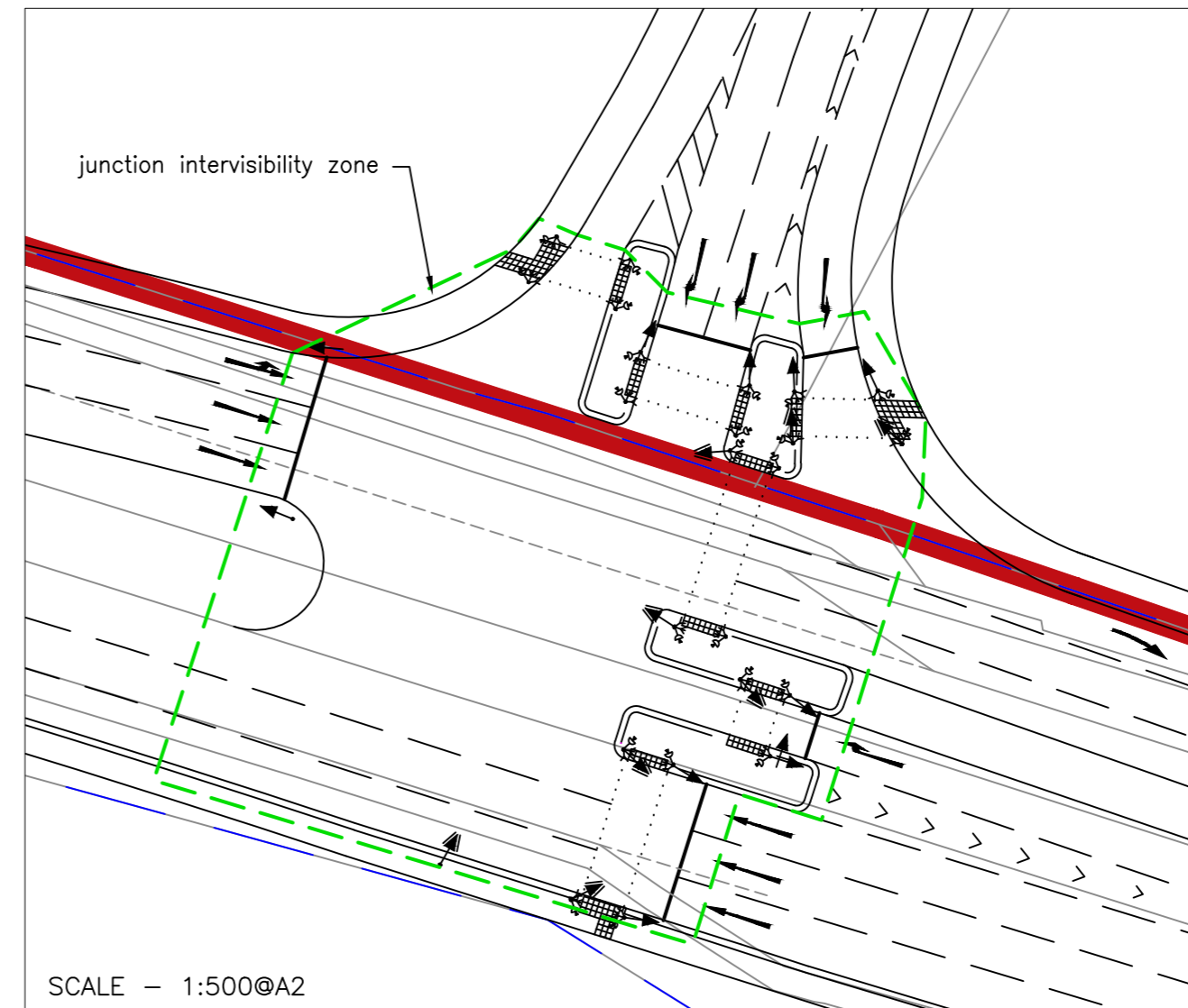
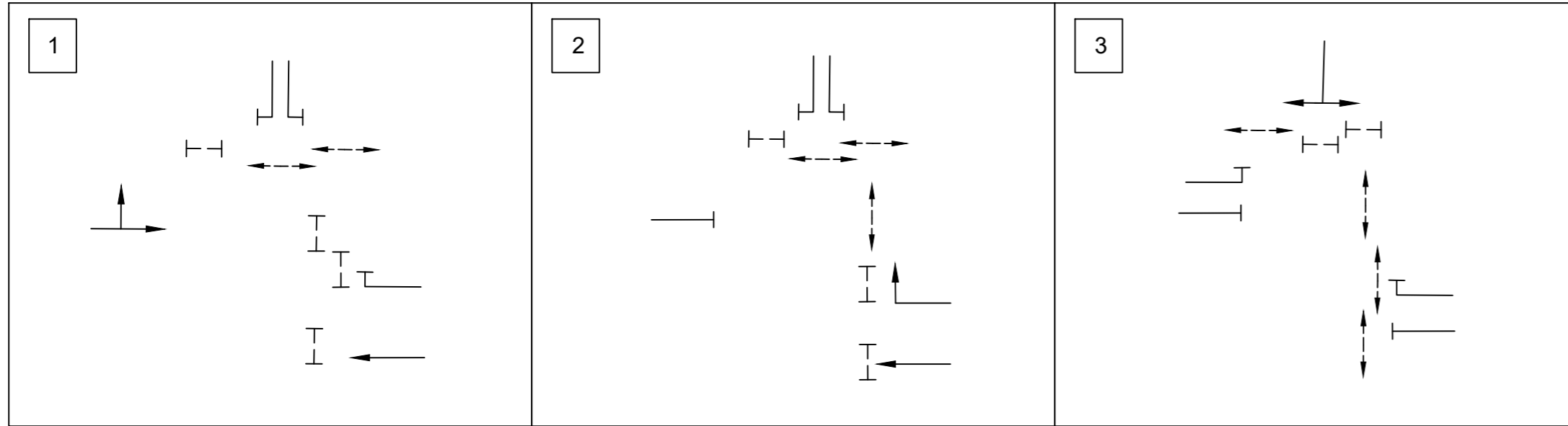
Modelling Strategy Note
Land Northeast of M42 Junction 10



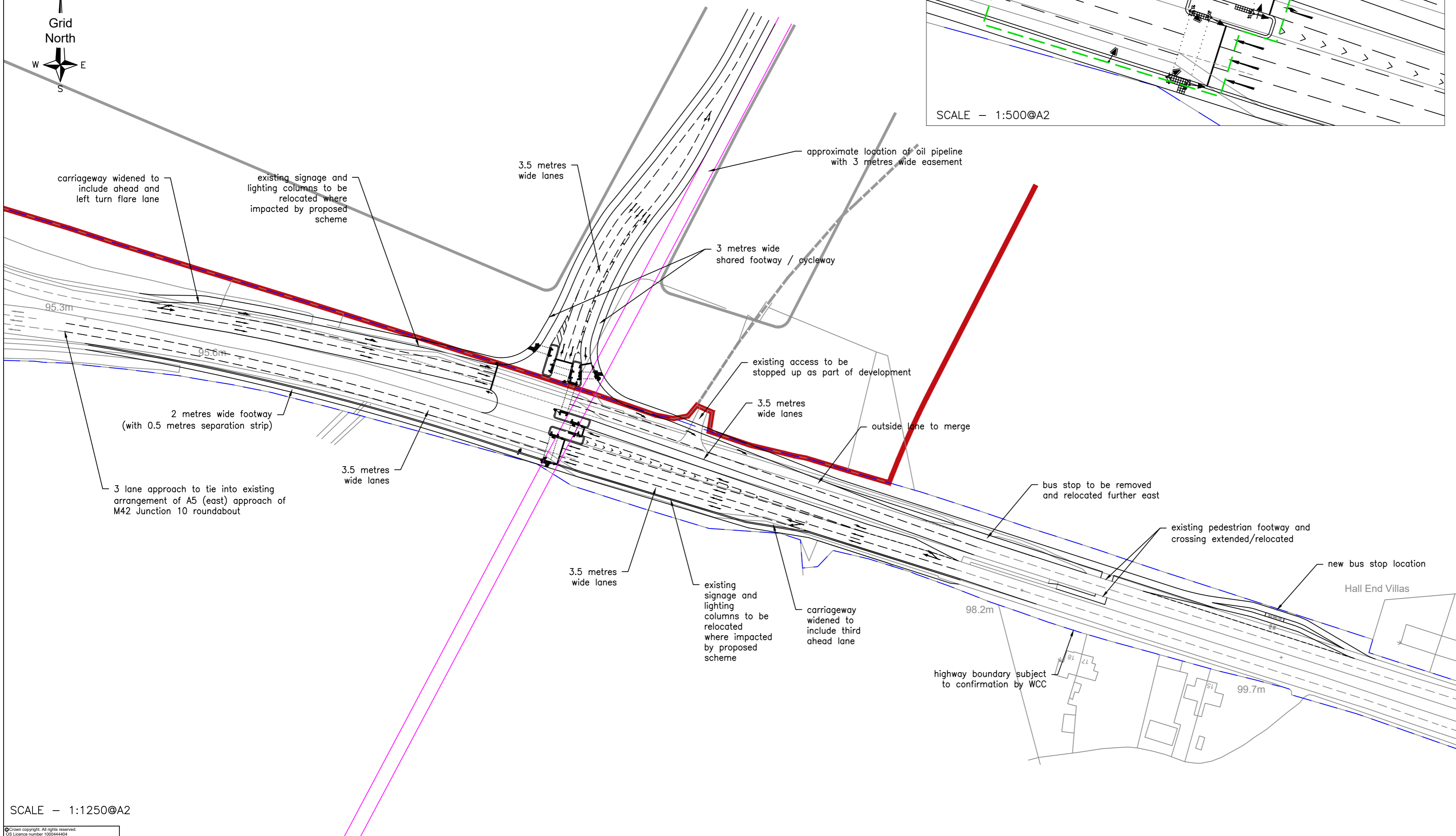
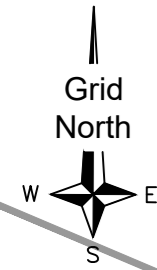
Client: Hodgetts Estates Limited

Date: 18 March 2022

APPENDIX B



- NOTES:**
- = above ground vehicle detector
 - ⊖ = two aspect nearside pedestrian signals with push button
 - ⊖ = kerbside detector
 - ⊖ = on-crossing detector
 - ➔ = three aspect signal with primary visor
 - ➔ = three aspect signal with secondary visor
 - ➔ = primary signal with filter arrow



SCALE - 1:1250@A2

REV.	DATE	DESCRIPTION	BY	CHKD
A	28.04.21	UPDATED PEDESTRIAN ISLAND DIMENSIONS	WM	CJB

CLIENT
HODGETTS ESTATES

CONTRACT
PROPOSED EMPLOYMENT LAND
NORTHEAST OF J10 M42,
NORTH WARWICKSHIRE

TITLE
PROPOSED SITE ACCESS LAYOUT
(WITH EASEMENT SHOWN)



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7 Gregory Boulevard
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NG7 6LB

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DRAWN BY	
NAME (PRINT)	DATE
WM	16.03.21
CHECKED BY	
NAME (PRINT)	DATE
CJB	16.03.21
SCALE AS SHOWN	STATUS PRELIMINARY
DRG. NO. F19123/07	REV. A

Modelling Strategy Note
Land Northeast of M42 Junction 10



Client: Hodgetts Estates Limited

Date: 18 March 2022

APPENDIX C

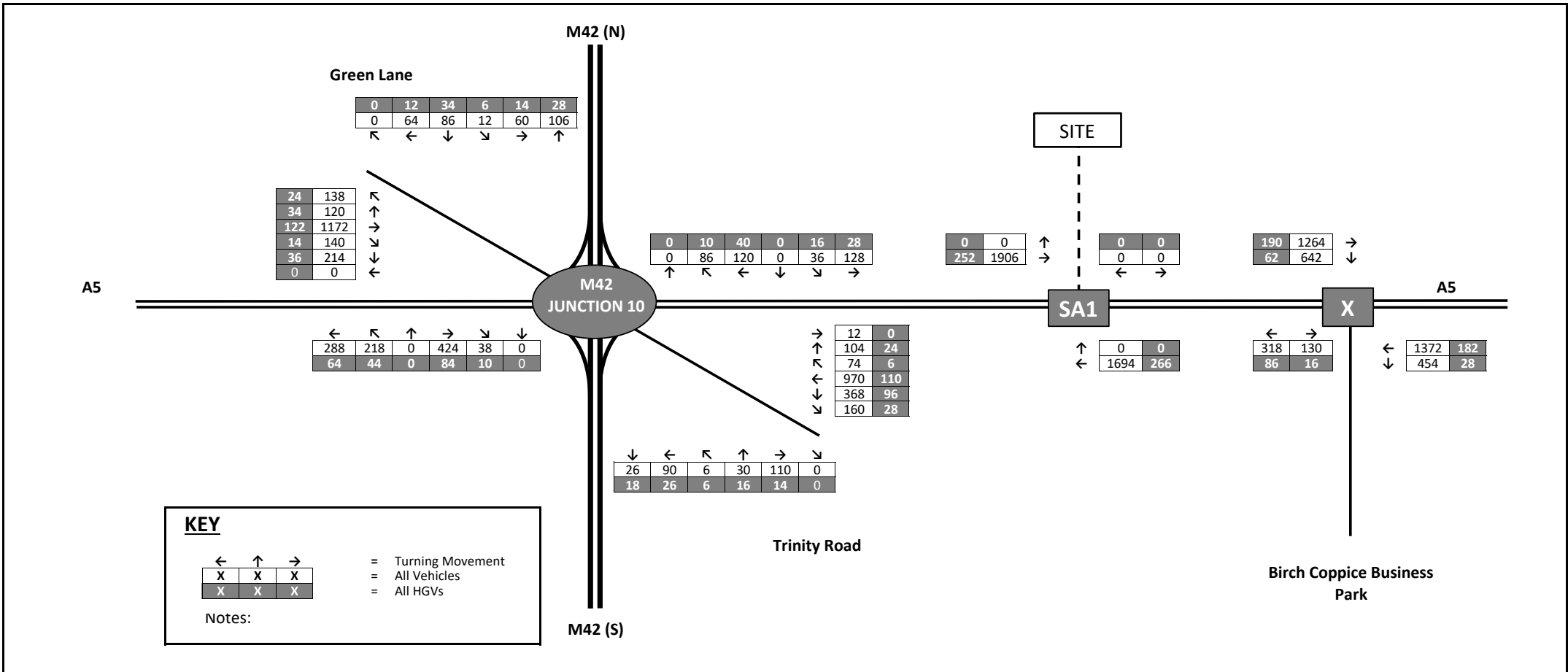


FIGURE 10
 2026 REFERENCE - AM PEAK (0800 TO 0900) - DEMAND FLOWS
 LAND NORTH OF THE A5, DORDON

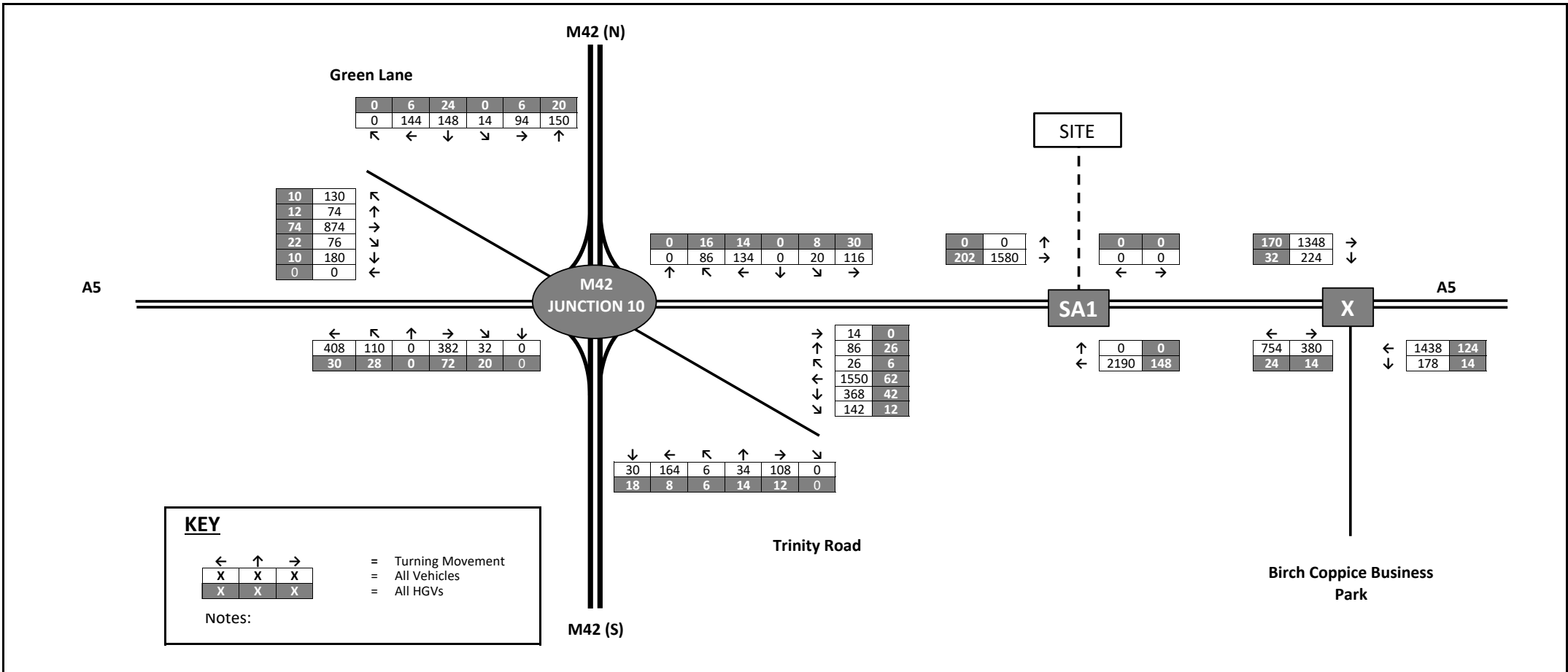


FIGURE 11
 2026 REFERENCE - PM PEAK (1700 TO 1800) - DEMAND FLOWS
 LAND NORTH OF THE A5, DORDON

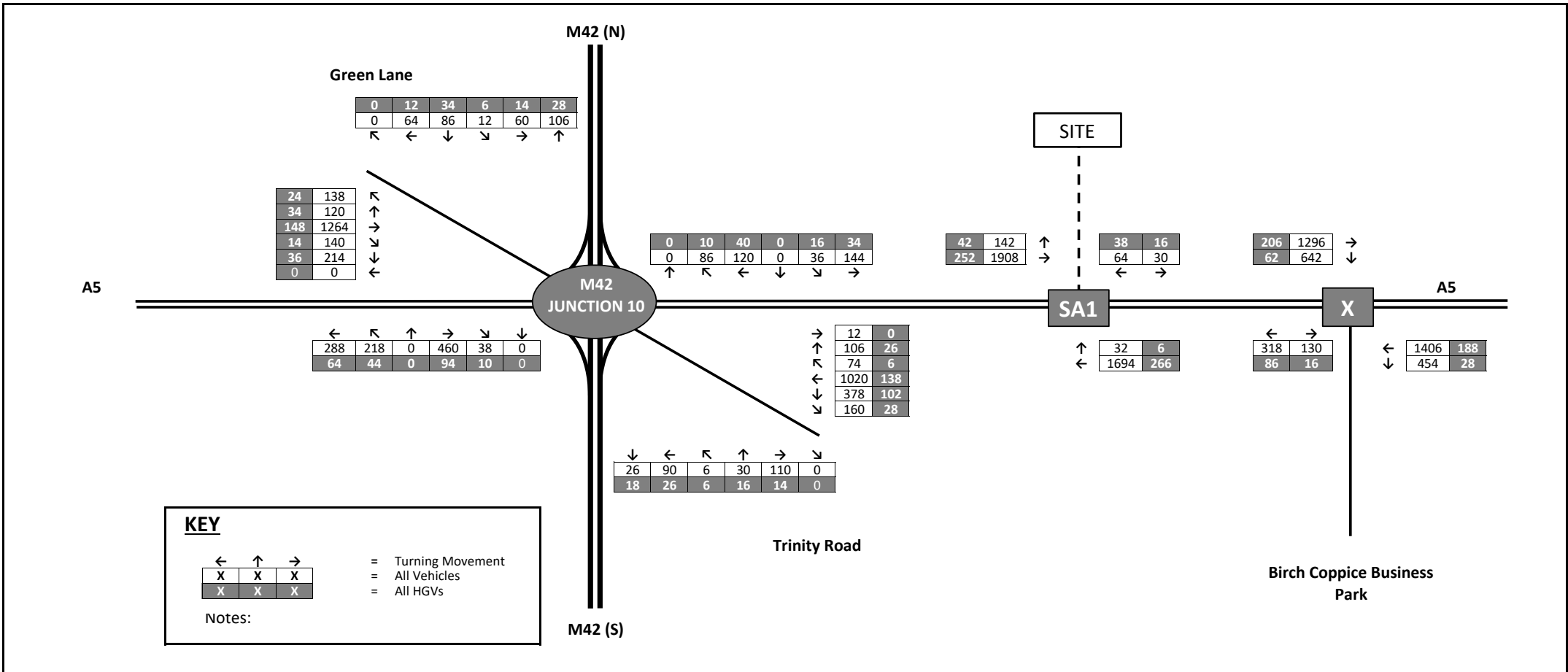


FIGURE 12
2026 REFERENCE + DEVELOPMENT - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

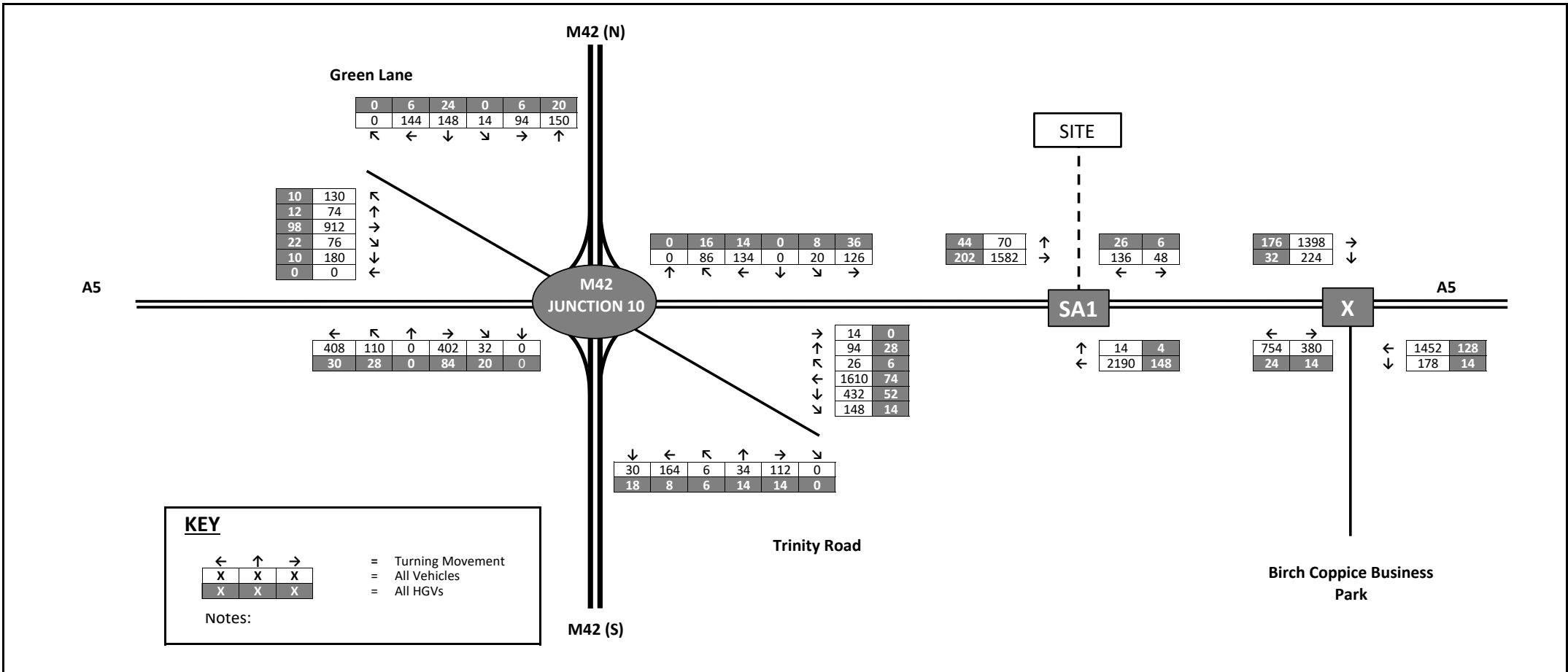


FIGURE 13
 2026 REFERENCE + DEVELOPMENT - PM PEAK (1700 TO 1800) - DEMAND FLOWS
 LAND NORTH OF THE A5, DORDON

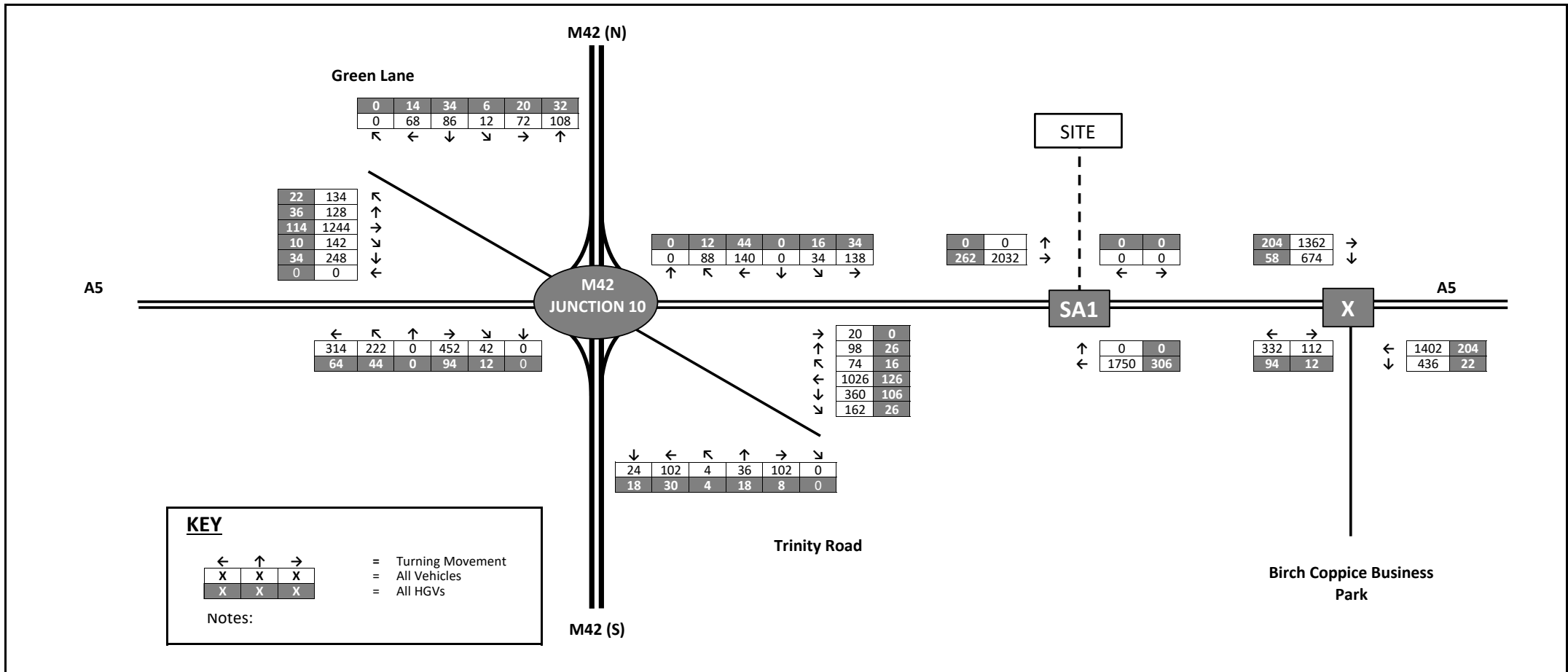


FIGURE 14
 2031 REFERENCE - AM PEAK (0800 TO 0900) - DEMAND FLOWS
 LAND NORTH OF THE A5, DORDON

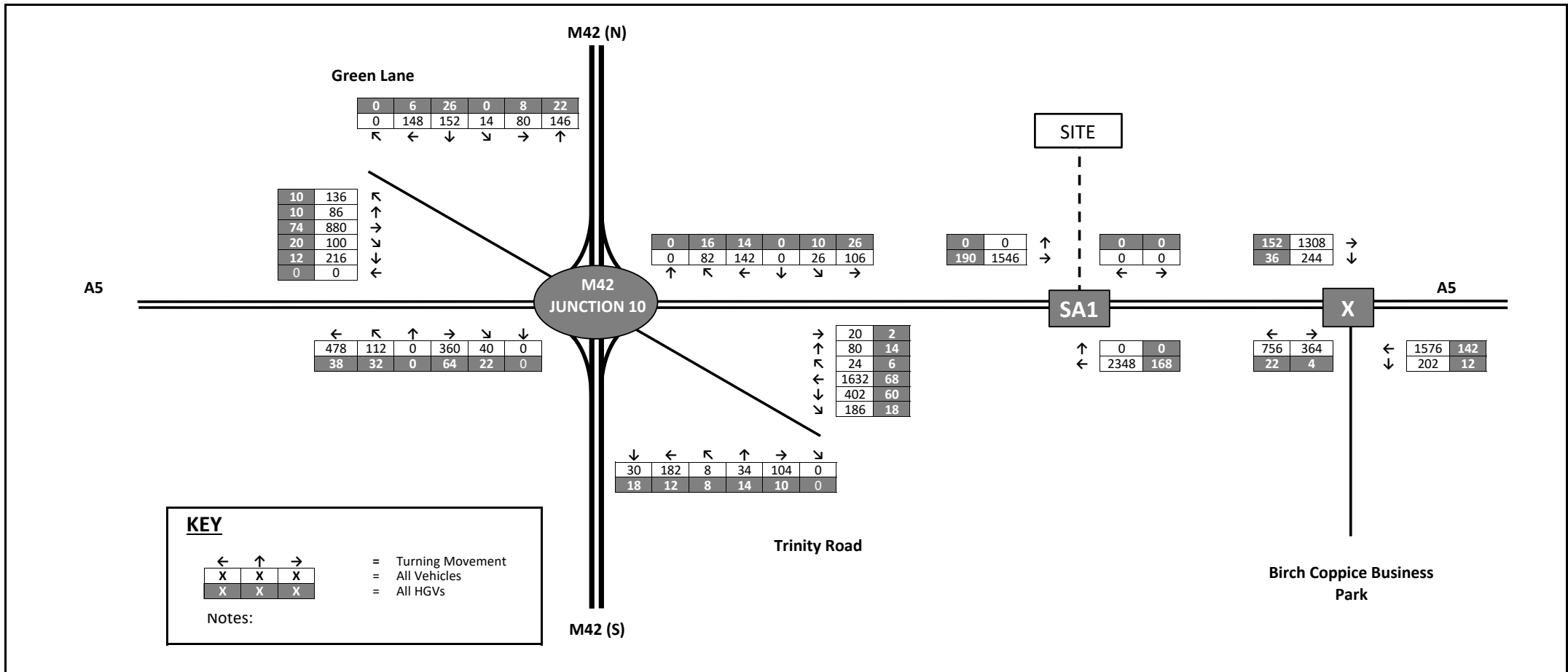
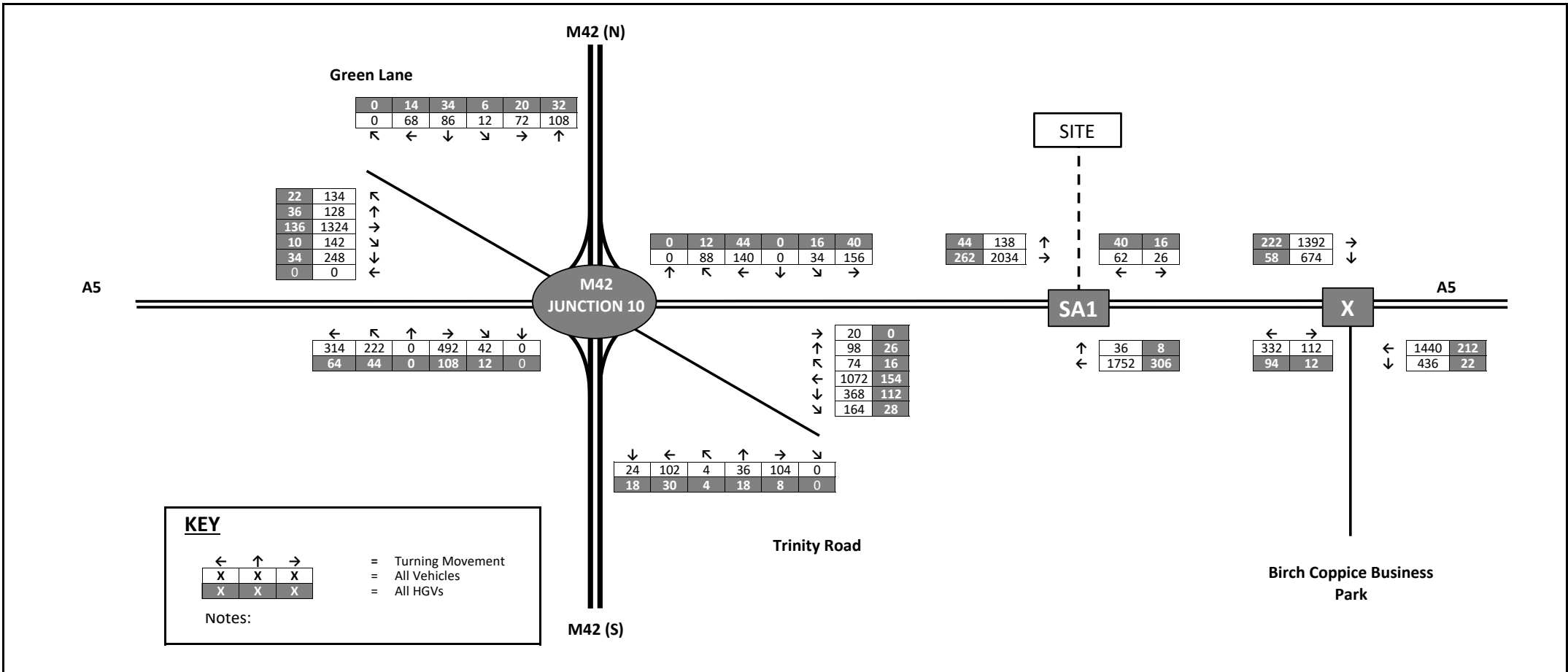
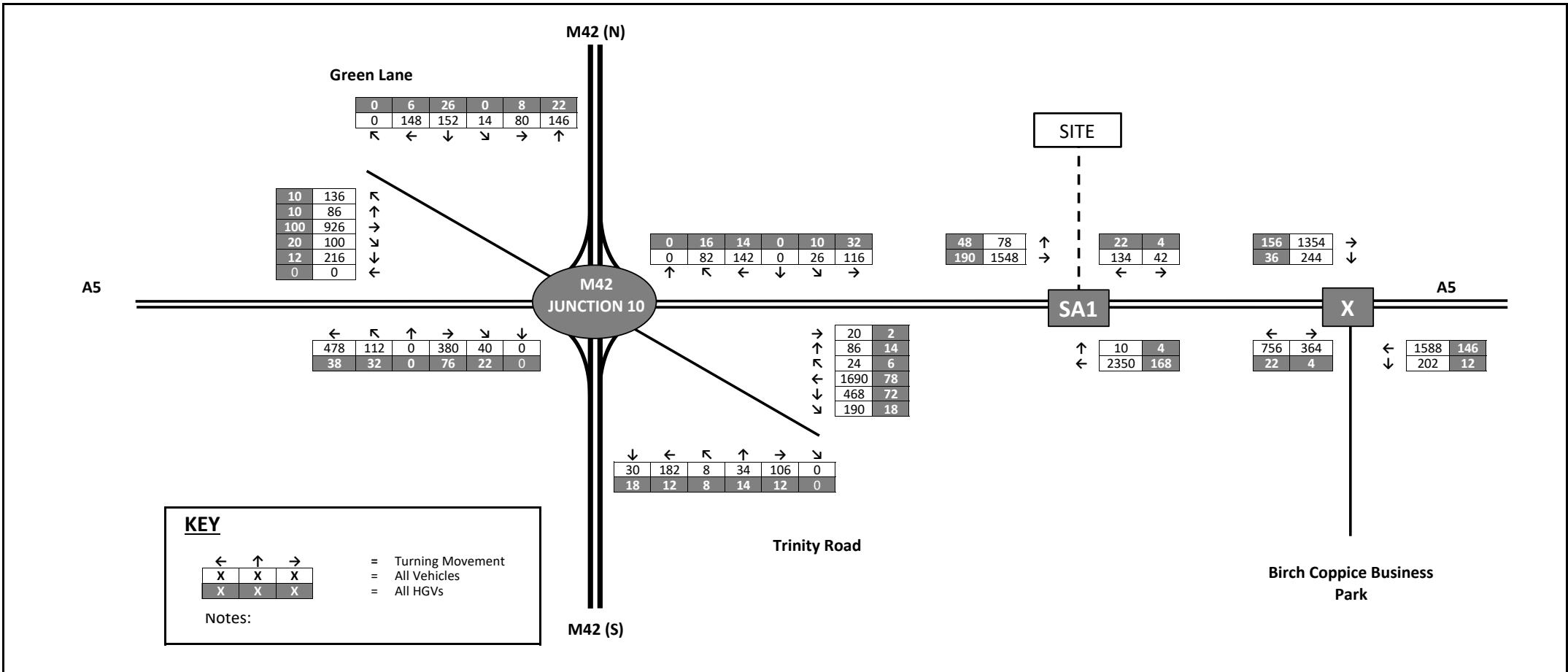


FIGURE 15
 2031 REFERENCE - PM PEAK (1700 TO 1800) - DEMAND FLOWS
 LAND NORTH OF THE A5, DORDON





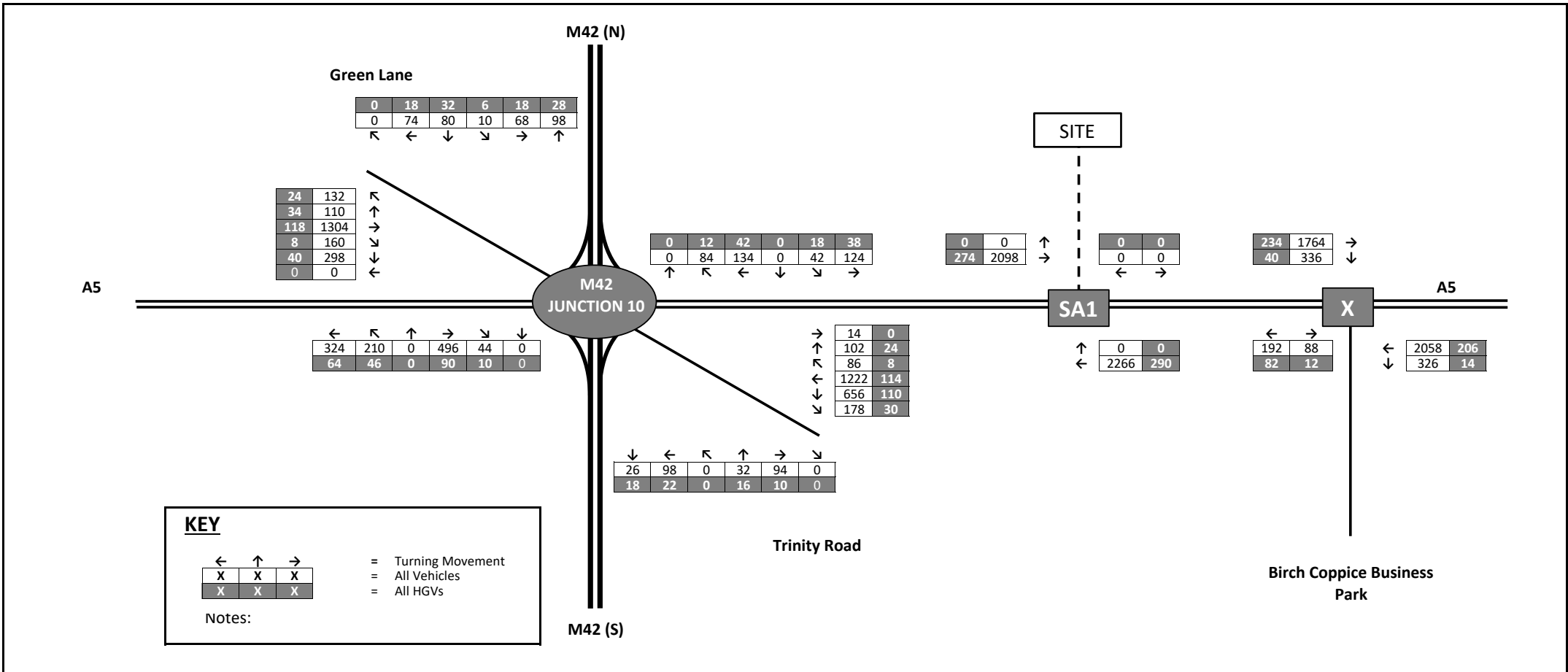


FIGURE 18
 2031 LOCAL PLAN - AM PEAK (0800 TO 0900) - DEMAND FLOWS
 LAND NORTH OF THE A5, DORDON

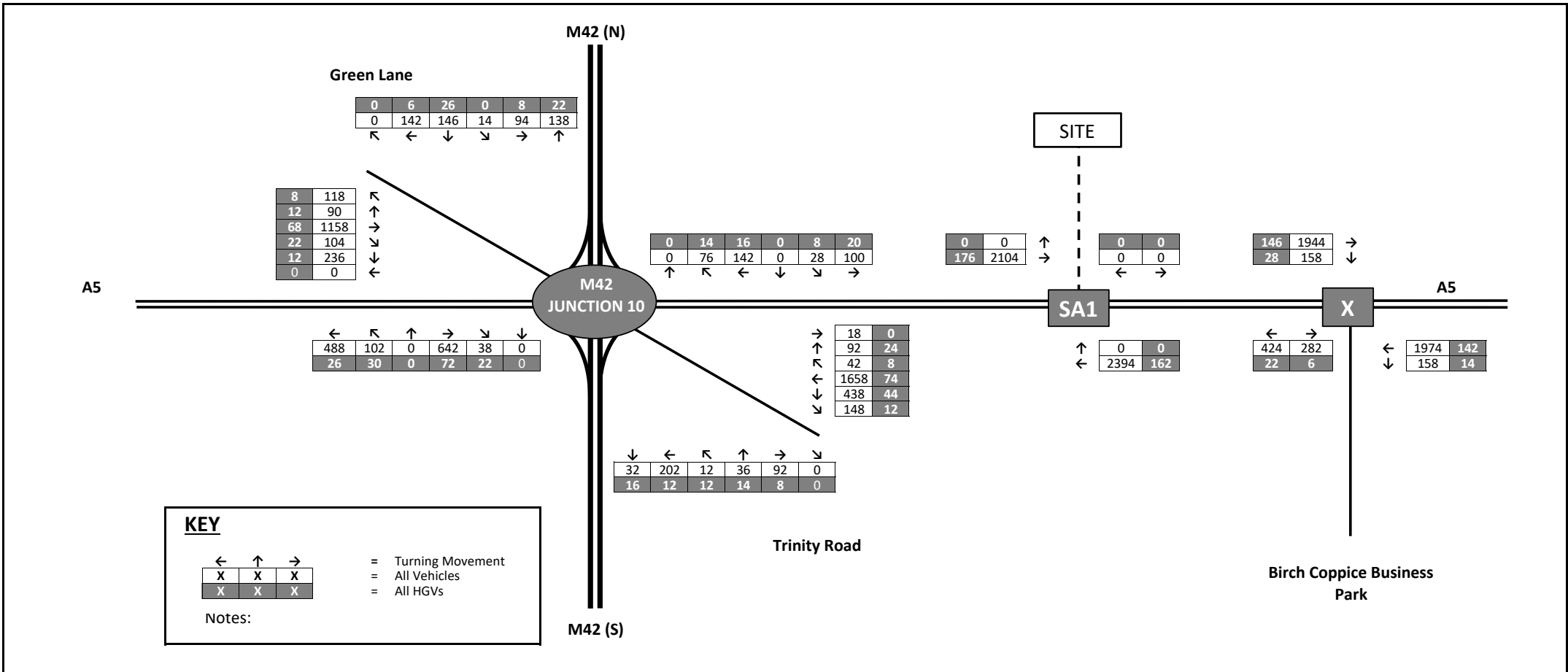


FIGURE 19
 2031 LOCAL PLAN - PM PEAK (1700 TO 1800) - DEMAND FLOWS
 LAND NORTH OF THE A5, DORDON

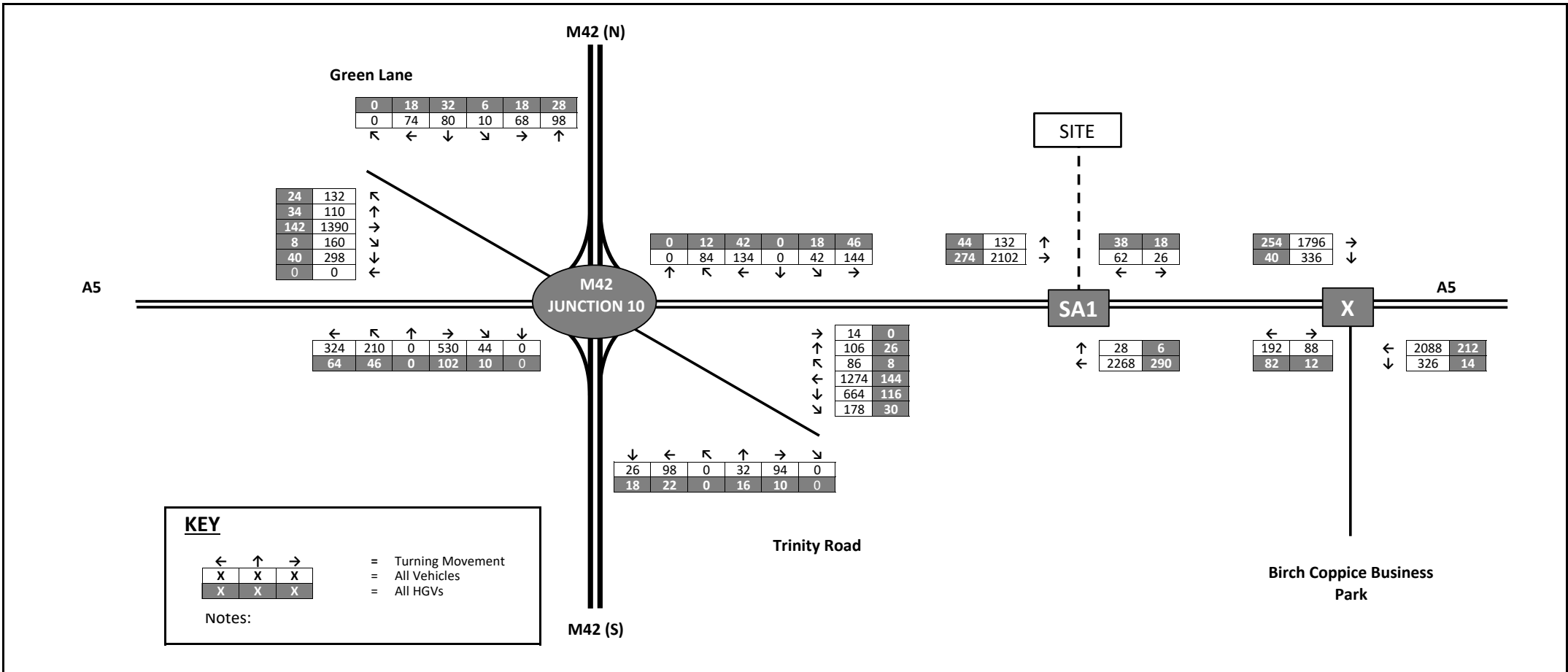


FIGURE 20
 2031 LOCAL PLAN + DEVELOPMENT - AM PEAK (0800 TO 0900) - DEMAND FLOWS
 LAND NORTH OF THE A5, DORDON

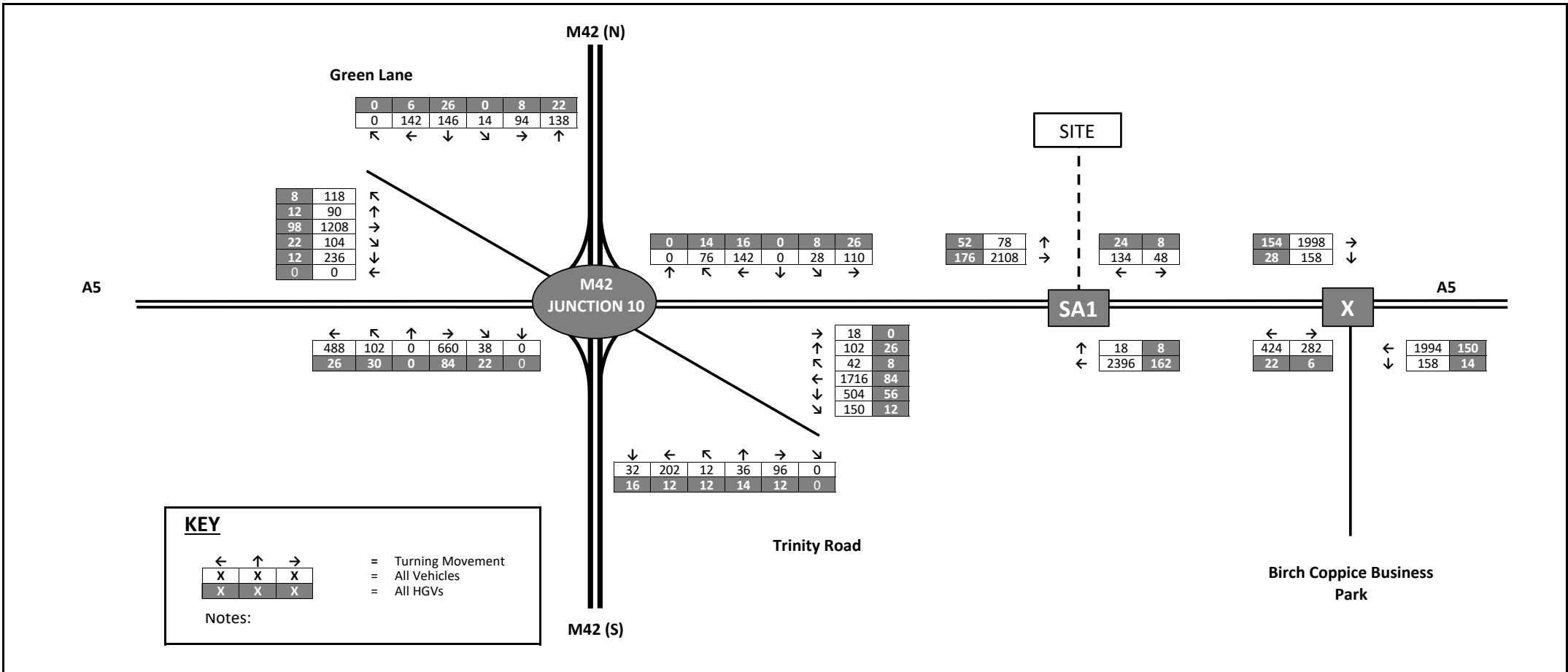


FIGURE 21
2031 LOCAL PLAN + DEVELOPMENT - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

Modelling Strategy Note
Land Northeast of M42 Junction 10



Client: Hodgetts Estates Limited

Date: 18 March 2022

APPENDIX D

Image 1 – M42 Junction 10, Local Plan Improvement Scheme

