

Technical Note

Project No: ITB14160
Project Title: Land South of Barnham Station
Title: Addendum Transport Response
Ref: MG/DS/ITB14160-007
Date: 16 February 2021

SECTION 1 Introduction

- 1.1.1 Gleeson Strategic Land has submitted an outline planning application (ref: BN/142/20) to Arun District Council (ADC) for the development of up to 200 new homes, with all matters reserved other than the principal means of access. Access to the site is to be taken from Marshall Close.
- 1.1.2 ADC has consulted Highways England (HE) for comment on matters related to the operation of the Strategic Road Network (SRN), and West Sussex County Council on matters related to the operation of the local highway network. No objection has been raised by HE, subject to a financial contribution of £515.58 per dwelling towards the mitigation of junction on the A27. More information has been sought by WSCC. Copies of the responses are provided at **Appendix A** and **Appendix B**, respectively.
- 1.1.3 The additional information sought by WSCC can be summarised as follows:
- Stage 1 Road Safety Audit and Designer's Response;
 - Review of pedestrian infrastructure to link the site to Yapton Road;
 - Revised trip generation, distribution and assignment;
 - Agreement of junction modelling; and
 - Revised Travel Plan.
- 1.1.4 Following receipt of the consultation response, the scope of the additional assessment of traffic impact has been discussed with WSCC. It has been agreed that further consideration will be given to the impacts of the development at the following locations:
- B2233/North End Road mini-roundabout junction;
 - B2233/Bilsham Road mini-roundabout junction;
 - B2233/A29 'War Memorial' junction; and

- The B2233/A29 junction forming part of the proposed A29 realignment application, which is currently being considered through planning application WSCC/052/20.

1.1.5 The remainder of this Technical Note (TN) is structured as follows:

- Section 2 – Site Access and Pedestrian Connection;
- Section 3 – Travel Plan;
- Section 4 – Traffic Impact; and
- Section 5 – Summary and Conclusions.

SECTION 2 Site Access and Pedestrian Connection

2.1 Proposed Site Access Arrangements

- 2.1.1 Access to the site is proposed via an extension to Marshall Close, as shown in drawing ITB14160-GA-017. A carriageway width of 5.5m is proposed with a 2m footway on the south / south east side (connecting with the existing footway on Marshall Close) and a 2.0m verge on the north west / north side.
- 2.1.2 An illustrative drawing showing the site access arrangements within the site is shown in drawing ITB14160-GA-005. This shows the continuation of a 5.5m carriageway (with minor widening on any bends) and west of the river crossing 2.0m footways on both sides of the access road.

2.2 Road Safety Audit

- 2.2.1 In accordance with the WSCC 'Road Safety Audit Policy', a Stage 1 Road Safety Audit (RSA) has been undertaken by an independent auditor. The RSA and Designer Response (document ref: RSA-20-126-3) are provided at **Appendix C**. In addition, as required by WSCC, a standalone document (ref: ITB14160-008) has been prepared in accordance with Appendix F of the GG119 document summarising the Auditor recommendations and Designer response, to enable the incorporation of comments from WSCC, as the Overseeing Organisation, and the detailing of agreed actions – see **Appendix D**.
- 2.2.2 To address matters raised as part of the RSA, a number of minor modifications have been made to the proposed access arrangement and associated improvements on Marshall Close. The alterations are detailed in full within the RSA and accompanying GG119 Appendix F document, and are presented in **Drawing ITB14160-GA-010 Rev B**. In summary, the following minor modifications have been made to the design:
- The proposed car parking lay-bys have been narrowed in width from 3.0m to 2.0m;
 - The Marshall Road carriageway is to be widened to the north of the east-west alignment, and to the east of the south-west alignment on the approach to the site;
 - The priority junction on-carriageway demarcation on the northern arm of the Marshall Close junction has been set back to correspond with the new edge of the carriageway; and
 - A small section of footway introduced on the southern section of Marshall Close to provide an alternative pedestrian connection with a smoother gradient (in addition to the retention of the existing path).

2.2.3 All matters raised by the Auditor have been accepted and addressed in accordance with the Auditor recommendation, and there are no outstanding matters of highway safety. In the context of paragraphs 108 and 109 of the NPPF, it has been demonstrated that safe and suitable access can be achieved and that the proposed development will not have an unacceptable impact on highway safety.

2.3 Pedestrian Connection

2.3.1 Further information has been sought by WSCC in respect of the pedestrian connection between the site and Yapton Road.

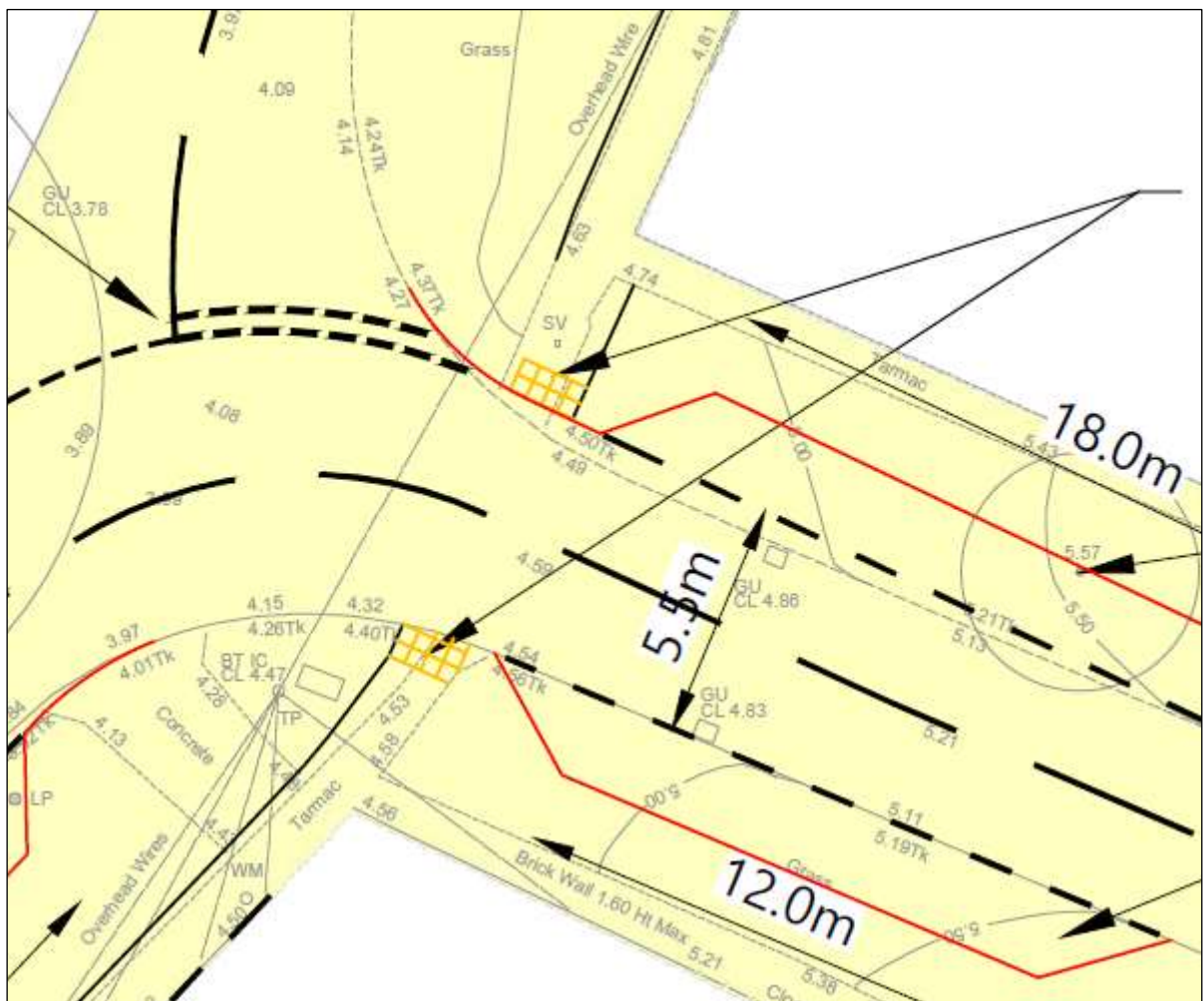
2.3.2 A footway is proposed along the site access road connecting with the existing footway located on the eastern side of Marshall Close carriageway, separated from the road by a wide highway verge. Continuous pedestrian infrastructure is provided from the termination of Marshall Close cul-de-sac to the south, along Marshall Close and joining the B2233 at the northern end of Marshall Close via a bound surface footway adjacent to properties 20 and 20a. The route forms part of the adopted public highway – see extract from the highway boundary plan in Image 2.1 below.

Image 2.1 Marshall Close Highway Boundary and Pedestrian Route to Yapton Road



Source: WSCC

Image 2.2: Crossing Improvement Location



Source: ITB14160-GA-010 Rev B

SECTION 3 Travel Plan

3.1.1 WSCC has requested that the following amendments be made to the Travel Plan:

- Alteration to the 'Plan Your Journey' URL;
- Promotion of the WSCC Cycle Journey Planner;
- Include reference to the possibility of Stagecoach supplying free taster tickets and discounted Megarider tickers; and
- Include a second round of £150 travel vouchers to all households if the 5-year vehicle trip rate reduction target is not achieved.

3.1.2 The Travel Plan has been amended in accordance with the comments and a revised document (ref: ITB14160-004A) has been produced. In the context of paragraph 108 of the NPPF, it has been demonstrated that the site is located in an accessible location and appropriate opportunities to promote sustainable transport modes can be, or have been, taken up.

SECTION 4 Traffic Impact

4.1 Introduction

- 4.1.1 WSCC has provided comments in respect of trip generation, trip distribution and assignment and the impact of the development on the local highway network. The assessment has been undertaken in the context of the key transport tests set out in paragraphs 108 and 109 of the National Planning Policy Framework, which state that:

"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

...

any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."

4.2 Trip Generation

- 4.2.1 The trip rates used in the assessment were submitted to, and agreed by, WSCC as part of the pre-application engagement to set the parameters and scope of the Transport Assessment accompanying the planning application.
- 4.2.2 Notwithstanding, and while the WSCC response dated 16 December 2020 notes that while the trip rate used would be acceptable, additional filtering of the selections was recommended based on the number of dwellings. Further filtering has been undertaken and the range used for the number of units has been revised to identify sites between 100 and 300 units.
- 4.2.3 A review of all identified sites has also been undertaken to identify sites that have a similar public transport provision to the proposed development. None of the identified sites are in as close proximity to a railway station as the proposed development is to Barnham Station; sites that have no access to frequent bus services as an alternative option to rail travel have been removed from the assessment.
- 4.2.4 A copy of the revised TRICS outputs, including the revised site selection parameters, are provided at **Appendix E**. The trip rates derived from this additional assessment are presented in **Table 4.1** alongside the trip rates used in the original assessment for comparison purposes:

Table 4.1 Trip Rate Review

	Morning Peak Hour (08:00 – 09:00)			Evening Peak Hour (17:00 – 18:00)		
	In	Out	Total	In	Out	Total
Trip rate per Dwelling (TA)	0.130	0.379	0.509	0.345	0.160	0.505
Trip rate per Dwelling (revised parameters)	0.148	0.330	0.478	0.338	0.161	0.499

Source: TRICS

- 4.2.5 Table 4.1 demonstrates that the revised parameters result in a marginally lower trip rate than that used to inform the TA; when extrapolated for 200 dwellings this equates to circa 6 fewer movements in the morning peak and 2 fewer movements in the evening peak. Therefore, the trip rate used in the TA has continued to be used in this additional assessment and provides for a robust forecast of vehicular trips generated by the proposed development.

4.3 Trip Distribution and Assignment

- 4.3.1 The trip distribution and assignment assessment in the TA identified a significant proportion of the trips generated by the development routing towards the Barnham road network (to the north west), as a result of Barnham being identified as a major attractor in the Gravity Model due to the size of its population. A review of the Census data that informed the model identified that at a mid-level output area, populations from neighbouring villages such as Eastergate and Westergate were grouped as part of Barnham.
- 4.3.2 Population centres in the immediate vicinity of the site have been subsequently derived from a lower output area, splitting the grouped populations to the component villages. The Gravity Model has been amended accordingly, reducing the attraction of Barnham for vehicle trips and instead distributing more trips to larger urban centres such as Chichester, Bognor and Littlehampton. The populations of the larger urban centres have not been split into lower output areas in order to maintain the influence of these locations on trip attraction to destinations outside of the immediate vicinity of the site.
- 4.3.3 On that basis, **Traffic Flow Diagrams TF1-3** have been updated to reflect the revised distribution and assignment exercise.

4.4 Traffic Impact

4.4.1 The junction capacity assessments undertaken as part of the TA accompanying the planning application have been rerun to reflect the alterations to the distribution and assignment of vehicular trips through the junctions.

4.4.2 The full Junctions 9 outputs are provided at **Appendix F** and are summarised in **Table 4.2, 4.3** and **4.4** for the following junctions respectively:

- Church Lane / Yapton Road;
- Barnham Road / Elm Grove; and
- Yapton Road / Lake Lane.

Table 4.2: Church Lane / Yapton Road Assessment Summary Triangle Junction

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2020						
Church Lane – Yapton Road	0.13	<1	10	0.12	<1	9
Yapton Road – Church Lane	0.07	<1	5	0.10	<1	5
2023 with Committed Development						
Church Lane – Yapton Road	0.13	<1	10	0.13	<1	10
Yapton Road – Church Lane	0.08	<1	5	0.11	<1	5
2023 with Committed Development and Development						
Church Lane – Yapton Road	0.33	1	13	0.21	<1	11
Yapton Road – Church Lane	0.14	<1	5	0.27	1	5
2025 with Committed Development						
Church Lane – Yapton Road	0.14	<1	10	0.13	<1	10
Yapton Road – Church Lane	0.08	<1	5	0.11	<1	5
2025 with Committed Development and Development						
Church Lane – Yapton Road	0.34	1	13	0.22	<1	11
Yapton Road – Church Lane	0.14	<1	5	0.28	1	5
2031 with Committed Development						
Church Lane – Yapton Road	0.14	<1	10	0.14	<1	10
Yapton Road – Church Lane	0.09	<1	5	0.12	<1	5
2031 with Committed Development and Development						
Church Lane – Yapton Road	0.35	1	14	0.23	<1	11
Yapton Road – Church Lane	0.15	<1	5	0.29	1	5

Source: Junctions 9

Table 4.3: B2233 Barnham Road / Elm Grove Cross Road junction

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2020						
Elm Grove N	0.31	<1	14	0.16	<1	12
Barnham Road N	0.20	1	6	0.04	<1	5
Elm Grove S	0.26	<1	11	0.17	<1	9
Barnham Road S	0.08	<1	5	0.04	<1	5
2023 with Committed Development						
Elm Grove N	0.33	1	15	0.18	<1	13
Barnham Road N	0.22	1	6	0.05	<1	4
Elm Grove S	0.27	<1	11	0.17	<1	9
Barnham Road S	0.08	<1	5	0.05	<1	5
2023 with Committed Development and Development						
Elm Grove N	0.34	1	16	0.19	<1	13
Barnham Road N	0.23	1	6	0.05	<1	4
Elm Grove S	0.28	<1	12	0.18	<1	9
Barnham Road S	0.09	<1	4	0.05	<1	5
2025 with Committed Development						
Elm Grove N	0.34	1	15	0.18	<1	13
Barnham Road N	0.22	1	6	0.05	<1	4
Elm Grove S	0.28	<1	12	0.18	<1	9
Barnham Road S	0.08	<1	5	0.05	<1	5
2025 with Committed Development and Development						
Elm Grove N	0.35	1	16	0.19	<1	14
Barnham Road N	0.23	1	6	0.05	<1	4
Elm Grove S	0.29	<1	12	0.18	<1	10
Barnham Road S	0.09	<1	4	0.05	<1	5
2031 with Committed Development						
Elm Grove N	0.36	1	16	0.19	<1	13
Barnham Road N	0.24	1	6	0.05	<1	4
Elm Grove S	0.29	<1	12	0.19	<1	10
Barnham Road S	0.09	<1	5	0.05	<1	5
2031 with Committed Development and Development						
Elm Grove N	0.37	1	17	0.20	<1	14
Barnham Road N	0.25	1	6	0.05	<1	4
Elm Grove S	0.31	<1	13	0.20	<1	10
Barnham Road S	0.10	<1	4	0.06	<1	5

Table 4.4: B2233 Yapton Road / Lake Lane Priority junction

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2020						
Lake Lane – Yapton Road	0.47	1	14	0.50	1	14
Yapton Road – Lake Lane	0.37	1	7	0.16	<1	6
2023 with Committed Development						
Lake Lane – Yapton Road	0.49	1	15	0.52	1	16
Yapton Road – Lake Lane	0.39	1	7	0.17	<1	6
2023 with Committed Development and Development						
Lake Lane – Yapton Road	0.60	1	18	0.59	1	18
Yapton Road – Lake Lane	0.45	1	8	0.32	1	7
2025 with Committed Development						
Lake Lane – Yapton Road	0.50	1	16	0.54	1	16
Yapton Road – Lake Lane	0.40	1	7	0.18	<1	6
2025 with Committed Development and Development						
Lake Lane – Yapton Road	0.61	2	18	0.60	2	19
Yapton Road – Lake Lane	0.46	2	8	0.33	1	7
2031 with Committed Development						
Lake Lane – Yapton Road	0.53	1	17	0.57	1	18
Yapton Road – Lake Lane	0.43	1	7	0.19	<1	6
2031 with Committed Development and Development						
Lake Lane – Yapton Road	0.64	2	20	0.64	2	21
Yapton Road – Lake Lane	0.49	2	8	0.35	1	7

Source: Junctions 9

4.4.3 As concluded in the TA and identified in the tables above, the assessed junctions in the TA (Church Lane / Yapton Road, Barnham Road / Elm Grove and Yapton Road / Lake Lane junctions) will not have significant impacts on their operation as a result of the proposed development and are all expected to operate well within capacity during each of the assessment years and scenarios presented.

4.5 Additional Assessment

4.5.1 Following the receipt of their consultation response dated 16 December 2020 and subsequent correspondence, WSCC advised that assessment of the following junctions should also be undertaken:

- B2233/North End Road mini-roundabout junction;

- B2233/Bilsham Road mini-roundabout junction; and
- B2233/A29 'War Memorial' junction.

4.5.2 Given the on-going national restrictions associated with the Covid-19 response, it has not been possible to undertake new traffic surveys at this time which would provide conditions representative of operation during a period where travel restrictions were not imposed. Therefore, traffic data that is already available within the public domain has been used to undertake the testing of the identified junctions.

4.5.3 Assessment at each location has been undertaken for 2025 and 2031 assessment years and has been informed by the application of the same growth and committed assumptions used to inform the TA, with the TEMPRO growth period extended to include the intervening period between collection of the data where the data collection date is before 2020. The growth rates used to inform the assessment are set out in **Table 4.5**.

Table 4.5: TEMPRO Growth Factors

Growth Period	AM Peak Hour	PM Peak Hour
2017 - 2025	1.0663	1.0669
2017 - 2031	1.1061	1.1088
2018 - 2025	1.057	1.057
2018 - 2031	1.096	1.099

Source: TEMPRO – Arun 003

4.5.4 Baseline traffic flows for 2020, 2025 and 2031 are shown in **Traffic Flow Diagrams TF4-9**.

B2233/North End Road Mini-Roundabout

4.5.5 Baseline data to inform the assessment has been obtained from the current application for the development of Ford Airfield (planning ref: F/40/20) collected in 2018. The junction has been modelled using Junctions 9 and the full outputs are provided at **Appendix G**, a summary of which is presented in **Table 4.6**.

Table 4.6: B2233/North End Road Mini-Roundabout Modelling Outputs

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2025 + Committed Development						
North End Road	0.25	<1	9	0.83	4	36
B2233 East	0.93	10	40	0.45	1	6
B2233 West	0.53	1	11	0.51	1	8
2025 + Committed Development + Development						
North End Road	0.26	<1	9	0.84	5	38
B2233 East	0.94	12	45	0.48	1	7
B2233 West	0.58	1	12	0.52	1	9
2031 + Committed Development						
North End Road	0.27	<1	9	0.88	6	47
B2233 East	0.96	15	55	0.47	1	6
B2233 West	0.56	1	12	0.53	1	9
2031 + Committed Development + Development						
North End Road	0.27	<1	9	0.88	6	50
B2233 East	0.98	17	62	0.50	1	7
B2233 West	0.61	2	13	0.54	1	9

Source: Junctions 9

- 4.5.6** The modelling identifies that in the morning peak period the B2233 East arm of the junction is operating close to theoretical capacity – the junction experiences capacity pressures in both the 2025 and 2031 assessment scenarios. In the evening peak, the pressure changes to the North End Road arm of the junction. This tidal movement is likely to be associated with vehicles routing through the junction to and from the A27 via the Yapton Road / A27 junction.
- 4.5.7** Whilst the proposed development does increase movements through the junction, the corresponding impact on its performance is not significant. An additional 5 second delay (increase in queue of 2 vehicles) on the B2233 East arm of the junction during the morning peak and a 2 second increase in delay (increase in queue of 1 vehicle) in the evening peak is forecast in the 2025 assessment scenario. In the context of the NPPF, development impacts at this junction are not significant and thus mitigation is not required. The residual cumulative impacts are clearly not severe.
- 4.5.8** Notwithstanding the above, a junction improvement is proposed at the junction as part of the Ford Airfield residential development (planning ref: F/4/20). A sensitivity test has been undertaken of the junction improvement, utilising the inputs of the assessment associated with the Ford Airfield

application with the addition of traffic generated by the proposed development. The full outputs are provided in **Appendix G** and are summarised in **Table 4.7**.

Table 4.7: B2233 / North End Road Improvement Sensitivity Test

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2025 + Ford + Development						
North End Road	0.22	<1	3	0.43	<1	5
B2233 East	0.85	5	18	0.48	5	1
B2233 West	0.54	1	8	0.52	1	6
2031 + Ford + Development						
North End Road	0.22	<1	3	0.45	<1	5
B2233 East	0.88	7	21	0.49	1	5
B2233 West	0.56	1	8	0.53	1	7

Source: Junctions 9

- 4.5.9 The assessment demonstrates that the proposed mitigation from the Ford Airfield development improves the operation of the junction beyond baseline conditions. With the addition of traffic associated with the proposed development there would be little queuing or delay at the junction.

B2233/Bilsham Road Mini-Roundabout

- 4.5.10 Baseline data to inform the assessment has been obtained from the current application for the development of Ford Airfield (planning ref: F/40/20) collected in 2018. The junction has been modelled using Junctions 9 and the full outputs are provided at **Appendix H**, a summary of which is presented in **Table 4.8**, overleaf.

Table 4.8: B2233/Bilsham Road Mini-Roundabout Modelling Outputs

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2025 + Committed Development						
B2233 East	0.66	2	13	0.54	1	11
Bilsham Road	1.13	43	237	0.47	1	11
B2233 West	0.49	1	7	0.83	5	21
2025 + Committed Development + Development						
B2233 East	0.68	2	14	0.59	1	12
Bilsham Road	1.14	46	253	0.49	1	12
B2233 West	0.52	1	8	0.85	5	23
2031 + Committed Development						
B2233 East	0.69	2	14	0.57	1	12
Bilsham Road	1.19	59	329	0.50	1	12
B2233 West	0.51	1	8	0.87	6	27
2031 + Committed Development + Development						
B2233 East	0.70	2	15	0.61	2	13
Bilsham Road	1.20	62	354	0.51	1	13
B2233 West	0.54	1	8	0.88	7	29

Source: Junctions 9

- 4.5.11** The assessment identifies that the Bilsham Road arm of the junction operates at capacity in both the morning peak 2025 and 2031 assessment scenarios. The development adds circa 40 movements through the junction during peak periods, resulting in an increased queue length of 3 vehicles and additional 16 seconds delay in the 2025 assessment scenario. During the evening peak period, the B2233 West arm of the junction is also approaching theoretical capacity, however, the proposed development only results in 1 additional queuing vehicle and 2 additional seconds of delay in the 2025 assessment scenario.
- 4.5.12** In the context of the NPPF, development impacts at this junction are not significant and thus mitigation is not required. The residual cumulative impacts are clearly not severe.
- 4.5.13** Notwithstanding the above, the development of Ford Airfield is to bring forward a capacity improvement at the junction. The impact of the mitigation scheme upon the performance of the junction has been modelled as a sensitivity test. The full outputs of the assessment are provided at **Appendix H** and summarised in **Table 4.9**, overleaf.

Table 4.9: B2233 / Bilsham Road Improvement Sensitivity Test

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2025 + Ford + Development						
B2233 East	0.59	2	8	0.46	1	6
Bilsham Road	0.58	1	7	0.28	<1	4
B2233 West	0.50	1	6	0.79	4	14
2031 + Ford + Development						
B2233 East	0.61	2	8	0.48	1	7
Bilsham Road	0.60	2	8	0.29	<1	4
B2233 West	0.52	1	6	0.82	4	16

Source: Junctions 9

- 4.5.14 The assessment demonstrates that the proposed mitigation from the Ford Airfield development improves the operation of the junction beyond baseline conditions. With the addition of traffic associated with the proposed development there would be little queuing or delay at the junction and all arms of the junction perform within capacity.

B2233/A29 'War Memorial' Roundabout Junction

- 4.5.15 Baseline data to inform the assessment has been obtained from the current application for the development of Phase 1 of the A29 Realignment (planning ref: WSCC/052/20) collected in 2017. The junction has been modelled using Junctions 9 and the full outputs are provided at **Appendix I**, a summary of which is presented in **Table 4.10**, overleaf.

Table 4.10: B2233/A29 Roundabout Modelling Outputs

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2025 + Committed Development						
Fontwell Avenue	0.56	1	9	0.93	10	47
Barnham Road	0.50	1	5	0.39	<1	4
Nyton Road	0.47	<1	3	0.42	<1	3
2025 + Committed Development + Development						
Fontwell Avenue	0.57	1	9	0.95	12	56
Barnham Road	0.52	1	5	0.40	<1	4
Nyton Road	0.48	<1	3	0.43	<1	3
2031 + Committed Development						
Fontwell Avenue	0.59	1	9	0.98	16	70
Barnham Road	0.52	1	5	0.41	<1	5
Nyton Road	0.49	1	4	0.44	<1	3
2031 + Committed Development + Development						
Fontwell Avenue	0.60	2	10	1.00	20	86
Barnham Road	0.54	1	5	0.42	<1	5
Nyton Road	0.50	1	4	0.45	<1	3

Source: Junctions 9

4.5.16 The assessment identifies that the junction is operating close to theoretical capacity - pressure is exhibited on the A29 Fontwell Road arm of the junction during the evening peak period. The development adds circa 38 movements through the junction during peak periods, resulting in an increase in queue length of 2 vehicles and 9 seconds in delay in the 2025 assessment scenario.

4.5.17 In the context of the NPPF, development impacts at this junction are not significant and thus mitigation is not required. The residual cumulative impacts are clearly not severe.

A29 Realignment – Phase 1

4.5.18 A planning application has been submitted for the construction of the northern phase of the A29 Realignment Scheme (planning ref: WSCC/052/20). The proposed development includes the introduction on a new junction of the A29 and B2233 Barnham Road. An extract of the A29 Realignment Scheme overview is shown in **Image 4.1**.

Image 4.1: A29 Realignment Scheme



Source: WSP TA – 70031782

- 4.5.19 The primary aims of the A29 realignment are to enable the delivery of new homes and jobs and to improve journey times on the A29 with particular reference to the War Memorial junction (para 4.3.2, WSP TA 70031782 August 2020). North-south journeys along the A29, as well as journeys to and from the east of the A29, are to be accommodated on a new road alignment that routes to the east of the existing alignment, in turn alleviating pressure on the War Memorial junction.
- 4.5.20 The application is accompanied by a Transport Assessment prepared by WSP (ref: TA 70031782). The TA includes a number of operational assessments for an opening year of 2023, including the assessment of the War Memorial junction and the new Barnham Road/A29 junction.
- 4.5.21 The outputs of the WSP assessment of the War Memorial junction assessment (para 5.5.12 – 5.5.14), in a 'with A29 realignment' scenario for an opening year of 2023, are replicated in **Table 4.11**:

Table 4.11: War Memorial with A29 Realignment Scheme

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2023 Opening Year						
Fontwell Avenue	0.62	2	11	0.81	4	24
Barnham Road	0.67	2	12	0.54	2	9
Nyton Road	0.57	1	5	0.53	1	4

Source: WSP TA

4.5.22 The assessment demonstrates that the War Memorial junction would operate within capacity on all arms during both the morning and evening peak hours. On the basis that the proposed development resulted in a maximum RFC increase of 0.02 when considered in accordance with current performance capabilities, it is evident that the proposed development would not have a material impact on the operation of the junction post-implementation of the A29 realignment scheme.

4.5.23 The operation of the A29/Northern Realignment Section and the B2233/Northern Realignment Section junctions has also been modelled and is presented as Junction 1 (para 5.5.3 – 5.5.4) and Junction 2 (para 5.5.5 – 5.5.6) within the WSP TA. The outputs of assessments for the 2023 'opening year' are replicated in **Tables 4.11** and **4.12** respectively.

Table 4.11: A29/Northern Realignment Section

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2023 Opening Year						
Fontwell Avenue (N)	0.44	<1	4	0.68	2	8
A29 Realignment Road	0.28	<1	4	0.15	<1	4
Fontwell Avenue (S)	0.56	1	6	0.32	<1	4

Source: WSP TA

Table 4.12: B2233/Northern Realignment Section

Approach	Morning Peak Period			Evening Peak Period		
	RFC	Queue (veh)	Delay (s/veh)	RFC	Queue (veh)	Delay (s/veh)
2023 Opening Year						
A29 Realignment Road	0.13	<1	3	0.27	<1	4
Barnham Road (east)	0.45	<1	5	0.40	<1	4
Southern Approach	0.09	<1	3	0.04	0	3
Barnham Road (west)	0.25	<1	4	0.33	<1	4

Source: WSP TA

4.5.24 It is evident from the outputs that there is significant residual capacity within the new junctions. While the introduction of the junction and A29 realignment scheme would likely result in an element of reassignment of movements through the junctions (e.g. those that would have travelled between Barnham Road (east) and Barnham Road (west) to access the A27 via Nyton Road may now chose to travel from Barnham Road (east) to A29 Realignment Road and through to the A29/Northern Realignment Section junction as a result of improved journey times) it would not alter the total number of movements; all movements from the proposed development previously assigned to the War Memorial junction would now route through the new B2233/Northern Realignment Section junction and a proportion to the A29/Northern Realignment Section junction.

4.5.25 The assessment of development traffic on the operation of the War Memorial junction, presented in Table 4.10, demonstrates that such a volume of traffic will have an imperceptible impact on junction performance – i.e., the traffic equates to a circa 0.02 increase in RFC. By comparison, there is a minimum RFC availability of 0.21 -0.70 on all arms of the A29/Northern Realignment Section junction and 0.40 – 0.81 on all arms of the new B2233/A29 junction. As such, it is clear that in the context of the NPPF the proposed development would not have a ‘severe impact’ on the performance of the new junctions and the A29 Realignment Scheme, and no further capacity assessment is required.

SECTION 5 Summary and Conclusions

5.1 Summary

5.1.1 Gleeson Strategic Land has submitted an outline planning application (ref: BN/142/20) to Arun District Council for the development of up to 200 new homes with all matters reserved other than the principal means of off access. Access to the site is to be taken from Marshall Close.

5.1.2 Highways England has been consulted on the proposed development and no objection has been raised, subject to a financial contribution of £515.58 per dwelling towards improvements on the A27.

5.1.3 West Sussex County Council (WSCC) has also been consulted on the proposed development in their capacity as the local highway authority. Additional information has been sought by WSCC, which is summarised as follows:

- Review of pedestrian infrastructure to link the site to Yapton Road;
- Stage 1 Road Safety Audit and Designer's Response;
- Revised Travel Plan;
- Revised trip generation, distribution and assignment; and
- Agreement of junction modelling.

5.1.4 Following receipt of the consultation response, the scope of the additional assessment of traffic impact has been discussed with WSCC. It has been agreed that further consideration will be given to the impacts of the development at the following locations:

- B2233/North End Road mini-roundabout junction
- B2233/Bilsham Road mini-roundabout junction;
- B2233/A29 'War Memorial' junction; and
- B2233/A29 junction forming part of the proposed A29 realignment application, which is currently being considered through planning application WSCC/052/20.

5.1.5 A footway is located on the eastern side of the Marshall Close carriageway, separated from the road by a wide highway verge. Continuous pedestrian infrastructure is provided from the termination of Marshall Close cul-de-sac to the south, along Marshall Close and joining the B2233 at the northern end of Marshall Close via a bound surface footway adjacent to properties 20 and 20a. The route forms

part of the adopted public highway. The route is to be widened to 1.5m, consistent with Inclusive Mobility guidance and improvement of the crossing provision over Marshall Close is proposed, including the introduction of tactile paving.

- 5.1.6 A Stage 1 Road Safety Audit has been undertaken in accordance with the WSCC Road Safety Audit Policy. All matters raised by the Auditor have been addressed in accordance with their recommendations. The full audit and Designer Response, along with a standalone document prepared with reference to Appendix F of GG119, has been produced. In the context of paragraph 108 of the NPPF, safe and suitable access to the site is proposed from Marshall Close.
- 5.1.7 The Travel Plan has been amended in accordance with the recommendations of WSCC, and a revised document (ref: ITB1416-004A) has been included as part of the submission of supplementary information. In the context of paragraph 108 of the NPPF, it has been demonstrated that the site is located in an accessible location and appropriate opportunities to promote sustainable transport modes can be, or have been, taken up.
- 5.1.8 Despite agreement of the trip rates used to inform the Transport Assessment as part of the pre-application TA scoping process, a review of the trip rates has been undertaken as requested. The use of the revised parameters has resulted in a trip rate marginally lower than that used to inform the TA. On that basis, the original trip rates have been used to ensure a robust assessment of forecast development traffic.
- 5.1.9 The distribution and assignment have been reviewed, and Census population data in the immediate vicinity of the site has been taken from a lower output area in order to assign population at a local level across the village locations. Accordingly, the attraction of Barnham as a destination of trips originating from the site has diminished and trips are transferred from the local Barnham network to the wider network, to ensure a robust assessment of junctions remote to the proposed development site.
- 5.1.10 Additional capacity modelling has been undertaken. The assessments demonstrate that the proposed development will not have a significant impact on the operation of the local highway network and therefore mitigation measures are not required. The residual cumulative impacts are not severe. This is consistent with the requirements of paragraphs 108 / 109 of the NPPF.
- 5.1.11 Consideration of the impact of the proposed development will have upon the proposed A29 Realignment Scheme has also been undertaken. It has been demonstrated that the proposed

development would have an imperceptible impact upon the performance of the new B2233/A29 Realignment Scheme junction.

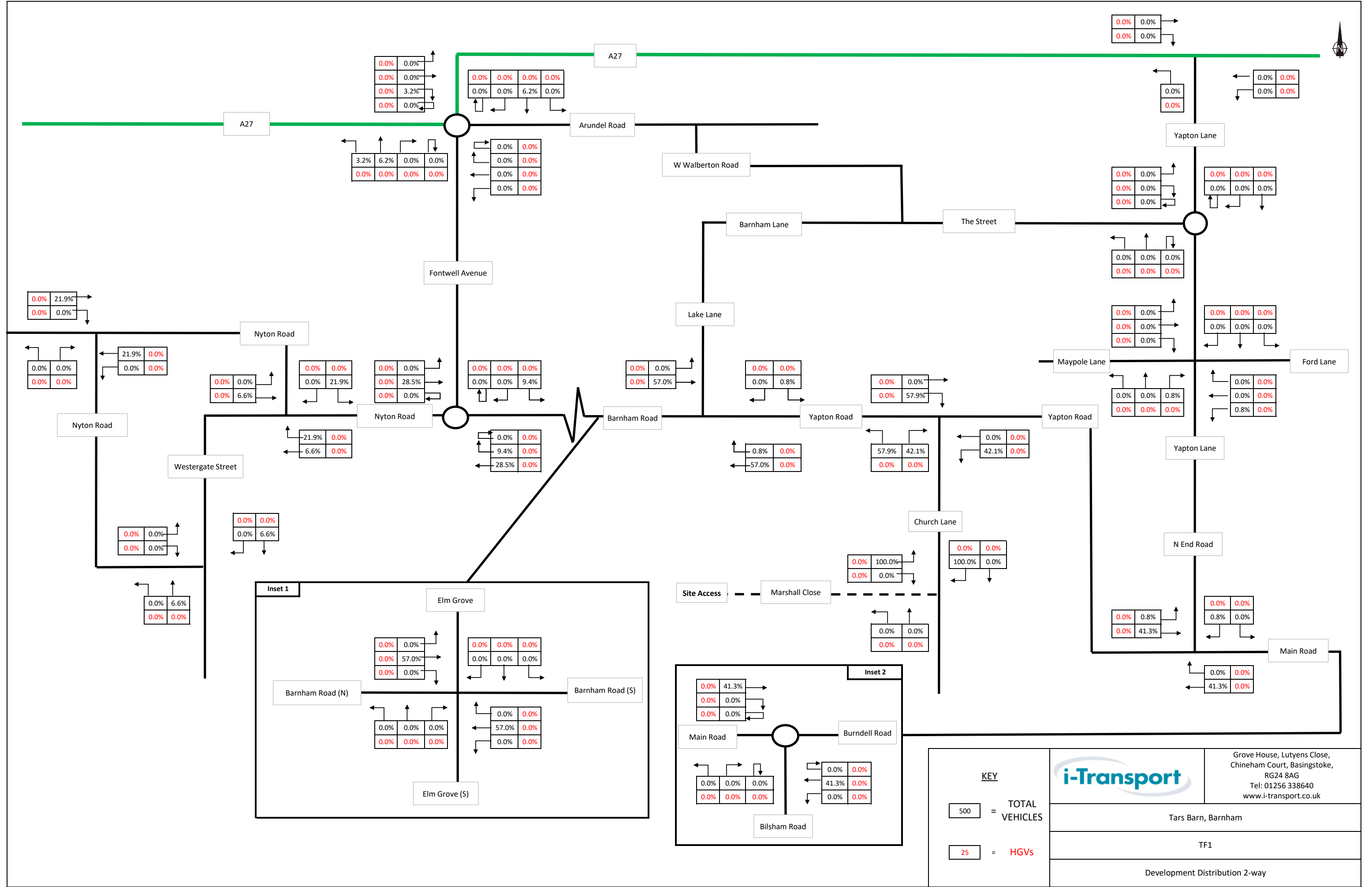
5.2 Conclusions

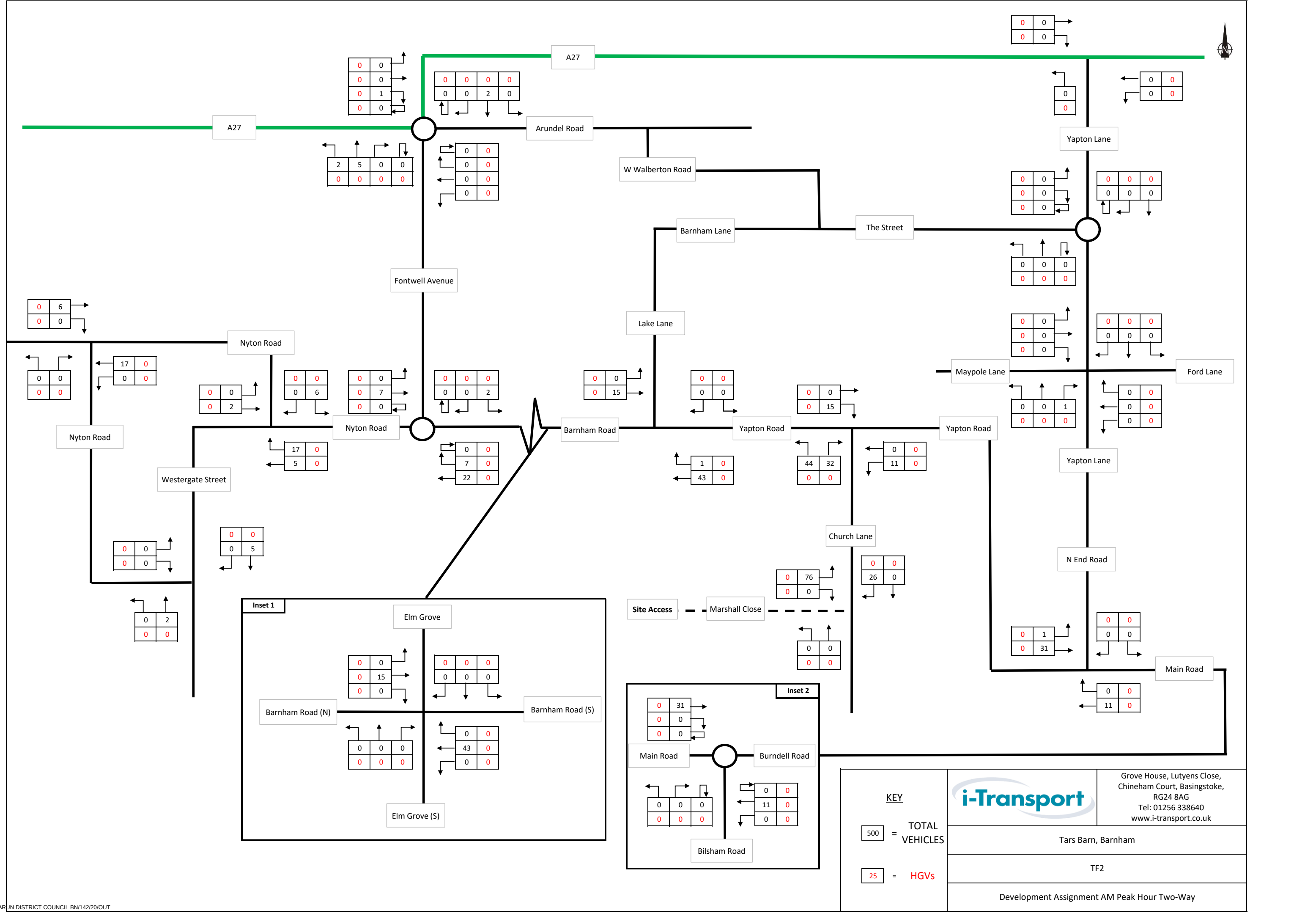
5.2.1 On that basis, it has been demonstrated that the proposed development is compliant with the key transport tests as set out in paragraph 108 / 109 of the National Planning Policy Framework, and which are reflected in local transport policies, namely that:

- Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up given the type of development and its location;
- Safe and suitable access to the site can be achieved for all users;
- Any significant impacts from the development on the transport network (in terms of capacity and congestion) or on highway safety, can be cost effectively mitigation to an acceptable degree; and
- The residual cumulative impacts on highway network are not severe.

5.2.2 As demonstrated through the TA and the submission of supplementary information, there are no transport and highway grounds upon which to refuse the proposed development.

FIGURES





KEY

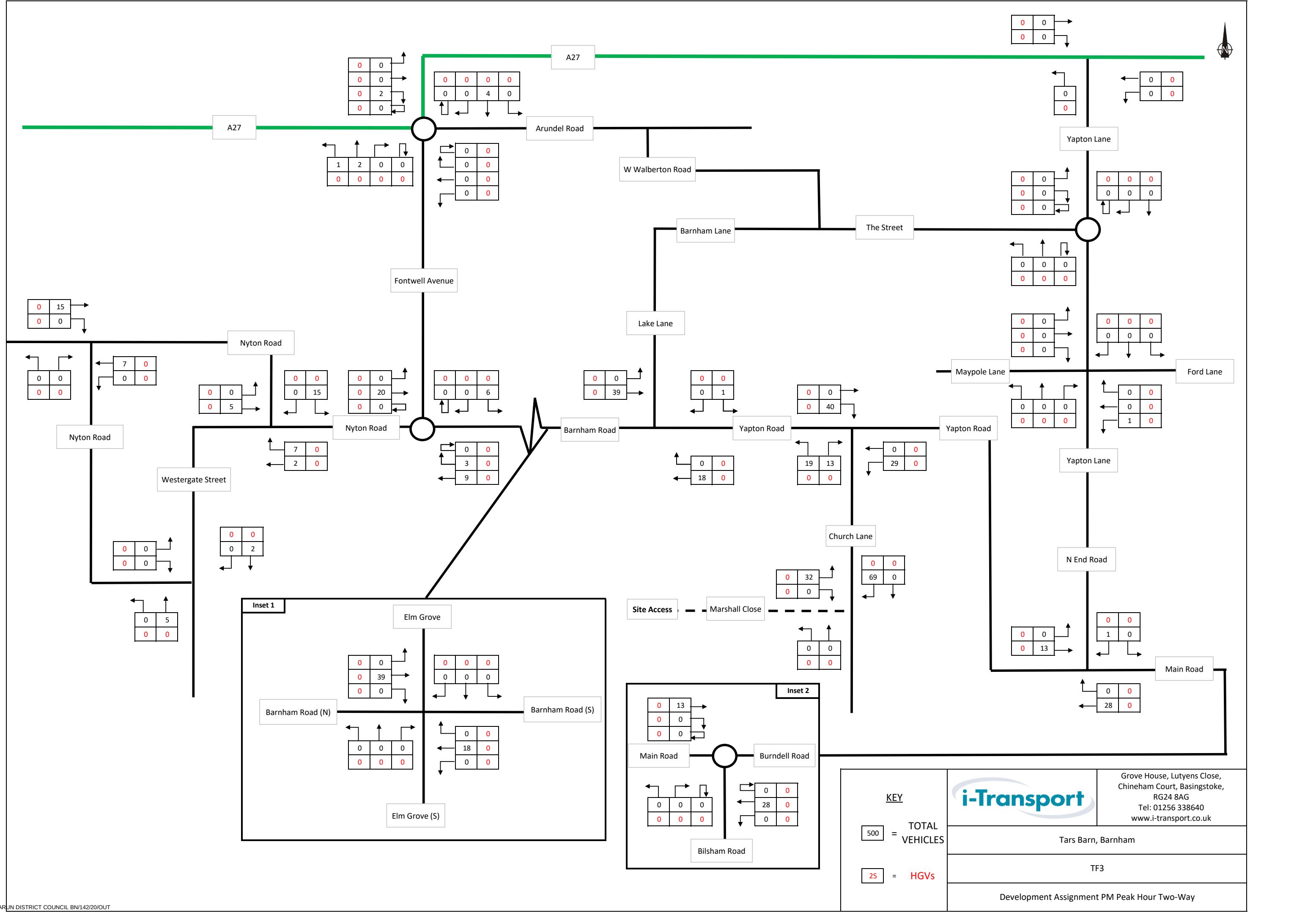
500 = TOTAL VEHICLES

25 = HGVs



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Tars Barn, Barnham	
TF2	
Development Assignment AM Peak Hour Two-Way	



KEY

500 = TOTAL VEHICLES

25 = HGVs

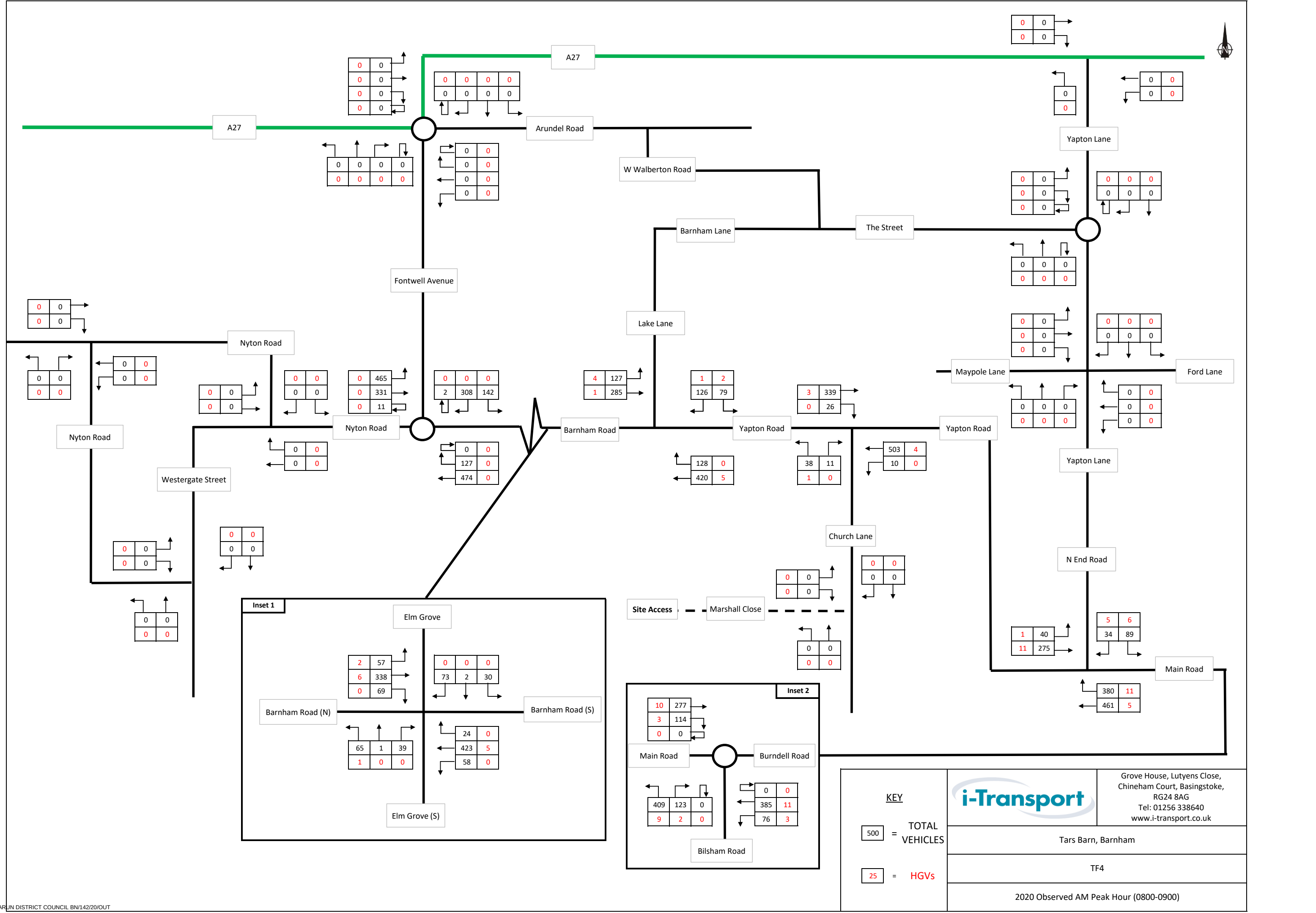


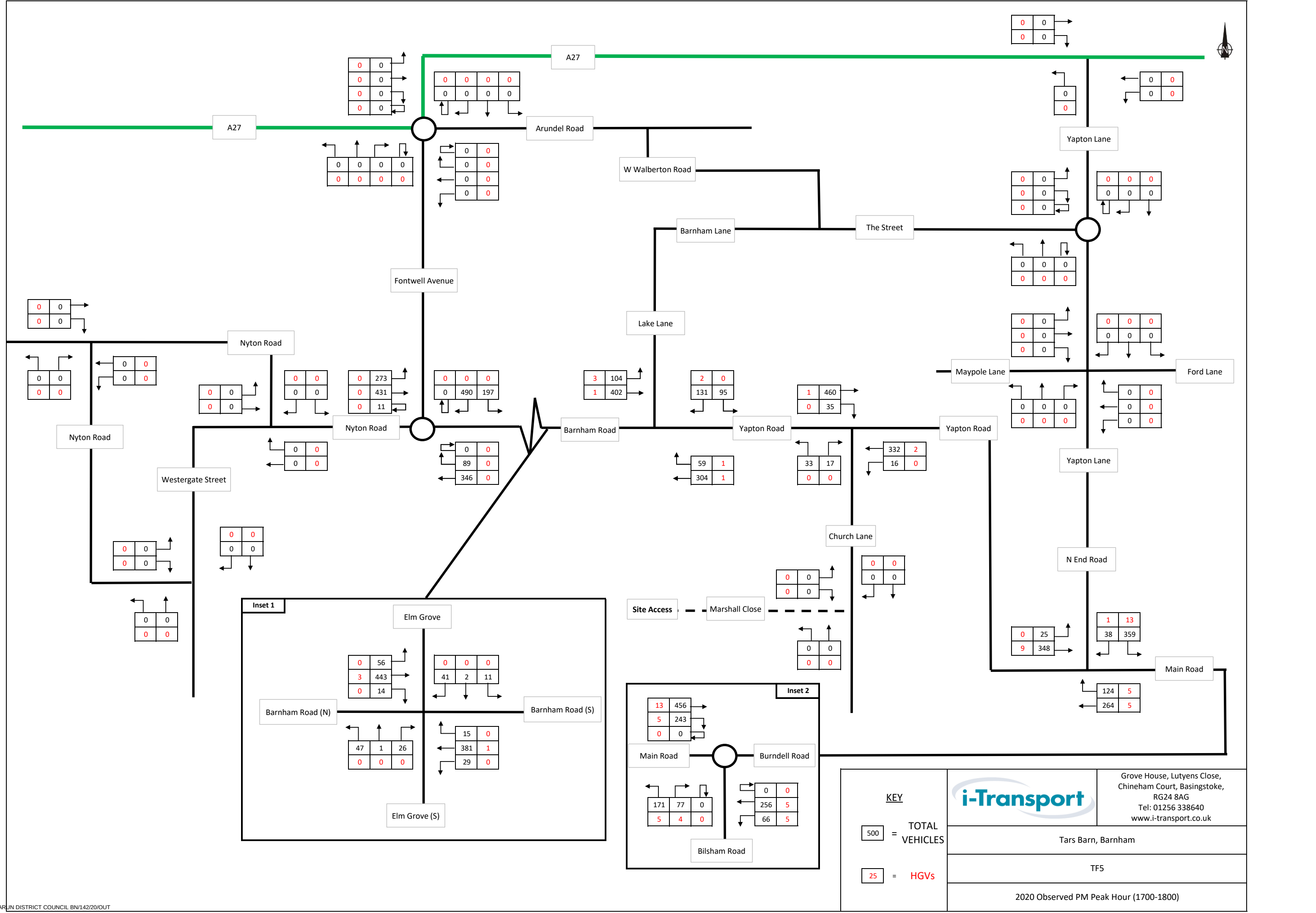
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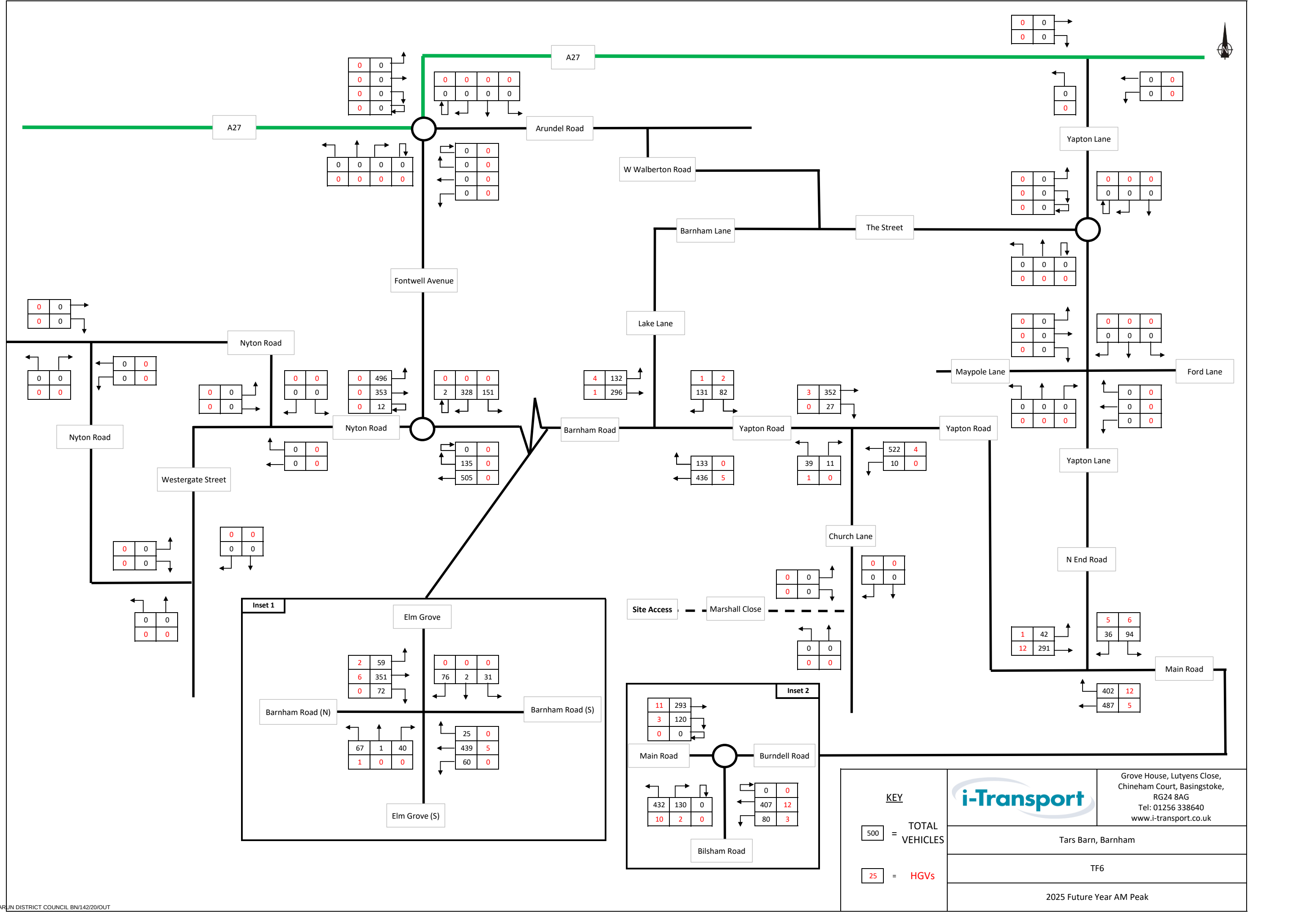
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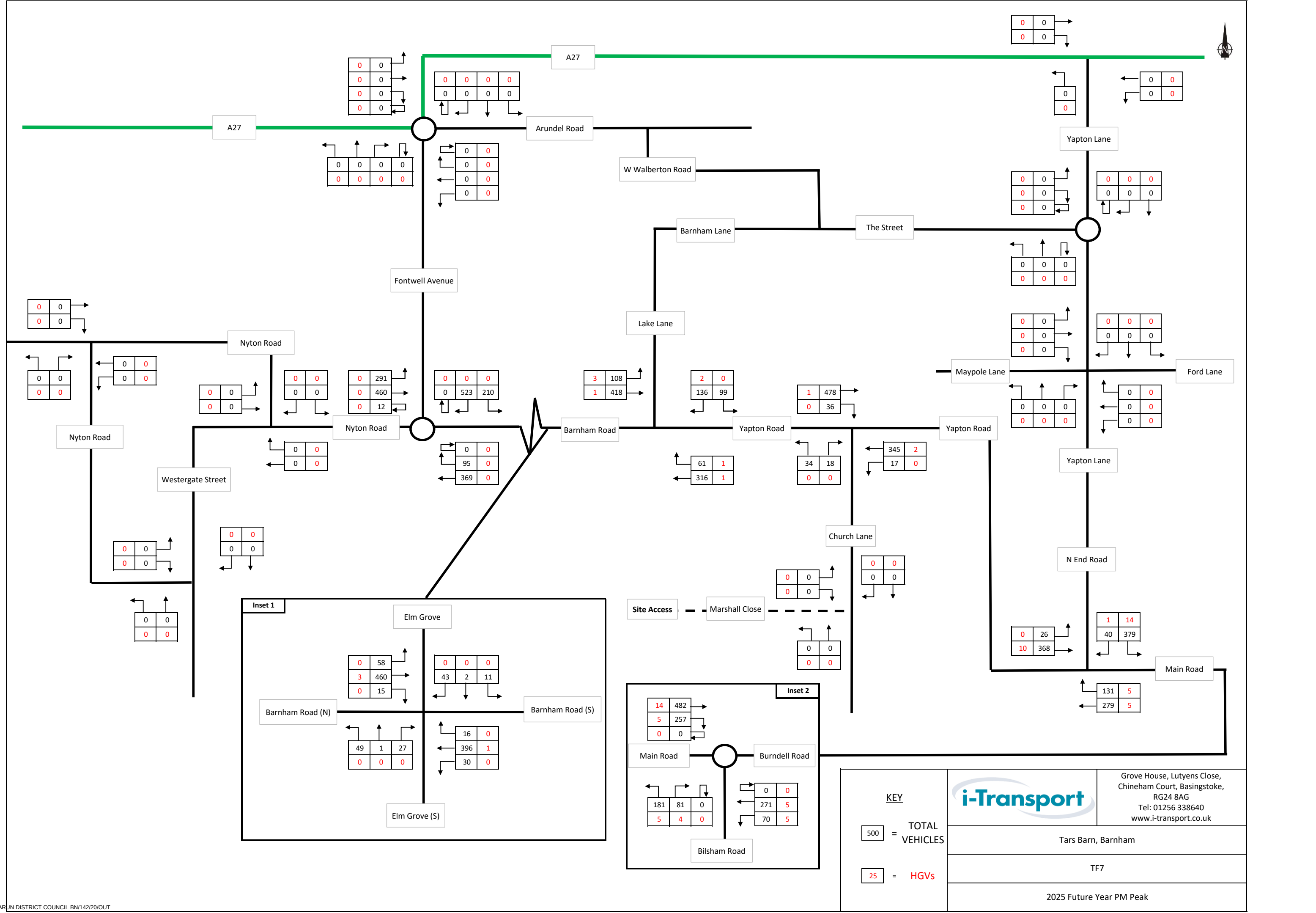
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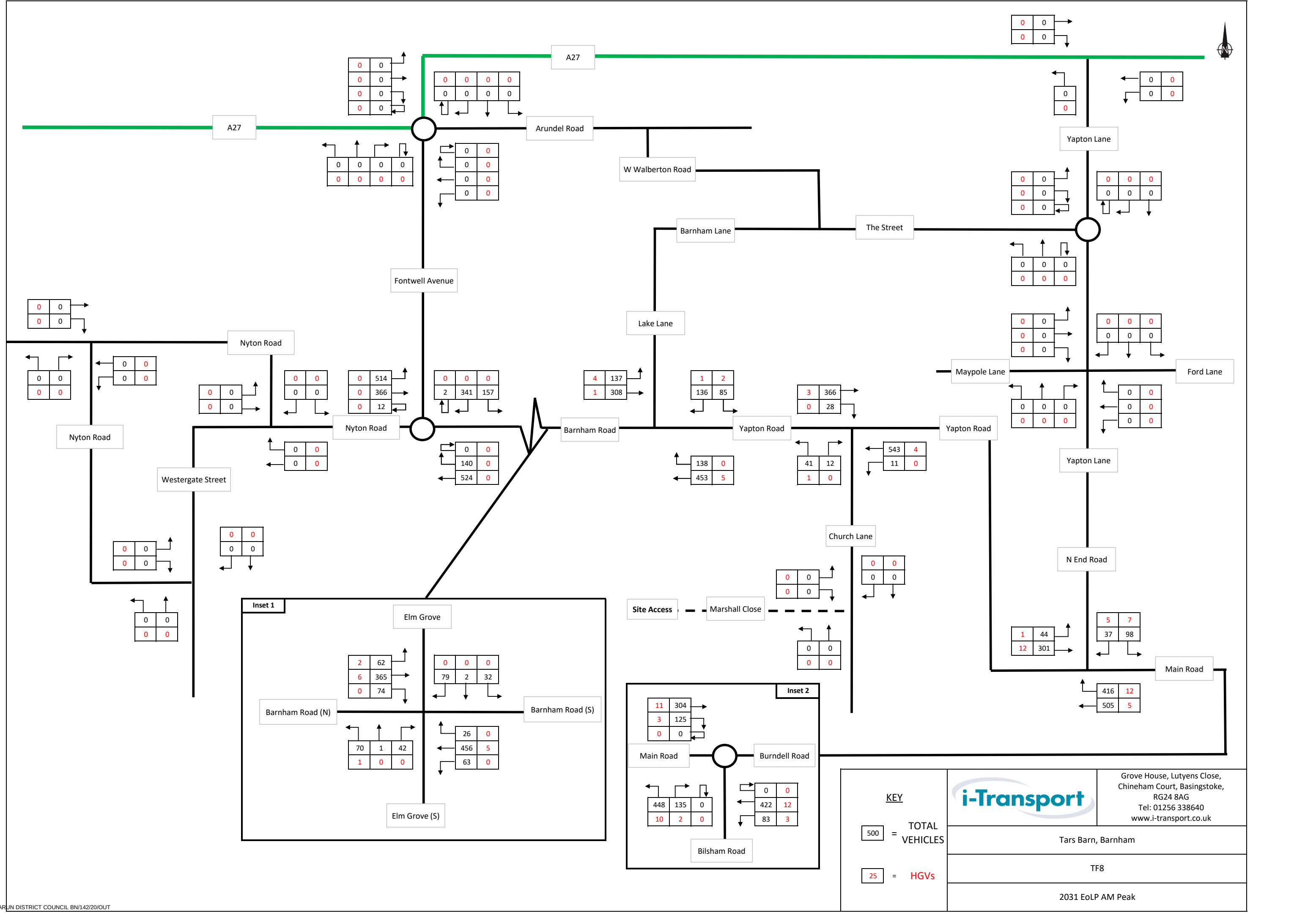
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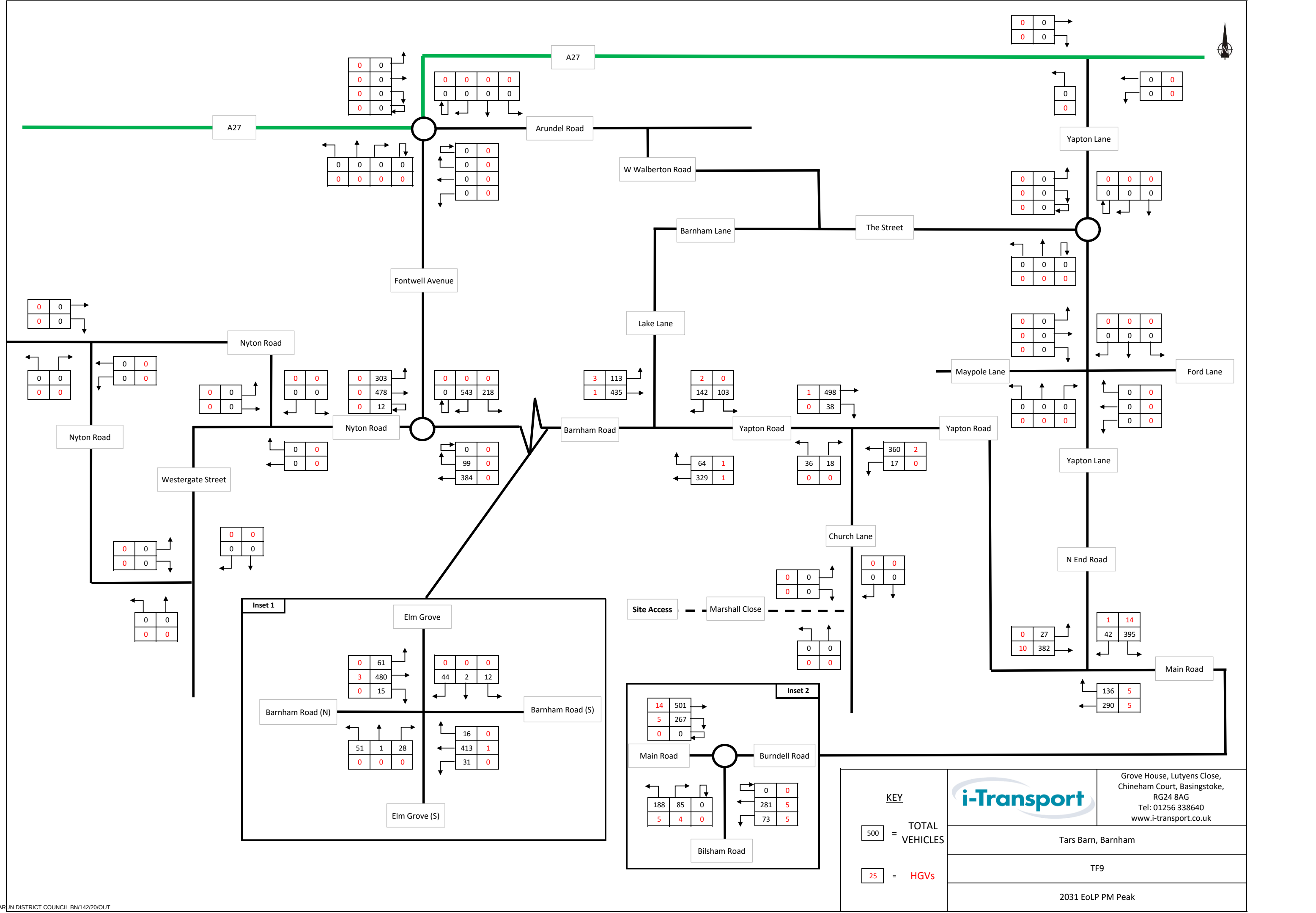




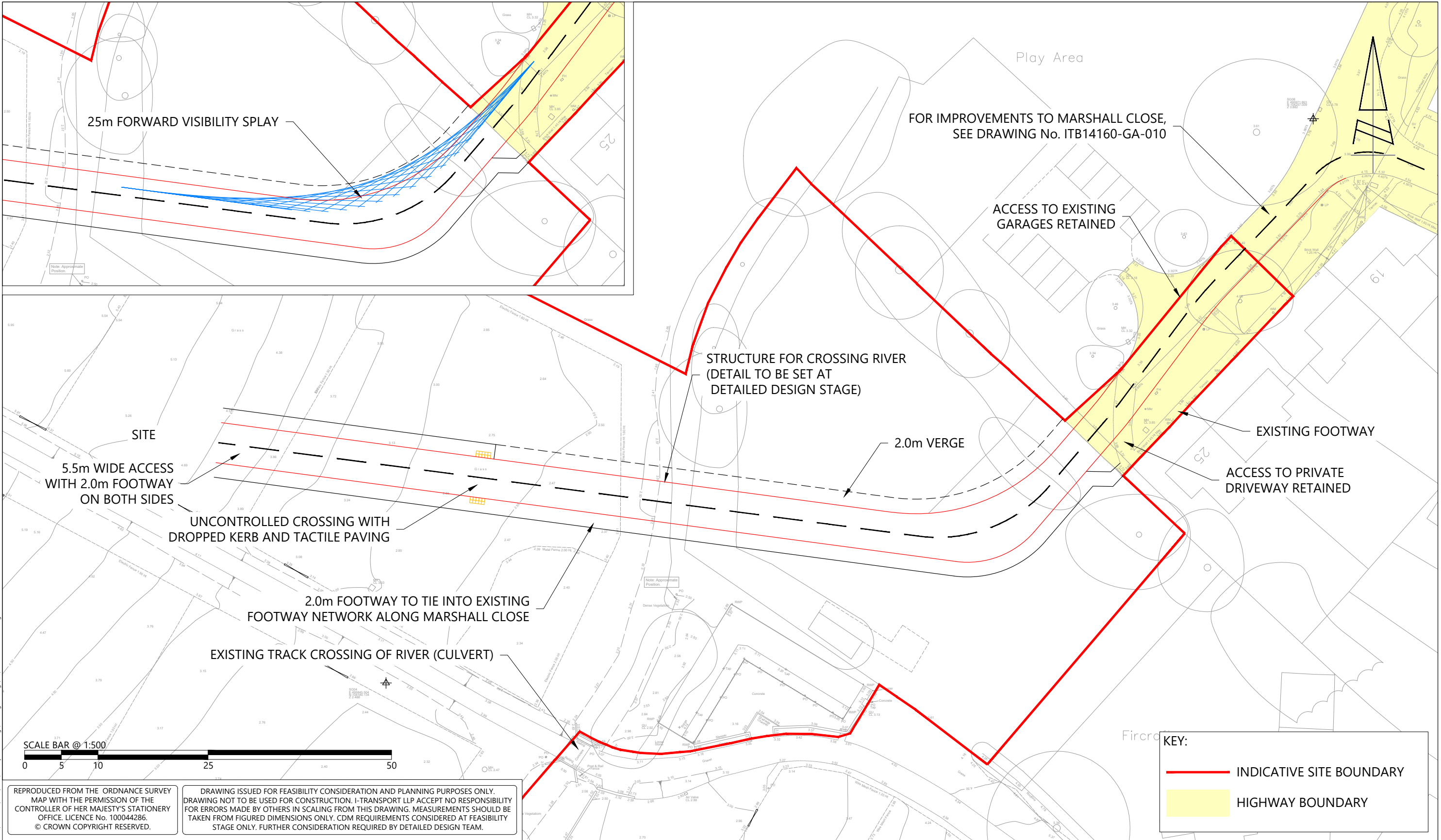








DRAWINGS

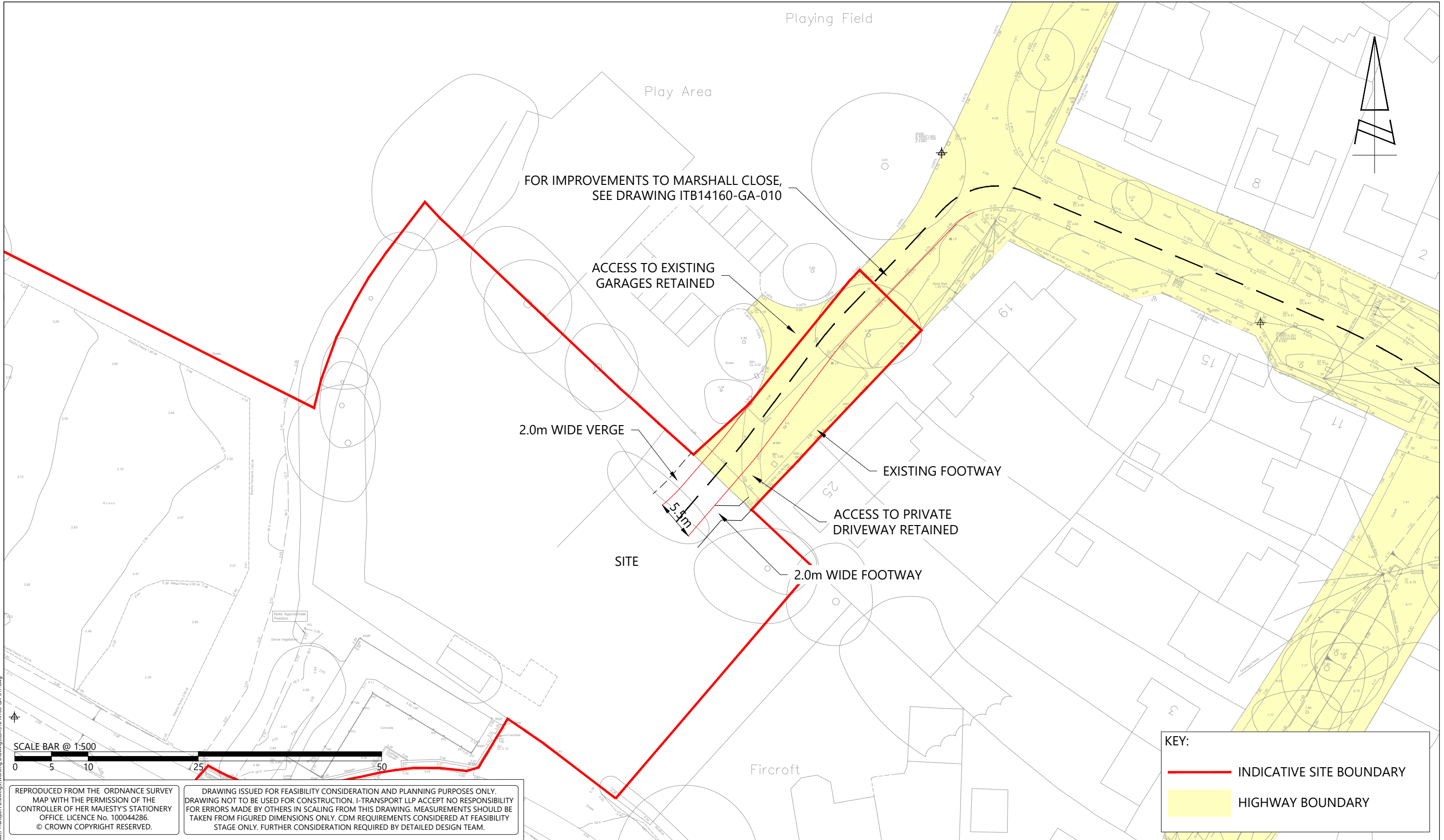


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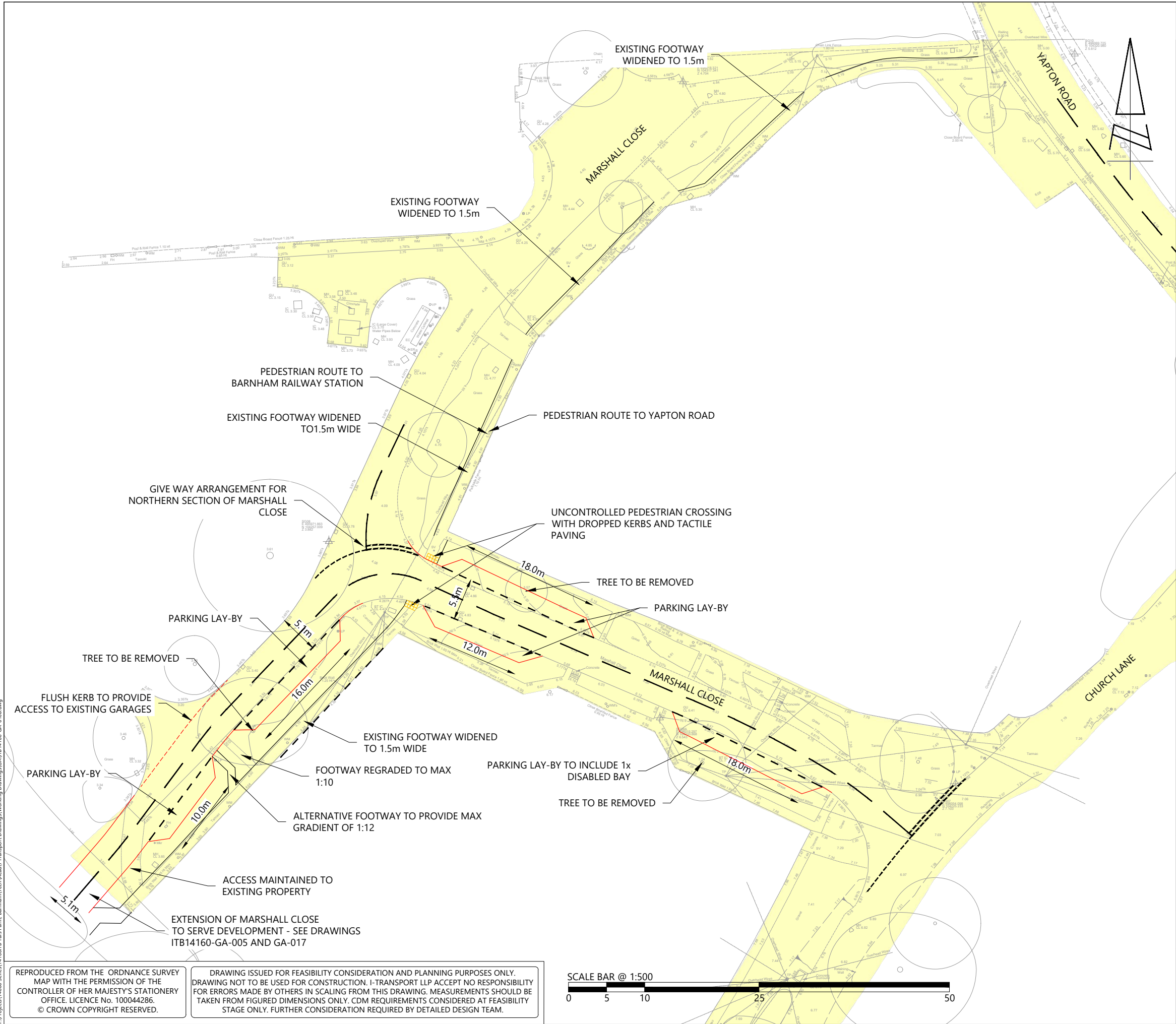
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KEY:		
	INDICATIVE SITE BOUNDARY	
	HIGHWAY BOUNDARY	

				TITLE: ILLUSTATIVE SITE ACCESS ARRANGEMENTS WITHIN THE SITE		DRAWN: MC	CHECKED: MG	APPROVED: MG
Grove House, Lutyens Close, Chineham Basingstoke, Hampshire, RG24 8AG Tel: 01256 338640 www.i-transport.co.uk				PROJECT: LAND TO THE SOUTH OF BARNHAM STATION		CLIENT: GLEESON STRATEGIC LAND		DATE: 29.07.20
STATUS: FOR INFORMATION						DRAWING No: ITB14160-GA-005		REV: D
REV	DATE	BY	DESCRIPTION	CHK	APD			
D	15.02.21	MC	SITE ACCESS AMENDED	DS	MG			
C	28.10.20	JD	SITE ACCESS AMENDED	MG	MG			
B	21.09.20	JD	SITE BOUNDARY ADDED	MG	MG			
A	08.09.20	JD	TOPO / TREE SURVEY ADDED	DS	DS			



 Grove House, Lutyens Close, Chineham Basingstoke, Hampshire, RG24 8AG Tel: 01256 338640 www.i-transport.co.uk							TITLE: PROPOSED SITE ACCESS FROM MARSHALL CLOSE		DRAWN: MC	CHECKED: MG	APPROVED: MG			
	REV	DATE	BY	DESCRIPTION			CHK	APD	PROJECT: LAND TO THE SOUTH OF BARNHAM STATION	CLIENT: GLEESON STRATEGIC LAND	PROJECT No: ITB14160	SCALE @ A3: 1:500	DATE: 15.02.20	
	STATUS: FOR INFORMATION									DRAWING No: ITB14160-GA-017			REV: -	



- NOTES:
1. RELOCATION OF STREET FURNITURE AND LIGHTING TO BE ADDRESSED AT DETAILED DESIGN STAGE.
 2. RELOCATION OF ALL EXISTING UTILITY COVERS AND MARKER POSTS TO BE ADDRESSED AT DETAILED DESIGN STAGE.
 3. PARKING LAYBY'S TO BE MINIMUM OF 2.0m WIDE
 4. WHERE LAYBY'S HAVE BEEN PROVIDED, VERGE TO EITHER BE REGRADED OR RETAINING STRUCTURE TO BE PROVIDED WHICH WILL BE SET BACK FROM EDGE OF LAYBY TO ALLOW CAR DOOR TO OPEN ALONG WITH GUARDRAIL TO BE PROVIDED AT TOP OF RETAINING STRUCTURE - DETAILS TO BE ADDRESSED AT DETAILED DESIGN STAGE.

KEY:

HIGHWAY BOUNDARY

B	15.02.21	MC	STAGE 1 RSA COMMENTS INCORPORATED	DS	MG
A	11.02.21	JD	ACCESS ROAD AMENDED	DS	MG
REV	DATE	BY	DESCRIPTION	CHK	APD

STATUS: FOR INFORMATION

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TITLE: PROPOSED IMPROVEMENTS TO MARSHALL CLOSE

PROJECT: LAND TO THE SOUTH OF BARNHAM STATION

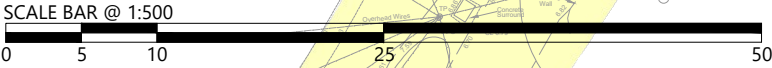
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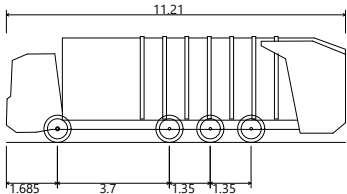
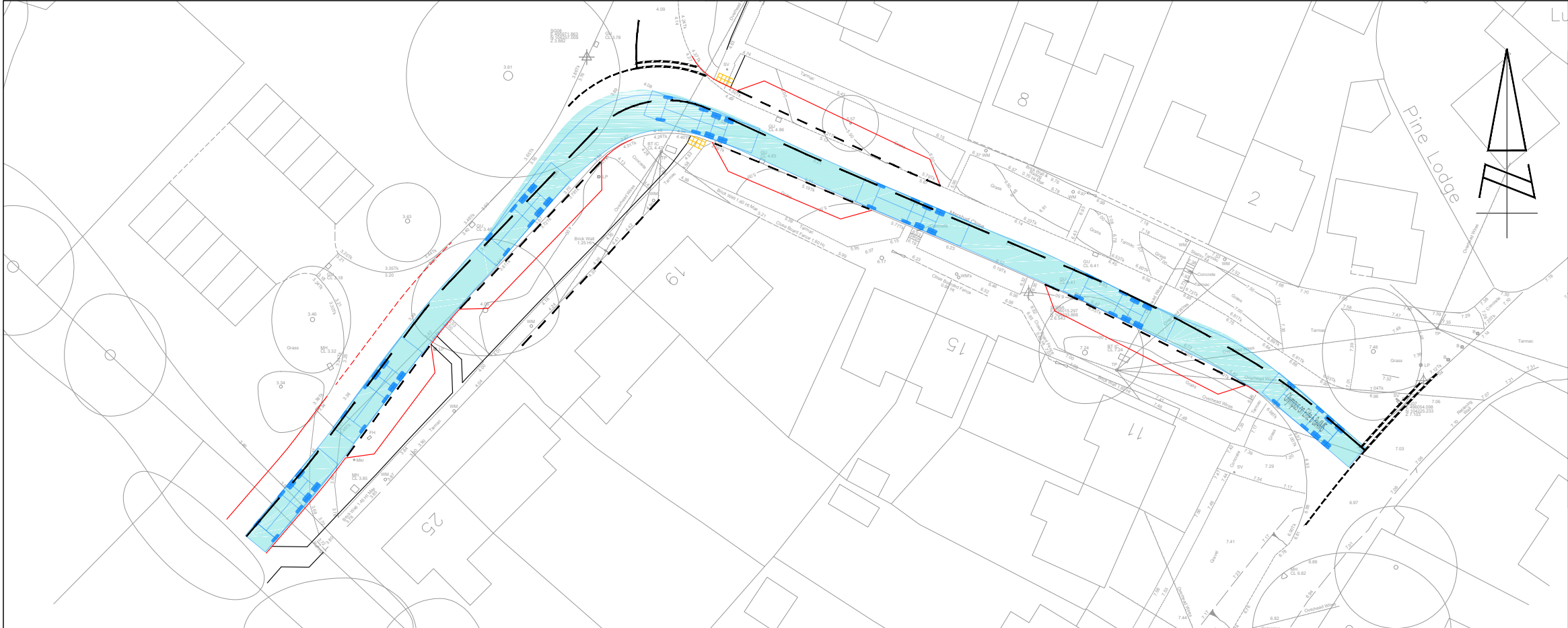
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DRAWING No: ITB14160-GA-010	REV: B	

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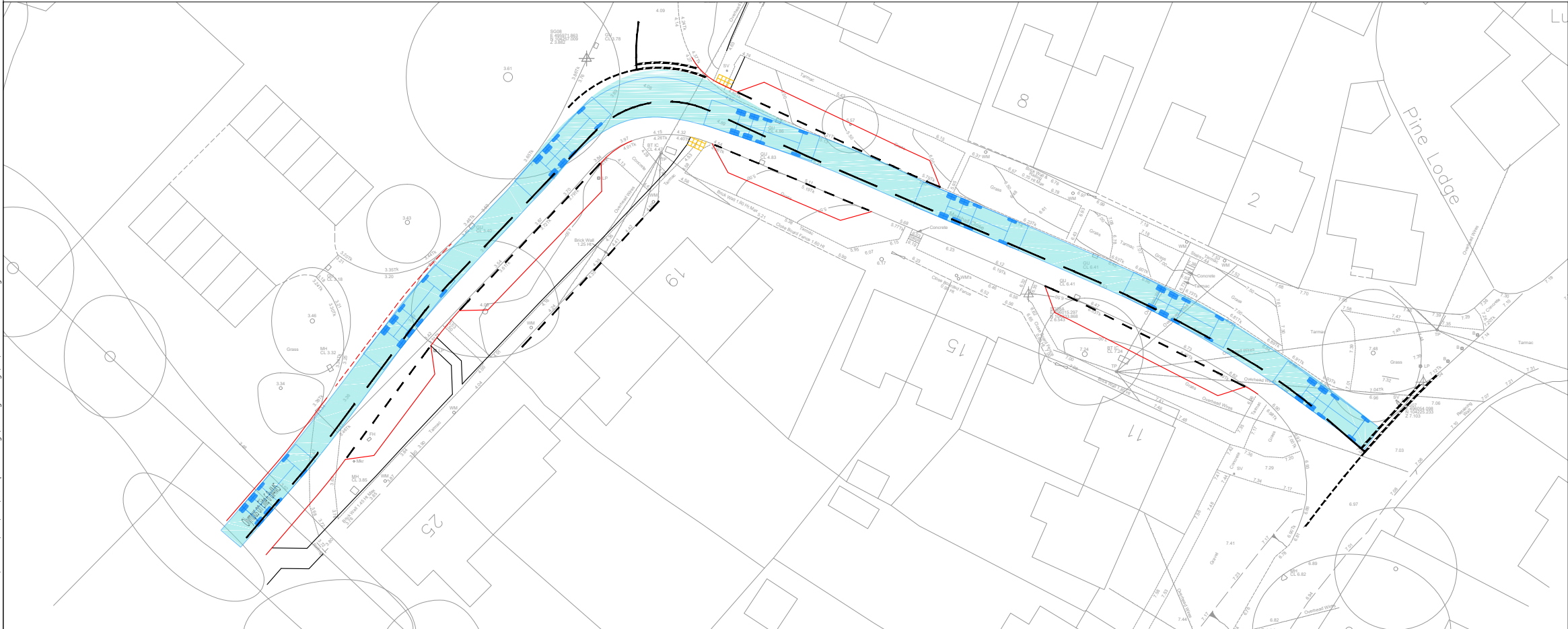




Olympus on Elite 6 8x4MS
Overall Length 11.210m
Overall Width 2.550m
Overall Body Height 3.500m
Min Body Ground Clearance 0.304m
Track Width 2.550m
Lock to lock time 6.50s
Kerb to Kerb Turning Radius 10.329m

C	11.02.21	JD	ACCESS ROAD AMENDED	DS	MG
B	28.10.20	JD	ACCESS ROAD AMENDED	MG	MG
A	22.10.20	JD	ACCESS ROAD AMENDED	MG	MG

REV	DATE	BY	DESCRIPTION	CHK	APD
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STATUS: FOR INFORMATION



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Tel: 01256 338640
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TITLE: SWEPT PATH ANALYSIS - REFUSE VEHICLE

PROJECT: TARS FARM, BARNHAM

CLIENT: GLEESON STRATEGIC LAND

DRAWN: JD	CHECKED: MG	APPROVED: MG
PROJECT No: ITB14160	SCALE @ A3: 1:500	DATE: 22.09.20

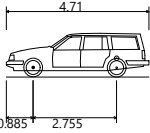
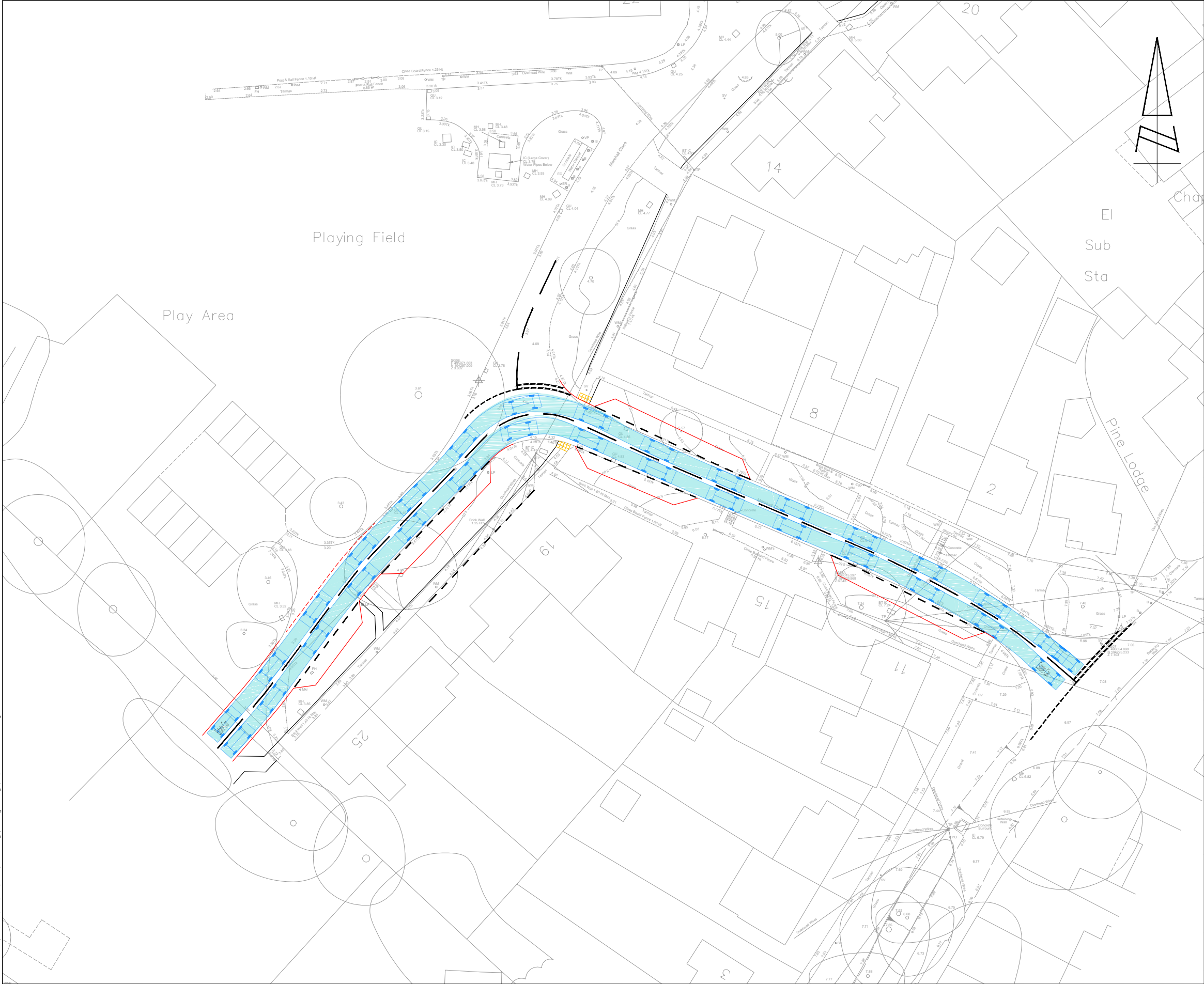
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Estate Car	4.710m
Overall Length	1.804m
Overall Width	1.442m
Overall Body Height	0.207m
Min Body Ground Clearance	1.756m
Max Track Width	4.00s
Lock to lock time	5.950m
Kerb to Kerb Turning Radius	

B	11.02.21	JD	ACCESS ROAD AMENDED	DS	MG
A	28.10.20	JD	ACCESS ROAD AMENDED	MG	MG
REV	DATE	BY	DESCRIPTION	CHK	APD

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TITLE: SWEPT PATH ANALYSIS - ESTATE CAR

PROJECT: TARS FARM, BARNHAM

CLIENT: GLEESON STRATEGIC LAND

DRAWN: JD	CHECKED: MG	APPROVED: MG
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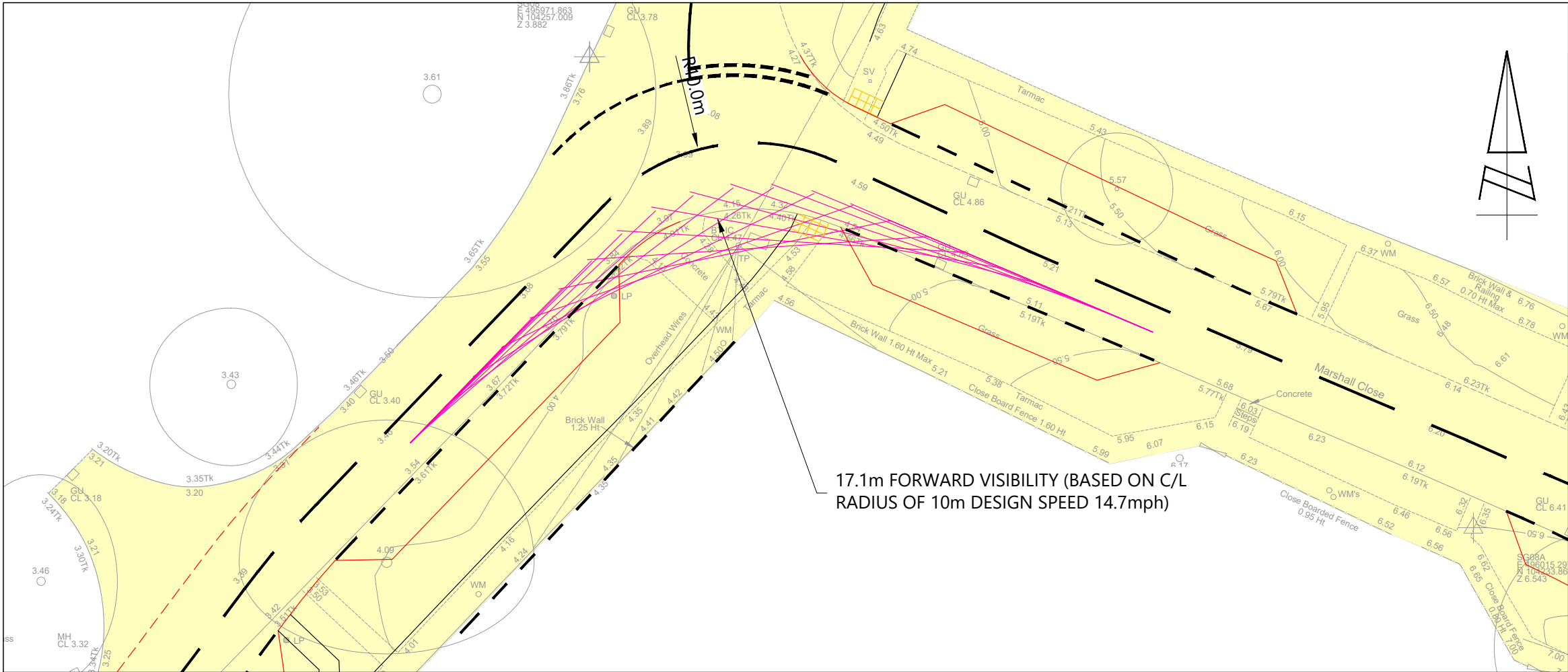
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17.1m FORWARD VISIBILITY (BASED ON C/L RADIUS OF 10m DESIGN SPEED 14.7mph)

KEY:

EXTENTS OF HIGHWAY BOUNDARY
BASED ON OS MAPPING

REV	DATE	BY	DESCRIPTION	CHK	APD

STATUS: FOR INFORMATION



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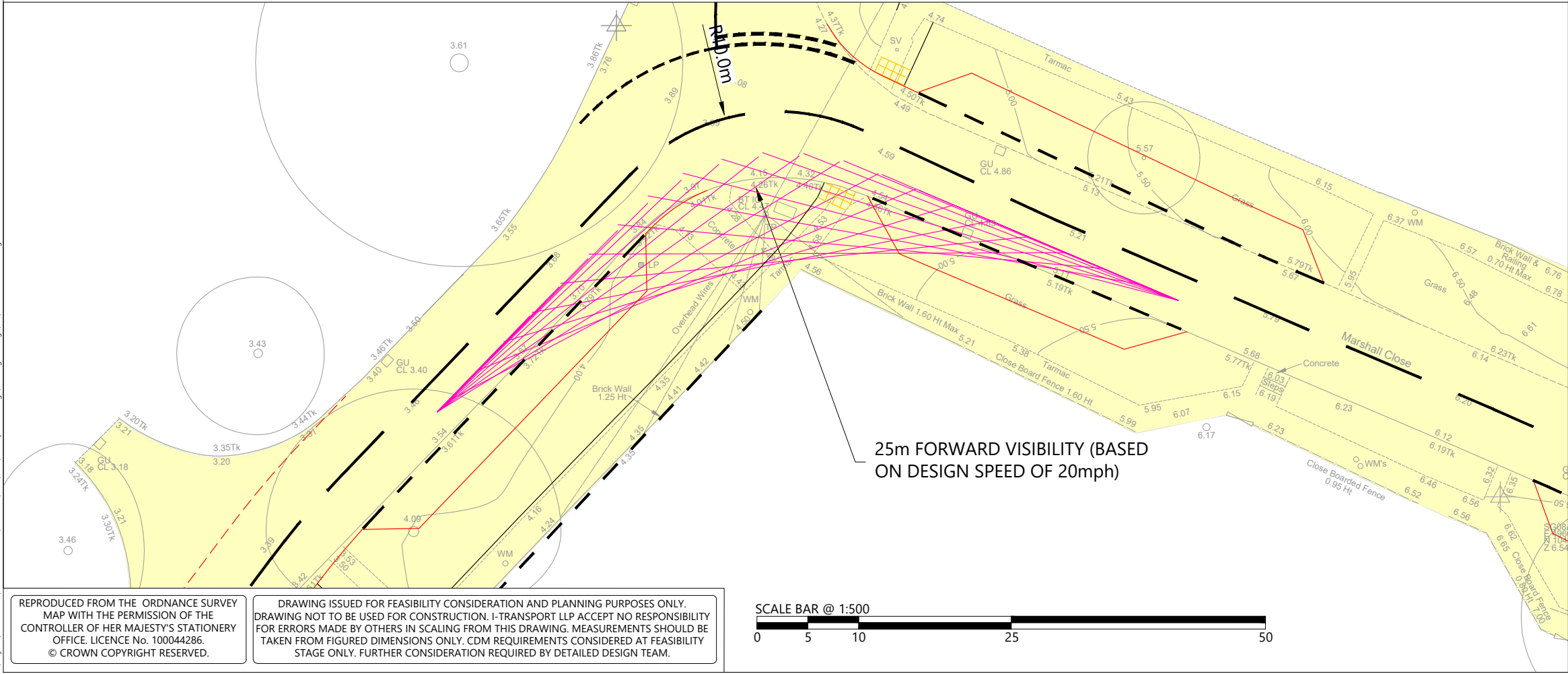
TITLE: PROPOSED IMPROVEMENTS TO MARSHALL CLOSE
FORWARD VISIBILITY

PROJECT: LAND TO THE SOUTH OF BARNHAM STATION

CLIENT: GLEESON STRATEGIC LAND

DRAWN: MC	CHECKED: DS	APPROVED: MG
PROJECT No: ITB14160	SCALE @ A3: 1:500	DATE: 15.02.21

DRAWING No: ITB14160-GA-018	REV: -
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25m FORWARD VISIBILITY (BASED ON DESIGN SPEED OF 20mph)



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