The Sizewell C Project

Deed of Obligation, Schedule 12, Annex W: Refreshed Noise Assessment: Two Village Bypass Construction

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Sizewell C
The power of **good for Britain**

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1. Introduction

1.1 AECOM has been appointed by Sizewell C Limited ('SZC') to identify residential buildings that will qualify under the Noise Mitigation Scheme (NMS) (as set out in Annex W of the **Deed of Obligation**[1]) as a result of the construction and operation of the Sizewell C nuclear power station project ('the project'). The project includes the following elements:

- The main development site (MDS) comprising land required for the Sizewell C nuclear power station, offshore works and land used temporarily to support construction, including a temporary accommodation campus and caravan site for the construction workforce. This includes the land east of Eastlands Industrial Estate (LEEIE).
- Two temporary park and ride sites, one at Darsham (the 'northern park and ride site') and one at Wickham Market (the 'southern park and ride site'), to reduce the amount of traffic generated by the construction workforce on local roads and through local villages.
- A permanent road to bypass Stratford St Andrew and Farnham (referred to as the 'two village bypass' or TVB), to alleviate traffic and mitigate road safety effects on the A12 through the two villages.
- A permanent road linking the A12 to west of the Sizewell C main development site (referred to as the 'Sizewell link road' or SLR), to alleviate traffic from the B1122 through Theberton and Middleton Moor.
- Permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (referred to as the 'Yoxford roundabout') and other road junctions to accommodate Sizewell C construction traffic and mitigate road safety effects.
- A temporary freight management facility (FMF) at Seven Hills on land to the south-east of the A12/A14 junction to manage the flow of freight to the main development site.
- A temporary extension of the existing Saxmundham to Leiston branch line into the main development site (referred to as 'the green rail route' or GRR) and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail to remove large numbers of lorries from the regional and local road network.

1.2 In addition, there will be temporary intensification for approximately 8 to 10 years of the use of the existing East Suffolk line railway between Westerfield Junction, just north of Ipswich and the junction with the Saxmundham to Leiston branch line, just north of Saxmundham, and the Saxmundham to Leiston branch line itself.

1.3 The project received development consent on 20 July 2022 under Statutory Instrument 2022 No 853. 'The Sizewell C (Nuclear Generating Station) Order 2022'.

1.4 Separate reports have been produced regarding qualification under the NMS due to the construction and operational use of each of the various elements of the project set out in paragraphs 1.1 and 1.2 above, except for the operational use of the power station itself, since the **Development Consent Order** (**DCO**) (Requirement 40: Operational Noise) precludes the operation of the power station at noise levels that could lead to properties being eligible for noise insulation.

1.5 This report focuses on noise insulation qualification under the NMS due to the construction of the two village bypass (TVB).

1.6 Figure 1 provides an overview of the preliminary design of the TVB[2]. Only minor changes are anticipated at the detailed design stage.

1.7 Works covered by the assessment in this report are currently anticipated to start in early 2025 and finish in late 2026.

[1] The Sizewell C Project 8.17/10.4 *Deed of Obligation Engrossment Version – Annexures - Part 3 of 3*, Book 8 Revision: 9.0, Book 10 Revision: 1.0, PINS Reference Number: EN010012, https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-008256-SZC%20Co.%20-%20Final%20signed%20and%20dated%20s.106,%20final%20s.106%20Explanatory%20Memorandum%20and%20final%20Confirmation%20and%20Compliance%20Document%2017.pdf

[2] File: SZC-AD0320-WSP-TVBHGN-ZZ0000-MD2-HCH-301001.dwg SZC 29/8/23

2. Criteria

Construction

2.1 The criteria for noise insulation and temporary rehousing are set out in the NMS which is detailed in Annex W of the **Deed of Obligation.**

2.2 Table 1.1 of the NMS sets out the criteria for eligibility for insulation for construction noise, which are:

"A Property will be eligible for an offer of insulation where the Property is predicted to experience the following when measured 1 m from the external façade of any Eligible Room:

(1) a construction noise level which exceeds the higher of either:

(a) the noise insulation trigger levels set out in Table 1.3 for any Associated Development site or in Table 1.4 for the main development site for the corresponding times of the day; or

(b) the existing Baseline Ambient Sound Level for the corresponding times of the day; and

(2) an exceedance of (1) where:

(a) the exceedance is predicted to occur on 10 or more days of working in any 15 consecutive days or on a total number of days exceeding 40 in any 6 consecutive months; or

(b) where the exceedance occurs only on a Saturday or Sunday, it is predicted to occur on 2 weekends, or part thereof, in any 15 consecutive days or on 6 weekends, or part thereof, in any 6 consecutive months."

2.3 The numerical values associated with these criteria are contained in Tables 1.3 and 1.4 of the NMS. Since this report does not consider the construction of the MDS, the values in Table 1.4 of the NMS are not relevant.

2.4 Table 1 sets out the NMS insulation trigger levels for construction noise for the associated development sites, which are taken from Table 1.3 of the NMS, but rearranged so that multiple periods are grouped according to their eligibility threshold; the NMS presented the periods chronologically.

Table 1. Construction noise insulation trigger levels for the Associated Development sites (from Table 1.3 in the NMS)

Day/Time	Averaging Period, T	Noise Insulation Trigger Level dB $L_{Aeq,T}$
Day: Weekdays, 08:00 to 18:00, Saturday, 08:00 to 13:00	10 hr (weekdays) 5 hr (Saturdays)	75
Shoulder Periods: Weekdays, 07:00 to 08:00 Weekdays, 18:00 to 19:00 Saturday, 07:00 to 08:00 Saturday, 13:00 to 14:00	1 hr	70
Evenings and weekends: Weekdays 19:00 to 23:00, Saturdays 14:00 to 23:00, Sundays 07:00 to 23:00	4 hr (weekdays) 1 hr (Saturdays) 1 hr (Sundays)	65
Nights: Every day 23:00 to 07:00	1 hr	55

2.5 Table 1.2 of the NMS sets out the criteria for temporary rehousing due to construction noise, which are:

"An occupier of a Property will be eligible for an offer of temporary rehousing where a Property is predicted to experience:

(1) a construction noise level which exceeds the higher of either:

(a) the temporary rehousing trigger levels set out in Table 1.5 for the corresponding times of the day; or

(b) the existing Baseline Ambient Sound Level by 10 dB for the corresponding times of the day; and

(2) an exceedance of (1) where:

(a) the exceedance is predicted to occur on 10 or more days of working in any 15 consecutive days or on a total number of days exceeding 40 in any 6 consecutive months; or

(b) where the exceedance occurs only on a Saturday or Sunday, it is predicted to occur on 2 weekends, or part thereof, in any 15 consecutive days or on 6 weekends, or part thereof, in any 6 consecutive months."

2.6 The numerical values associated with these criteria are contained in Table 1.5 of the NMS, and these are set out in Table 2.

Table 2. Construction noise temporary rehousing trigger levels – all sites (Table 1.5 in the NMS)

Day	Time	Averaging Period, T	Temporary Rehousing Trigger Level dB $L_{Aeq,T}$
Monday to Friday	07:00 to 08:00	1 hr	80
	08:00 to 18:00	10 hr	85
	18:00 to 19:00	1 hr	80
	19:00 to 23:00	4 hr	75
	23:00 to 07:00	1 hr	65
Saturday	07:00 to 08:00	1 hr	80
	08:00 to 13:00	5 hr	85
	13:00 to 14:00	1 hr	80
	14:00 to 23:00	1 hr	75
	23:00 to 07:00	1 hr	65
Sunday and Public Holidays	07:00 to 23:00	1 hr	75
	23:00 to 07:00	1 hr	65

2.7 The trigger levels relate to 'façade' noise levels, i.e. 1 metre from the external façade.

2.8 The potential working times for the TVB construction works are Monday to Saturday 07:00 to 19:00. The appointed road construction contractor has advised that they may not need to carry out works on Saturday afternoons between 14:00 and 19:00. However, as this will not be confirmed until the construction programme is refined, a conservative approach to the assessment of eligibility for noise insulation has been adopted, whereby receptors that are predicted to meet the Saturday afternoon trigger levels have been identified.

2.9 For temporary rehousing, those properties that are predicted to be eligible based on Saturday afternoon construction works have been identified separately from any that are predicted to be eligible during the 'core' working hours as discussed in paragraph 2.16.

2.10 In addition, the appointed road construction contractor has confirmed that the one-hour 'shoulder' periods of 07:00 to 08:00 Monday to Saturday, 18:00 to 19:00 Monday to Friday, and 13:00 to 14:00 Saturday would be used for activities such as staff briefings, not construction works.

2.11 The NMS trigger levels at which offers of noise insulation or temporary rehousing are to be made are the higher of the absolute levels set out in Tables 1 and 2 or a level set relative to the baseline ambient sound levels at a receptor, where the existing ambient sound levels already exceed the absolute thresholds.

2.12 Based on the baseline noise monitoring and modelling completed for the **Environmental Statement (ES)**[3] the baseline ambient sound levels at the closest façades of the receptors nearest to the A12 are generally in the mid 60 to mid 70 dB, $L_{Aeq,16h,\ facade}$ range during the day and the high 50 to low 60 dB $L_{Aeq,8h,façade}$ range at

[3] The Sizewell C Project 6.6 Revision, 1.0, Volume 5 Two Village Bypass *Chapter 4 Noise and Vibration*, May 2020,PINS Reference Number: EN010012, https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-002032-SZC_Bk6_ES_V5_Ch4_Noise_and_Vibration.pdf

night. At receptors and façades further away from the A12 along the route of the bypass, baseline ambient sound levels are generally below the absolute thresholds.

2.13 Taking a conservative approach, the absolute trigger levels for eligibility for noise insulation set out in Table 1 and the absolute trigger levels for eligibility for temporary rehousing set out in Table 2 have been adopted for all receptors, even where the ambient sound levels are likely to be higher than the trigger levels. This is considered to be a robust application of the NMS.

2.14 For the sake of clarity, the daytime shift spans the 'daytime' ten-hour period Monday to Friday and five-hour Saturday morning period defined in the NMS, as well as the Saturday afternoon period. Although it is noted the appointed contractor may not need to use Saturday afternoons for construction works, this is not yet confirmed so they have been included to provide a conservative approach.

2.15 The relevant noise insulation trigger level will be the most stringent threshold over these periods, which is 65 dB, quantified as a one-hour $L_{Aeq,T}$ during Saturday afternoons. Even though the contractor may not need to work on Saturday afternoons, the time required to insulate the affected properties means that it is better to make offers to more houses than might ultimately require it, so Saturday afternoon working is possible should it become necessary. If this approach is not adopted, the works may potentially be delayed while the NMS process is implemented.

2.16 However, the time required to organise temporary rehousing is much shorter, and therefore the weekday daytime and Saturday morning threshold of 85 dB has been adopted, quantified as either a ten-hour $L_{Aeq,T}$ on Mondays to Fridays between 08:00 and 18:00 or a five hour $L_{Aeq,T}$ on Saturday mornings from 08:00 to 13:00. The properties that would be eligible for temporary rehousing if Saturday afternoon working does become necessary have been identified in the text of this report, based on the lower threshold of 75 dB as a one-hour $L_{Aeq,T}$.

2.17 Some works are required outside of normal daytime hours, these relate to:

- eight nights of work at each end of the scheme to complete the tie-ins between the new junction and the existing A12 at the western end of the scheme, and the A12 and Friday Street at the eastern end; and
- nine nights of work at the A12 / Friday Street junction to remove the existing islands and white lines. The appointed road construction contractor has confirmed that these night works will not be carried out within 15 days of the other phase of night-time tie-in works at the A12 / Friday Street junction.

2.18 For these works, the relevant noise insulation trigger level is 55 dB, and the relevant temporary rehousing trigger level is 65 dB, both quantified as a one-hour $L_{Aeq,T}$.

3. Methodology

Construction activities and plant

3.1 The construction of the Sizewell C Project will span 9-12 years and involve many different contractors. A contractor is in place for the majority of the TVB works, therefore the construction information set out in the **ES**[4&5] has been reviewed and updated as appropriate.

3.2 The calculations use the SoundPLAN noise modelling software (version 8.2). The construction activities and plant from the **ES** have been used as a starting point**.** However, the appointed contractor has provided various updates and additional detail on the construction activities, plant, working times and durations, which have been adopted. The **ES** was based on spreadsheet calculations rather than noise modelling and focussed on the identification of potentially significant effects. Potential qualification under the NMS was

[4]The Sizewell C Project 6.6 Revision: 1.0 Volume 5 Two Village Bypass *Chapter 4 Noise and Vibration Appendices 4A - 4B,* May 2020, PINS Reference Number: EN010012 https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-002034-SZC_Bk6_ES_V5_Ch4_Noise_and_Vibration_Appx4A_4B_Noise_Appendices.pdf
[5] The Sizewell C Project 6.6 Revision: 1.0 Volume 5 Two Village Bypass *Chapter 2 Description of Two Village Bypass*, May 2020, PINS Reference Number: EN010012, https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-002028-SZC_Bk6_ES_V5_Ch2_Description_of_Two_Village_Bypass.pdf

considered for construction noise, although the **ES** noted that a refreshed noise assessment would be required once more information on the construction works was available.

3.3 Table 3 details the assumed construction activities and durations. The list of plant used in the model for each activity is provided in Appendix A.

Table 3. Construction activities

Ref	Activity	Duration
1.1	Site set up - Vegetation clearance	20 days
1.2	Site set up - Site clearance	104 days
1.3	Compound build (A12 & A12 / Friday St junctions)	56 days A12, 20 days A12 / Friday St
1.4	Peat stabilisation	145 days
1.5	Statutory undertakers protection slabs	5 days
1.6	Build haul road offline	78 days
1.7	Build haul road online	40 days
2.1	Earthworks	342 days
3.1	Drainage	79 days
4.1	Pavements – new outside extents of existing roads	67 days
4.2	Pavements blacktop	35 days
4.3	Temporary carriageway (A12/Friday St junction only)	10 days
4.4	Pavements remove existing roads and footpaths	40 days
4.5	Pavements tie-ins night (A12 & A12 / Friday St junctions)	8 nights A12, 8 nights A12 / Friday St
4.6	Pavements tie-ins day (A12 & A12 / Friday St junctions)	80 days
4.7	Pavements remove islands night (A12 / Friday St junction only)	7 nights
4.8	Pavements remove white lines night (A12 / Friday St junction only)	2 nights
5.1	Kerbs	39 days
5.2	Footpaths	32 days
6.1	Main Road Bridge construction	84 days
6.2	Main Road Bridge piling	
6.3	Footbridge	69 days
6.4	Culverts CV01-CV05	119 days (14-30 days each)
7.1	Road Restraints	79 days
8.1	Fencing	74 days
9.1	Traffic Signs	46 days
10.1	Road Lighting (roundabouts)	21 days
11.1	Haul Road operation	-
11.2	Compound operation (A12 & A12 / Friday St junctions)	-
12.1	Compound removal	10 days A12, 10 days A12 / Friday St

3.4 The duration of the majority of the daytime activities is more than ten days and therefore they have the potential to meet the noise insulation and temporary rehousing criteria. The night-time activities (Activity 4.5 at both the A12 and A12 / Friday Street junctions, and Activities 4.7 and 4.8 at the A12 / Friday Street junction only) are expected to last less than ten nights, and there will be a period of more than 15 days between the two phases of night-time works at the A12 / Friday Street junction (Activity 4.5 and Activities 4.7/4.8), and therefore the night-time works cannot trigger qualification for noise insulation or temporary rehousing.

Ground heights

3.5 The noise model contains a 3-dimensional representation of the existing ground heights in the study area. The ground data is based on 2020 2 m Digital Terrain Model (DTM) LIDAR data downloaded from the Defra website[6] in December 2021, which has been filtered using the standard settings in the SoundPLAN software to reduce the size of the dataset.

[6] https://environment.data.gov.uk/DefraDataDownload/?Mode=survey downloaded 16/12/21

3.6 Proposed ground heights for the TVB works are incorporated into the noise model for the assessment of the later construction works, once the main earthworks and drainage are complete. The proposed ground heights are based on data provided by LDA Design in May 2022[7].

OS datasets

3.7 The noise model contains a 3-dimensional representation of residential and non-residential buildings in the surrounding area, and a representation of the existing ground type, for example acoustically hard surfaces such as concrete or water, or acoustically soft surfaces such as vegetation. These data are based on OS MasterMap (including the Building Height Attribute dataset) and OS AddressBase Plus data provided by Dalcour Maclaren in December 2021.

Receptors

3.8 The construction noise calculations have been undertaken at the 38 no. receptor buildings shown on Sheets 1 to 7 of Figure 2. Predicting construction noise levels at every façade of every property is not a reasonable or proportionate approach and therefore, in some locations a single receptor position is used to represent several adjacent properties or façades. Professional judgement has been applied conservatively to identify which façades at a property are likely to qualify. For example, if the façade of one half of a pair of semi-detached properties is just over the relevant criterion and the other half is just under, then both have been identified as qualifying.

Mitigation

3.9 At this stage no specific mitigation has been identified for inclusion in this construction noise assessment, so no allowance for mitigation has been made in the calculations presented in this report.

Prediction method

3.10 The prediction method for the construction noise assessment is that contained in ISO 9613-2:1996[8], as was the case for the TVB construction noise calculations in the **ES**.

3.11 The majority of the construction activities will progress across the worksite, therefore, estimates of the working areas over ten days have been made based on the total area of each activity and the total duration of each activity. The surrounding residential properties have been grouped into 11 no. areas, labelled A to K (see Sheets 1 to 7 of Figure 2). The working area over ten days that is closest to each of the 11 no. groups of residential properties has been used to estimate the average construction noise level over the worst ten days.

3.12 Some activities are limited to specific locations, therefore their noise levels are assumed to be constant for the duration of these activities. For example, the construction (Activity 1.3), operation (Activity 11.2) and removal (Activity 12.1) of the two compounds at the A12 and A12 / Friday Street junctions, and the works to construct the main bridge (Activities 6.1 and 6.2), footbridge (Activity 6.3) and culverts (Activity 6.4).

3.13 The majority of the works are by their nature sequential in any one location, e.g. site clearance followed by earthworks, then drainage, pavements, kerbs, footpaths and finally, fencing, signs and lighting. Therefore, there is limited potential for these activities to overlap in any one location. In particular, it is highly unlikely that the worst case ten days of more than one of these activities will coincide at any one location. However, given the size of the scheme, there is potential for sequential activities to occur at the same time in adjacent areas of the scheme, and activities limited to a specific location will overlap with other activities.

3.14 The current programme has been reviewed and a total of 20 no. combinations of daytime activities over the duration of the works have been assessed, and the worst-case combination reported for each receptor.

Assumptions and limitations

3.15 As with all construction noise assessments, the predicted noise levels can only ever be a best estimate of the actual noise levels due to the large number of variables for which assumptions must be made, including the number, type and on-time of each item of plant, and the location and extent of the activity. Estimating the noise level that is likely to be exceeded for ten days also includes some inherent uncertainty as it is

[7] File: '7542_WF_2VB_3D.dwg from LDA Design 15/07/22
[8] ISO 9613-2:1996 'Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation'

dependent on assumptions on the duration of the activity, the rate of progress across the working area and the manner in which the works will progress.

3.16 The eligibility for insulation and temporary rehousing due to construction works under the NMS are based on the predicted construction noise levels exceeding the relevant trigger levels. However, for the purposes of this refreshed assessment, eligibility is considered to also occur where the predicted construction noise levels are equal to the relevant trigger level. The results have been rounded to the nearest whole decibel, i.e. 0.5 dB is rounded up. This is considered a reasonable approach given the inherent uncertainties in the construction noise calculation process, as set out above.

3.17 Some utility diversion works will be required at the TVB and at this stage there is insufficient detail available on the nature, timing, and duration of these works to quantify noise from them; therefore utility diversion works are not included in this assessment.

4. Results

4.1 Full details of the predicted construction noise levels at the 38 no. selected receptor buildings are provided in Appendix B, and are also illustrated on the seven sheets of Figure 2. Façades identified as qualifying for noise insulation are also highlighted.

4.2 The highest construction noise levels are generally associated with the various pavements and footpath works, followed by the earthworks and site clearance works. The works associated with fencing, traffic signs and road lighting require less noisy plant and, therefore, generally result in lower noise levels. The works to construct the main bridge, footbridge and culverts are not in close proximity to residential properties and therefore do not generally result in high construction noise levels at receptors.

4.3 Night-time noise levels during the tie-in works are reasonably high at the receptors closest to the A12 and the A12 / Friday Street junctions, due to the plant requirements for this activity and the proximity of the receptors. As detailed in Section 3 of this report, the night-time tie-in works at the A12 and the two phases of night-time tie-in works at the A12 / Friday Street junction, cannot trigger noise insulation and temporary-rehousing qualification as their durations do not meet the ten or more days threshold and the time between the two phases of night works at the A12 / Friday Street junction will be more than 15 days.

Eligibility for insulation

4.4 The results indicate that exceedances of the noise insulation criteria are predicted at 20 no. of the selected receptor buildings close to the scheme, which represent 24 no. residential properties.

4.5 At 19 no. of the 24 no. residential properties, this outcome is based on predicted exceedances of the Saturday afternoon noise insulation threshold only. At the remaining five identified residential properties, the 75 dB daytime and Saturday morning threshold is also met. Although the contractor has indicated that construction works may not be needed on Saturday afternoons, it is considered prudent to assume that such works might occur, as the time required for the installation of insulation makes it difficult to insulate properties at short notice should Saturday afternoon working be necessary.

Eligibility for temporary rehousing

4.6 The temporary rehousing criterion for the weekday daytime and Saturday mornings is not predicted to be exceeded at any residential properties.

4.7 The temporary rehousing criterion for Saturday afternoons is predicted to be exceeded at five residential properties represented by Receptors A_05, A_06, A_07, K_23 and H_28. These are located close to the junction with the A12 at the western end of the scheme, the A12 / Friday Street junction at the eastern end and the footbridge earthworks on the mainline.

4.8 The contractor has indicated that construction works may not be needed on Saturday afternoons. As the time required to organise temporary rehousing is significantly shorter than for the installation of insulation, and because the contractor will have the ability to manage the works to avoid unnecessarily disrupting people's lives by rehousing them, the properties identified as being potentially eligible for temporary rehousing based on Saturday afternoon working will be reviewed periodically as the works progress.

4.9 As a result, the five residential properties that might be eligible for temporary rehousing if construction works become necessary on Saturday afternoons, are not explicitly identified on Figure 2.

Mitigation

4.10 Requirement 2 of the DCO requires a Noise Monitoring and Management Plan (NMMP), as part of the Code of Construction Practice, for the TVB construction works, to be submitted to East Suffolk Council for approval. The NMMP will set out noise mitigation measures.

4.11 The benefit of such measures has not been included in the calculations set out in this report, and since their purpose will be to reduce construction noise levels, the assessment of eligibility for noise insulation set out in this report will not need to be revisited.

4.12 The implications of any alterations to the proposed timing or durations of the works may require an update of this noise assessment in due course to confirm eligibility for temporary rehousing.

5. Conclusion

5.1 The results of the construction noise modelling indicate that 24 no. residential properties close to the scheme are predicted to be eligible for noise insulation under the Noise Mitigation Scheme for the Sizewell C project. At the majority of these properties, this conclusion is based on construction works on a Saturday afternoon being necessary, despite the contractor advising they may not be needed.

5.2 The time required to organise the installation of insulation is such that it is considered prudent to assume that Saturday afternoon works could occur, thereby avoiding the need to delay the works in the event that such working is necessary.

5.3 No properties are predicted to be eligible for temporary rehousing, assuming working on Saturday afternoons is not needed. The time required to organise temporary rehousing is much shorter than for the installation of insulation, so should Saturday afternoon working prove necessary, the properties likely to be eligible for temporary rehousing can be reviewed closer to the time. Based on the current programme, up to five residential properties may be eligible for temporary rehousing should Saturday afternoon working be necessary.

Appendix A Construction information

Table 4. Summary of construction information

Ref	Activity	Plant	% on-time	No. of plant items	L_{wA} dB
1.1	Site set up - Vegetation clearance	Chainsaw	17	2	115
		Woodchipper	17	1	121
1.2	Site set up - Site clearance	Lorry loader crane HIAB	25	1	104
		Diesel / petrol generator	100	1	97
		360 Wheeled / tracked excavator	70	2	107
		180 Backhoe loader	50	1	107
		Dump truck 1	70	2	106
		Telehandler	50	1	107
1.3	Compound build	Lorry loader crane HIAB	25	1	104
	(A12 and A12 / Friday St junctions)	Diesel / petrol generator	100	1	97
		360 Wheeled / tracked excavator	70	2	107
		5t dumper	70	2	106
		Vibratory tamping roller	50	1	111
1.4	Peat stabilisation	B250 cassegrande rig	80	2	108
		Concrete mixer truck	100	2	107
		20t 360 excavator	50	2	106
1.5	Statutory undertakers protection slabs	Concrete mixer truck	50	1	107
		Lorry loader crane HIAB	50	1	104
		5t dumper	50	1	106
		20t 360 excavator	50	1	106
1.6	Build haul road offline	Tracked dozer	75	1	108
		Vibratory tamping roller	50	1	111
		Road tipper wagon	100	2	107
1.7	Build haul road online	Soil stabilizer WR200	75	1	106
		Road tipper wagon	50	1	107
		Small tanker	50	1	104
		Wheeled loading shovel	50	1	107
		Vibratory tamping roller	75	1	111
2.1	Earthworks	Tracked dozer	50	1	108
		Wheeled loading shovel	50	1	107
		360 Tracked excavator	70	2	110
		Motorgrader/scraper	50	2	108
		Articulated hauler/dump truck	50	8	108
		Vibratory tamping roller	50	2	111
3.1	Drainage	Lorry loader crane HIAB	50	1	104
		360 Tracked excavator	90	2	110
		180 Backhoe loader	70	2	107
		Dump truck 1	50	2	106
		Concrete mixer truck	50	1	107
		Trench rammer	50	2	91
		Road tipper wagon	50	2	107
4.1	Pavements - new outside extents	Dump truck 2	30	12	108
	of existing roads	360 Tracked excavator	50	1	110
		180 Backhoe loader	50	1	107
4.2	Pavements blacktop	Asphalt paver(and tipper lorry)	90	1	109
		Compressor and pneumatic hand tool	10	1	118
		180 Backhoe loader	30	1	107
		Deadweight/vibrating roller	75	2	111
		Vibrating plate compactor	25	1	110
4.3	Temporary carriageway	Dump truck 2	30	12	108
	(A12 / Friday St junction only)	360 Tracked excavator	50	1	110

Ref	Activity	Plant	% on-time	No. of plant items	L_{wA} dB
		180 Backhoe loader	50	1	107
		Asphalt paver(and tipper lorry)	90	1	109
		Compressor and pneumatic hand tool	10	1	118
		Deadweight/vibrating roller	75	2	111
		Vibrating plate compactor	25	1	110
4.4	Pavements remove existing	Cold planer/milling machine	70	1	104
	roads and footpaths	Dump truck 2	50	1	108
		360 Tracked excavator (with breaker)	70	1	116
4.5	Pavements tie-ins night	Cold planer/milling machine	70	1	104
	(A12 and A12 / Friday St junctions)	Dump truck 2	50	1	108
		360 Tracked excavator (with breaker)	70	1	116
		180 Backhoe loader	50	1	107
		Asphalt paver(and tipper lorry)	70	1	109
		Compressor and pneumatic hand tool	17	1	118
		Deadweight/vibrating roller	50	1	111
		Vibrating plate compactor	25	1	110
4.6	Pavements tie-ins day	Dump truck 2	50	1	108
	(A12 and A12 / Friday St junctions)	Cold planer/milling machine	70	1	104
		360 Tracked excavator (with breaker)	10	1	116
		Hand saw	20	1	112
		360 Tracked excavator	60	1	110
		Compressor and pneumatic hand tool	17	1	118
		Deadweight/vibrating roller	50	1	111
		Vibrating plate compactor	25	1	110
4.7	Pavements remove islands night	Cold planer/milling machine	70	1	104
	(A12 / Friday St junction only)	Dump truck 2	50	1	108
		360 Tracked excavator (with breaker)	70	1	116
		180 Backhoe loader	50	1	107
		Asphalt paver (and tipper lorry)	70	1	109
		Compressor and pneumatic hand tool	17	1	118
		Deadweight/vibrating roller	50	1	111
		Vibrating plate compactor	25	1	110
4.8	Pavements remove white lines night (A12 / Friday St junction only)	Hydroblaster	70	1	101
5.1	Kerbs	Road sweeper	70	1	107
		Lorry loader crane HIAB	50	1	104
		Telehandler	50	1	107
		Concrete mixer truck	70	1	107
		Compressor and pneumatic hand tool	17	2	118
		5t excavator	25	2	93
5.2	Footpaths	Mini asphalt paver (and tipper lorry)	60	1	109
		Deadweight/vibrating roller	60	1	111
		Vibrating plate compactor	60	1	110
6.1	Main Road Bridge construction	Lorry loader crane HIAB	25	1	104
		Telehandler	50	1	107
		360 Tracked excavator	70	1	110
		Concrete mixer truck	70	1	107
		Concrete pump	50	1	108
		Concrete compaction plant	25	1	96
		Dump truck 2	50	1	108
		Deadweight/vibrating roller	50	1	111
		Compressor and pneumatic hand tool	17	1	118
		Mobile elevating work platform	25	1	104
6.2	Main Road Bridge piling	Mobile all terrain crane	50	1	101
		Piling rig (Continuous flight auger/bored)	50	1	108
6.3	Footbridge	Lorry loader crane HIAB	25	1	104

Ref	Activity	Plant	% on-time	No. of plant items	L_{wA} dB
		Telehandler	50	1	107
		360 Tracked excavator	70	1	110
		Concrete mixer truck	70	1	107
		Concrete pump	50	1	108
		Concrete compaction plant	25	1	96
		Dump truck 2	50	1	108
		Deadweight/vibrating roller	50	1	111
		Compressor and pneumatic hand tool	17	1	118
		Mobile all terrain crane	50	1	101
		Mobile elevating work platform	25	1	104
		Piling rig (Continuous flight auger/bored)	50	1	108
6.4	Culverts CV01-CV05	Lorry loader crane HIAB	25	1	104
		Telehandler	50	1	107
		360 Tracked excavator	70	1	110
		Concrete mixer truck	70	1	107
		Concrete pump	50	1	108
		Concrete compaction plant	25	1	96
		Dump truck 2	50	1	108
		Deadweight/vibrating roller	50	1	111
		Compressor and pneumatic hand tool	17	1	118
		Mobile all terrain crane	50	1	101
		Mobile elevating work platform	25	1	104
		Piling rig (Continuous flight auger/bored)	50	1	108
7.1	Road Restraints	Lorry loader crane HIAB	25	2	104
		Telehandler	50	2	107
		Concrete mixer truck	70	1	107
		Mini excavator	50	2	100
		180 Backhoe loader	50	2	107
8.1	Fencing	Lorry loader crane HIAB	25	1	104
		180 Backhoe loader	50	2	107
		Concrete mixer truck	70	1	107
9.1	Traffic Signs	Lorry loader crane HIAB	25	1	104
		Tracked excavator 14t	50	1	98
		Mini excavator	50	1	100
		Mobile elevating work platform	25	1	104
10.1	Road Lighting (roundabouts)	Lorry loader crane HIAB	25	1	104
		Mini excavator	50	1	100
		Mobile elevating work platform	25	1	104
11.1	Haul Road operation	Road tipper wagon/dumpers	Peak 21/hr 2 way		107
11.2	Compound operation	Mobile Concrete batching plant (A12 only)	40	1	108
	(A12 and A12 / Friday Street junctions)	Telehandler	50	1	107
		Office generator	100	1	90
		Wheelwash	20	1	90
12.1	Compound removal	Lorry loader crane HIAB	25	1	104
		Diesel / petrol generator	100	1	97

Appendix B Detailed construction noise results

Table 5 contains a breakdown of the results for the individual or combined construction activities (Activities 1.1 to 12.1) at each receptor location/façade. At receptors with more than one floor, results for the floor with the highest noise level are reported.

The 'Max Day' column contains the construction noise level for the noisiest individual activity or combination of activities during the day. A total of 20 no. combinations of daytime activities over the duration of the works have been assessed. Results which meet or exceed the various NMS daytime trigger levels of 65, 70, 75 and 80 dB $L_{Aeq,T}$ façade are highlighted as follows:

65 dB $L_{Aeq,T}$ façade – trigger level to qualify for noise insulation on Saturday afternoon
70 dB $L_{Aeq,T}$ façade – trigger level to qualify for noise insulation during shoulder hours on weekdays and Saturdays
75 dB $L_{Aeq,T}$ façade – trigger level to qualify for noise insulation on weekday daytimes and Saturday morning, and temporary rehousing on Saturday afternoon
80 dB $L_{Aeq,T}$ façade – trigger level to qualify for temporary rehousing during shoulder hours on weekdays and Saturdays

The 'Max Night' column contains the construction noise level for the noisiest combination of activities during the night. The three night-time activities will not overlap (Activities 4.5, 4.7 and 4.8), however, as a conservative approach the A12 and Friday Street compounds (Activity 11.2) are assumed to operate during the night works. Results which meet or exceed the various NMS night-time trigger levels of 55 and 65 dB $L_{Aeq,T}$ façade are highlighted as follows:

55 dB $L_{Aeq,T}$ façade – trigger level to qualify for noise insulation during the night-time
65 dB $L_{Aeq,T}$ façade – trigger level to qualify for temporary rehousing during the night-time

Note the results are highlighted solely on the basis of the construction noise trigger levels being met or exceeded. To qualify under the NMS both the construction noise level and duration criteria must both be met. Where relevant, durations are discussed in Section 4 of this report.

A '-' indicates the receptor is remote from the construction activity and the predicted construction noise level is low (less than 30 dB $L_{Aeq,T}$ façade).

Table 5. Detailed construction noise results ($L_{Aeq,T}$ façade)

ID	Façade	Max Day	Max Night	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	3.1	4.1	4.2	4.3	4.4	4.5 night	4.6	4.7 night	4.8 night	5.1	5.2	6.1	6.2	6.3	6.4	7.1	8.1	9.1	10.1	11.1	11.2	12.1
A_01	SE	62	63	52	56	54	51	37	50	42	60	53	52	52	36	52	63	58	34	-	54	53	48	39	36	52	49	49	41	38	47	50	57
A_01	SW	62	64	52	56	53	50	35	51	41	61	54	53	52	-	54	64	60	-	-	56	55	48	39	-	51	49	49	43	40	47	50	57
A_02	SW	62	64	51	55	53	50	35	51	41	61	56	55	55	-	55	63	60	-	-	56	56	48	40	-	52	49	48	43	41	47	49	56
A_03	NW	58	60	47	52	50	38	30	47	31	57	51	50	49	-	52	60	56	-	-	52	52	34	-	-	40	37	44	39	36	41	47	53
A_03	SW	61	62	51	54	53	50	31	50	40	59	53	52	51	-	55	61	58	-	-	54	54	49	40	-	52	49	47	41	38	47	49	56
A_04	NE(s)	61	65	52	52	48	39	37	35	43	60	53	45	45	35	43	65	53	33	-	55	55	42	33	36	45	37	48	33	-	42	44	50
A_04	NE(n)	59	62	49	52	48	36	33	34	40	58	50	44	44	36	39	62	52	34	-	52	52	44	35	37	45	36	45	32	-	41	45	50
A_04	NW	50	51	39	41	40	34	-	40	-	48	47	47	47	-	45	51	45	-	-	41	46	31	-	-	36	33	38	36	34	39	35	42
A_04	SE(s)	67	67	55	60	58	52	36	52	43	65	59	57	57	35	58	67	65	32	-	59	60	49	40	37	55	51	52	47	43	49	55	61
A_04	SE(n)	61	65	52	53	49	38	37	36	43	61	53	46	46	36	43	65	52	35	-	55	55	43	34	38	47	37	48	33	-	43	45	51
A_04	SW	67	64	54	60	57	52	-	52	39	63	58	57	57	-	58	63	65	-	-	57	59	49	40	-	54	51	50	47	44	49	54	60

ID	Façade	Max Day	Max Night	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	3.1	4.1	4.2	4.3	4.4	4.5 night	4.6	4.7 night	4.8 night	5.1	5.2	6.1	6.2	6.3	6.4	7.1	8.1	9.1	10.1	11.1	11.2	12.1
A_05	NE(s)	79	76	65	69	63	51	34	46	41	74	58	64	65	36	67	76	79	34	-	71	72	47	38	36	53	50	57	53	34	46	61	67
A_05	NE(n)	78	75	63	68	62	50	35	43	42	72	58	62	62	36	62	75	77	34	-	68	70	48	39	37	51	48	56	53	31	46	61	66
A_05	NW(s)	67	63	54	58	53	35	30	53	-	65	56	57	57	-	67	63	66	-	-	63	62	30	-	-	38	34	48	47	43	45	50	57
A_05	NW(n)	71	69	57	61	56	34	33	46	38	66	56	56	56	33	59	69	70	32	-	62	63	31	-	-	38	33	51	49	38	42	55	60
A_05	SE	81	77	67	72	66	54	35	60	43	78	65	70	70	33	78	77	81	32	-	76	76	50	41	36	57	53	59	58	50	53	62	70
A_05	SW(s)	77	71	62	68	63	52	-	60	38	76	65	67	68	-	77	71	75	-	-	73	73	47	38	-	54	51	55	57	51	53	57	66
A_05	SW(c)	73	67	59	64	59	47	-	59	32	72	64	64	65	-	73	67	70	-	-	70	69	38	-	-	50	46	52	54	49	50	52	62
A_05	SW(n)	68	63	55	59	53	35	30	54	-	66	59	59	59	-	68	63	66	-	-	64	63	30	-	-	38	34	48	47	45	47	49	57
A_06	NE	74	72	60	65	61	50	34	48	41	69	58	58	59	36	61	72	73	34	-	65	66	48	39	37	51	48	54	50	36	46	58	64
A_06	NW	65	64	52	56	52	35	-	48	34	62	54	53	53	33	61	64	64	31	-	59	59	35	-	-	40	36	47	45	38	43	49	56
A_06	SE	75	73	62	66	61	39	35	55	43	71	60	61	62	34	67	73	75	33	-	67	68	42	33	37	47	38	55	52	44	48	59	64
A_06	SW	71	67	57	62	57	42	34	55	33	68	59	59	60	-	69	67	70	-	-	66	65	35	-	-	45	41	51	50	44	48	54	61
A_07	NE(s)	75	71	60	67	61	49	34	47	43	72	55	63	63	32	74	70	74	31	-	71	71	47	38	36	50	48	53	55	40	47	58	65
A_07	NE(n)	62	62	49	54	50	37	-	46	33	61	54	53	53	34	58	62	60	33	-	57	58	35	-	-	40	36	44	41	38	41	46	52
A_07	NW	60	57	46	50	47	36	-	47	30	59	56	55	54	-	59	57	56	-	-	55	56	32	-	-	39	35	43	42	42	43	41	49
A_07	SE(s)	75	63	60	65	60	50	33	58	40	72	63	64	64	33	75	62	66	32	-	73	71	46	37	34	53	49	52	52	47	50	54	64
A_07	SE(n)	69	61	57	58	53	45	32	55	39	68	64	63	63	-	69	61	61	-	-	64	65	44	36	-	47	45	49	51	49	51	47	56
A_07	SW(s)	76	65	61	65	60	50	-	59	36	73	65	65	66	33	76	65	68	32	-	74	72	44	36	32	53	49	52	52	49	50	54	63
A_07	SW(c)	65	60	53	55	51	44	-	53	34	65	59	58	58	-	64	60	58	-	-	60	60	38	-	-	46	43	46	47	46	47	45	53
A_07	SW(n)	73	70	61	60	55	43	-	61	35	72	67	66	66	-	70	70	70	-	-	67	66	39	30	-	46	42	52	53	53	54	43	59
B_08	SE	60	56	47	51	49	46	31	56	38	59	55	54	54	31	53	56	56	-	-	52	52	44	35	34	48	47	46	44	42	47	43	51
C_09	E	68	58	52	67	53	54	34	61	42	66	61	60	60	33	57	57	57	31	-	58	55	50	41	34	56	52	62	47	48	55	47	56
C_09	N	69	59	58	65	54	45	-	63	32	67	62	61	61	33	58	59	59	31	-	59	56	37	-	32	50	46	62	48	48	55	48	57
C_09	S(n)	53	39	42	49	39	43	30	45	41	50	45	46	45	-	37	39	40	-	-	38	42	47	37	-	47	42	44	32	31	43	30	40
C_09	S(s)	62	48	48	61	48	53	30	46	40	58	55	54	53	30	41	47	40	-	-	43	46	48	39	32	54	51	56	39	38	48	42	51
C_09	W(n)	65	57	53	59	51	35	-	60	30	64	59	58	58	31	54	57	57	30	-	55	53	33	-	-	37	33	56	46	45	52	46	55
C_09	W(s)	54	43	40	50	41	45	-	48	34	52	45	46	46	-	40	43	44	-	-	41	43	46	37	-	48	45	46	36	33	43	36	44
D_10	NE	66	41	57	47	40	-	58	-	60	65	65	62	62	42	58	40	39	41	-	61	46	-	-	49	32	44	59	51	-	55	32	41
D_10	NW	69	42	62	49	42	41	61	42	63	69	69	66	66	41	61	42	40	40	-	65	47	41	32	49	43	43	63	54	-	57	36	41
D_10	SW	67	42	59	46	39	41	58	42	61	66	66	63	64	31	58	41	40	-	-	62	47	41	32	36	43	44	60	52	-	55	33	41
D_11	SE	60	33	54	35	31	30	48	-	55	59	59	55	54	-	55	33	-	-	-	53	36	30	-	35	31	32	53	44	-	49	-	30
D_12	NE	57	38	46	37	36	38	43	40	46	56	53	50	50	35	42	37	35	32	-	50	47	39	30	38	41	43	46	38	-	46	-	37
E_13	S	56	44	46	44	41	43	43	46	46	53	50	50	49	-	51	44	43	-	-	47	44	46	37	42	46	44	46	36	-	46	36	43
E_14	S	60	45	51	45	41	44	48	47	50	58	55	54	54	-	56	44	43	-	-	51	45	47	38	30	48	45	51	41	30	48	36	43
E_14	W	58	47	49	44	44	44	39	47	36	56	52	51	51	-	54	47	46	-	-	47	46	47	39	-	48	46	50	36	33	46	39	46

ID	Façade	Max Day	Max Night	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	3.1	4.1	4.2	4.3	4.4	4.5 night	4.6	4.7 night	4.8 night	5.1	5.2	6.1	6.2	6.3	6.4	7.1	8.1	9.1	10.1	11.1	11.2	12.1
F_14	E	60	39	49	47	39	-	47	33	51	57	54	52	52	41	53	39	39	38	-	49	47	31	-	48	31	37	48	40	-	48	30	40
F_15	E	61	45	44	50	43	33	33	33	47	58	51	47	46	45	42	44	44	43	-	46	50	39	30	56	40	45	48	32	31	46	36	45
F_15	N	58	43	40	48	44	-	32	32	36	55	49	44	43	44	40	42	43	42	-	44	48	41	33	54	41	43	45	31	30	44	36	44
F_15	W	57	45	47	37	42	41	47	44	40	55	53	52	52	-	53	44	43	-	-	49	43	45	37	35	46	44	46	40	30	47	36	43
F_16	N	55	42	41	45	41	-	30	33	40	52	48	44	44	42	39	41	41	41	-	43	46	33	-	49	39	40	44	-	-	43	34	41
F_16	S	67	40	54	55	38	41	48	44	57	64	57	55	55	-	53	39	35	-	-	50	54	44	35	55	45	43	54	43	-	53	33	40
F_17	E(s)	66	38	55	56	37	-	45	-	57	65	56	52	52	36	51	37	40	33	-	51	55	-	-	48	34	36	55	41	-	52	-	36
F_17	E(n)	63	43	52	51	44	34	40	40	56	60	54	51	51	44	49	42	43	42	-	48	52	39	30	52	40	42	53	39	30	51	36	45
F_17	N	59	46	47	49	43	-	30	32	48	57	53	49	48	46	45	43	41	46	-	48	51	33	-	53	40	43	50	33	32	48	35	44
F_18	E	69	47	54	60	45	-	34	-	57	67	58	52	50	47	52	44	42	47	-	54	57	-	-	63	-	48	57	36	33	54	36	46
F_18	N	65	42	52	56	42	-	35	-	52	63	55	48	47	43	47	41	40	42	-	51	54	32	-	57	38	43	53	34	30	51	33	42
F_18	S	68	35	54	58	37	39	46	43	57	65	56	54	54	35	52	34	32	32	-	52	56	42	33	59	41	46	56	40	-	53	-	36
F_18	W	62	41	50	52	40	34	46	40	51	60	54	52	52	39	52	40	40	37	-	49	50	39	31	52	40	41	49	40	-	49	34	40
F_19	E	67	48	52	57	46	-	46	-	53	63	58	52	50	49	49	47	47	47	-	53	56	-	-	63	-	49	56	41	34	53	39	48
F_19	N	65	49	49	55	48	-	-	30	41	61	57	50	50	50	46	48	48	49	-	53	56	-	-	62	34	48	55	36	35	52	41	50
F_19	S	67	41	55	58	38	30	38	34	58	65	56	51	51	35	52	40	38	32	-	52	56	39	30	56	40	42	56	40	-	53	32	38
F_19	W	59	44	47	48	42	34	44	38	51	56	52	50	50	38	49	43	42	36	-	47	47	39	31	48	40	38	48	39	-	47	36	42
F_20	E	68	47	52	58	46	-	32	-	55	65	57	53	52	48	49	46	46	47	-	53	57	-	-	62	-	49	56	35	34	53	39	48
F_20	N	60	48	47	49	46	-	38	-	37	56	55	48	47	48	45	45	43	47	-	50	53	-	-	57	37	44	52	35	35	50	40	48
F_20	S(s)	67	41	53	57	40	37	46	42	55	65	55	52	52	37	50	41	39	34	-	51	55	40	31	59	40	46	55	39	-	52	33	40
F_20	S(n)	60	44	49	49	41	38	42	43	52	57	52	50	50	34	47	43	42	32	-	45	48	40	32	47	40	40	48	37	-	48	35	42
F_20	W	58	40	46	48	38	32	39	37	49	55	49	47	47	-	44	40	39	-	-	42	44	38	-	38	40	35	45	32	-	45	33	39
F_21	E	67	47	50	57	44	-	38	-	51	65	57	51	50	48	48	46	46	47	-	52	56	-	-	61	-	48	55	35	34	52	35	46
F_21	S	66	42	47	56	42	33	37	39	44	64	55	46	43	38	43	41	41	34	-	51	55	38	-	60	39	46	52	30	-	50	36	42
F_21	W	55	44	41	40	41	40	41	43	44	51	48	47	47	33	46	43	42	-	-	42	40	41	32	43	43	39	43	34	-	44	35	42
F_22	E	67	47	50	57	45	-	-	-	51	65	58	51	49	47	46	46	46	47	-	53	57	-	-	62	-	47	55	34	34	52	38	47
F_22	N	59	47	45	48	47	-	-	-	37	55	54	46	46	46	44	46	46	44	-	48	51	33	-	56	42	41	50	33	32	48	40	48
G_25	E	60	46	47	45	42	-	-	30	44	60	54	50	48	43	41	46	48	42	-	46	49	-	-	52	32	43	51	32	31	49	33	44
G_25	S	62	44	46	46	42	35	35	38	46	61	55	50	49	43	41	41	35	44	-	46	50	35	-	54	37	44	51	33	31	50	30	43
G_25	W	54	37	41	35	37	35	34	38	43	49	48	42	42	34	39	36	35	32	-	43	47	35	-	51	36	40	43	-	-	44	-	35
G_26	E	63	46	45	51	46	-	-	-	44	62	55	51	49	46	42	44	41	45	-	45	47	-	-	50	-	42	51	37	36	50	34	48
G_26	S	60	50	46	49	46	36	36	39	45	58	53	48	47	48	44	45	35	50	-	47	50	37	-	54	38	47	49	35	34	48	34	48
G_26	W	58	44	44	43	40	33	36	38	46	54	51	46	45	40	41	44	45	40	-	45	49	34	-	52	35	43	46	32	-	46	34	42
G_27	E	63	54	49	56	53	-	32	-	44	62	55	54	51	52	49	53	53	52	33	49	50	-	-	51	-	47	52	40	39	50	47	55
G_27	N	59	53	46	55	51	-	-	-	31	55	51	51	49	50	48	52	53	51	31	46	46	-	-	37	-	45	47	38	37	46	44	54

ID	Façade	Max Day	Max Night	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	3.1	4.1	4.2	4.3	4.4	4.5 night	4.6	4.7 night	4.8 night	5.1	5.2	6.1	6.2	6.3	6.4	7.1	8.1	9.1	10.1	11.1	11.2	12.1
G_27	S	63	50	48	53	50	35	37	38	47	62	56	53	51	49	47	47	44	49	-	48	51	35	-	54	37	46	52	37	36	51	44	52
G_27	S	63	45	47	47	44	35	37	39	47	62	56	53	50	44	43	42	37	45	-	47	51	36	-	54	37	45	52	35	32	51	32	45
H_28	E(n)	75	71	60	67	60	-	-	-	37	65	61	57	58	59	58	71	75	57	50	61	58	-	-	44	-	52	60	50	44	49	54	64
H_28	E(s)	74	70	59	67	61	-	30	-	39	64	60	57	57	59	58	70	73	56	48	60	58	-	-	44	-	52	59	49	44	50	56	65
H_29	N(n)	72	69	56	59	49	-	-	-	-	61	57	55	55	57	56	69	72	54	47	58	55	-	-	32	-	50	54	47	41	41	34	51
H_29	N(s)	61	55	41	53	51	-	-	-	31	50	45	44	43	47	43	55	59	42	33	44	44	-	-	35	32	39	41	36	32	38	35	54
H_29	S(s)	67	63	55	63	58	32	32	36	42	61	57	55	55	56	55	63	65	54	42	55	54	33	-	48	34	50	54	45	42	48	52	61
H_29	S(n)	58	50	43	55	52	35	32	38	42	51	50	47	46	43	39	49	53	39	-	43	45	36	-	48	37	35	45	36	34	46	40	55
H_29	W(s)	57	49	44	54	50	35	32	38	42	52	49	47	46	42	39	48	52	37	-	43	45	36	-	48	37	33	44	37	34	45	39	53
H_29	W(n)	58	49	40	55	53	33	30	36	40	52	49	47	45	42	38	49	53	37	-	41	44	34	-	45	34	34	44	33	33	44	37	56
H_30	E(n)	64	57	49	61	58	-	-	-	40	59	54	52	52	53	49	55	58	51	34	49	50	-	-	45	-	47	49	42	41	48	52	61
H_30	E(s)	65	58	52	62	59	-	31	-	42	60	55	54	54	57	55	56	56	55	37	52	51	-	-	48	-	50	52	43	42	50	54	62
H_30	N(e)	64	58	42	57	55	-	-	-	-	55	49	48	47	49	45	58	62	44	35	48	47	-	-	31	-	41	43	39	37	42	47	58
H_30	N(w)	64	60	42	51	43	-	-	-	-	51	46	47	46	52	47	60	64	45	37	49	49	-	-	-	-	43	37	38	33	34	31	44
H_30	S(n)	65	58	51	62	59	32	32	36	42	60	55	53	53	54	52	55	56	54	35	51	50	33	-	48	34	49	51	43	42	49	54	62
H_30	S(s)	64	58	51	60	57	-	33	34	42	59	53	52	52	56	54	57	55	53	38	52	53	33	-	48	33	49	51	41	40	49	54	60
H_30	W	50	43	38	43	42	33	30	36	40	44	46	42	41	39	36	43	47	35	-	35	42	34	-	45	34	31	39	-	-	42	33	42
I_31	E(n)	74	47	42	50	38	-	-	-	30	74	68	50	50	54	50	46	49	47	36	48	67	-	-	36	-	51	64	40	34	36	-	39
I_31	E(s)	72	50	44	43	35	-	-	-	-	72	57	45	44	45	50	49	51	50	-	44	54	-	-	-	-	34	59	41	33	34	-	37
I_31	N	71	61	55	57	48	-	-	-	-	70	71	59	59	60	60	61	64	60	42	57	69	-	-	34	-	56	67	50	46	45	39	51
I_31	S(s)	70	54	49	47	46	31	30	35	38	70	58	54	54	50	50	54	57	53	33	49	53	32	-	44	33	40	58	55	41	47	36	48
I_31	S(c)	72	48	40	41	39	-	-	-	32	72	55	45	44	45	44	45	47	48	-	41	52	-	-	38	-	37	59	41	33	37	-	40
I_31	S(n)	73	53	47	42	34	-	-	-	36	73	59	50	49	46	44	53	56	45	33	47	55	-	-	36	-	35	60	40	37	36	-	36
I_31	W	68	62	56	57	50	31	30	35	38	65	68	60	60	60	60	62	65	60	42	57	66	32	-	44	33	55	64	58	47	48	40	53
I_32	E	72	44	39	45	34	-	-	-	-	72	55	46	46	49	45	44	47	42	31	43	53	-	-	32	-	46	59	37	31	33	-	35
I_32	NE	73	52	48	52	36	-	-	-	-	73	61	52	51	56	54	51	54	52	35	50	59	-	-	-	-	54	60	48	37	33	-	38
I_32	NW	68	54	49	53	48	-	-	-	-	68	62	54	53	58	55	53	57	53	38	52	60	-	-	37	-	55	58	47	40	45	41	51
I_32	S	61	46	41	41	45	-	30	-	38	61	48	47	45	44	42	46	47	42	-	40	45	-	-	43	31	41	52	37	33	43	35	48
I_32	SW	61	56	49	48	50	-	30	30	38	59	55	53	53	52	53	56	57	54	35	50	49	30	-	43	31	44	51	45	42	46	37	53
I_33	E	65	52	45	47	41	-	-	-	-	65	54	48	48	50	50	51	53	52	34	46	52	-	-	-	-	45	54	40	34	36	-	44
I_33	N	63	57	51	51	49	-	-	-	31	62	57	55	54	54	54	56	56	57	34	51	51	-	-	38	-	47	53	45	43	47	37	52
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I_34	E	66	42	35	42	38	-	-	-	32	66	47	45	44	46	40	42	44	42	30	41	46	-	-	36	-	41	63	34	30	35	-	39

ID	Façade	Max Day	Max Night	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	3.1	4.1	4.2	4.3	4.4	4.5 night	4.6	4.7 night	4.8 night	5.1	5.2	6.1	6.2	6.3	6.4	7.1	8.1	9.1	10.1	11.1	11.2	12.1
I_34	S	57	46	41	40	44	30	30	34	40	56	49	47	45	45	41	46	47	44	-	40	45	31	-	45	32	36	54	36	35	44	35	46
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I_35	SW	63	50	47	48	47	-	32	33	40	61	53	52	52	52	49	50	51	50	34	48	49	30	-	44	31	48	62	41	39	44	38	49
I_36	E	55	47	39	39	38	-	-	-	-	54	45	43	42	43	45	44	45	47	-	40	40	-	-	30	-	36	49	32	30	34	32	41
I_36	N	63	52	48	49	45	-	-	-	33	63	54	52	52	54	50	52	54	50	34	49	50	-	-	42	-	49	62	42	39	43	37	48
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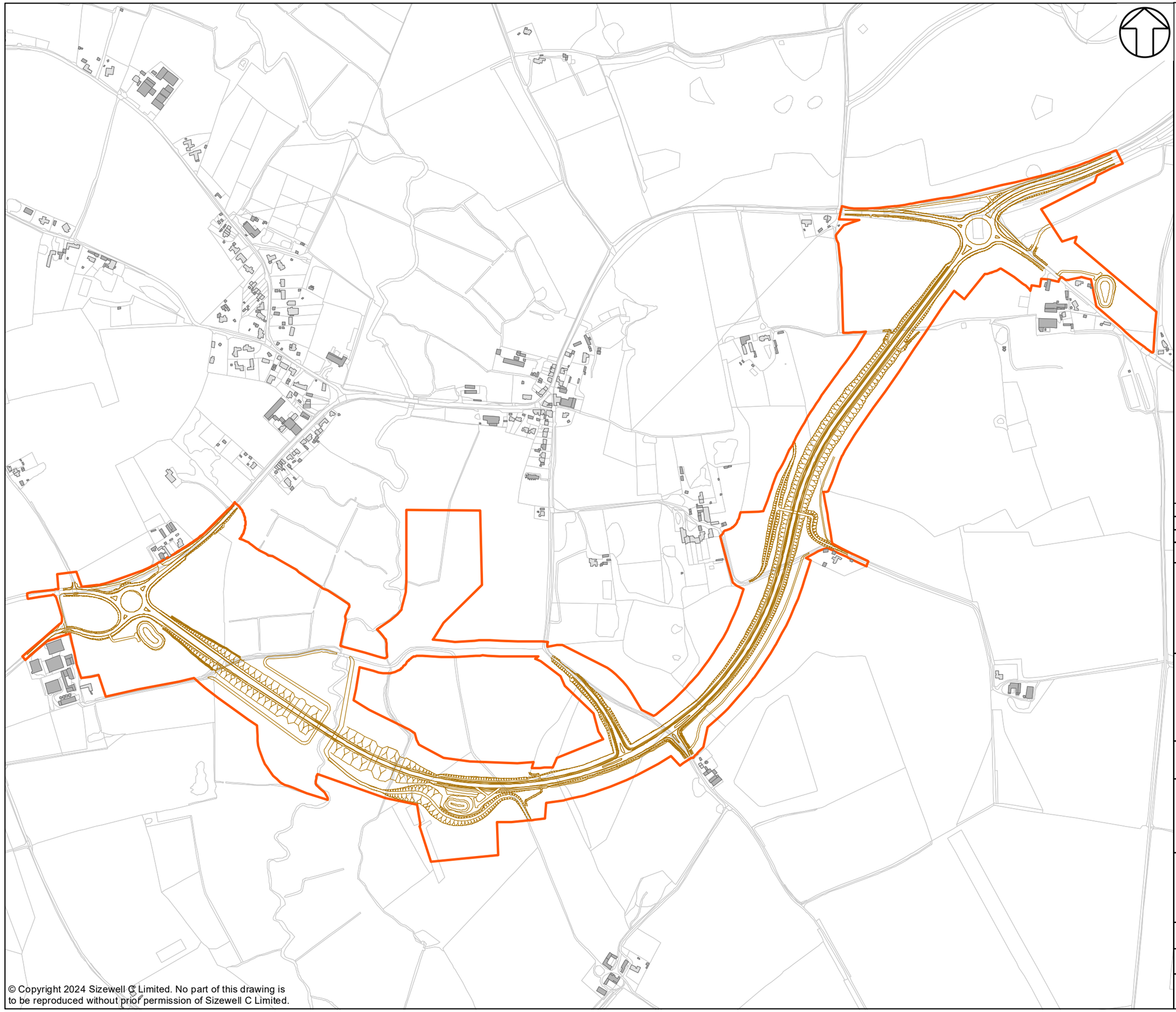
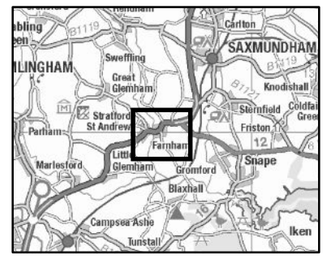
J_38	SW	45	40	34	38	34	-	-	-	-	44	40	39	39	43	37	38	38	40	-	35	37	-	-	31	-	39	32	-	-	32	-	35
K_23	NE(w)	74	39	58	52	36	35	42	39	58	73	59	56	54	39	61	39	34	36	-	63	66	36	-	62	37	51	62	38	-	54	-	35
K_23	NE(e)	75	47	51	48	45	-	-	-	43	75	55	51	50	48	50	46	45	47	-	66	69	-	-	56	-	44	65	35	34	50	38	47
K_23	NW(c)	75	38	61	54	38	37	43	41	60	74	61	58	57	35	63	38	37	32	-	62	65	37	-	65	39	54	61	40	-	57	30	36
K_23	NW(n)	74	47	57	54	44	33	32	37	55	74	59	55	53	47	61	45	43	47	-	64	67	34	-	59	36	46	63	34	34	53	36	46
K_23	NW(s)	70	38	60	55	36	31	41	37	59	70	60	54	53	-	63	38	36	-	-	55	58	37	-	60	39	47	57	39	-	56	30	37
K_23	SE(s)	58	36	39	37	35	-	36	-	46	57	46	45	45	38	41	34	31	36	-	43	48	-	-	44	-	36	43	32	-	42	-	35
K_23	SE(n)	68	45	44	44	43	-	41	31	51	68	52	51	51	45	43	43	42	44	-	60	62	-	-	49	-	40	55	38	31	48	35	45
K_23	SW(w)	70	39	60	53	36	36	43	40	60	70	60	57	55	32	62	38	35	-	-	56	59	37	-	59	38	50	57	40	-	56	-	36
K_23	SW(c)	69	35	56	51	34	33	41	38	57	68	58	54	53	33	59	34	33	-	-	55	58	34	-	61	36	51	55	38	-	53	-	33
K_23	SW(e)	61	33	44	41	35	-	43	34	53	58	54	53	53	35	44	32	30	31	-	47	49	31	-	45	33	36	48	40	-	48	-	33
K_24	W	55	42	42	41	37	31	35	35	45	51	46	43	43	41	40	40	37	42	-	40	44	33	-	47	34	39	42	32	-	44	32	39

Figure 1. Two Village Bypass Construction Location Plan



KEY:

- Residential building
- Non-residential building
- Red Line Planning Boundary
- Scheme design



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01	21.02.24	O.B.	S.S.	FIRST ISSUE	C.S.

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DOCUMENT:
60679030_NI_TVB_CONST_1

DRAWING TITLE:
TWO VILLAGE BYPASS
CONSTRUCTION LOCATION PLAN

DRAWING NO:	REVISION:
FIGURE 1	01

DATE:	DRAWN:	SCALE:
FEB 2024	O.B.	1:7,000 @A3

SCALE BAR:
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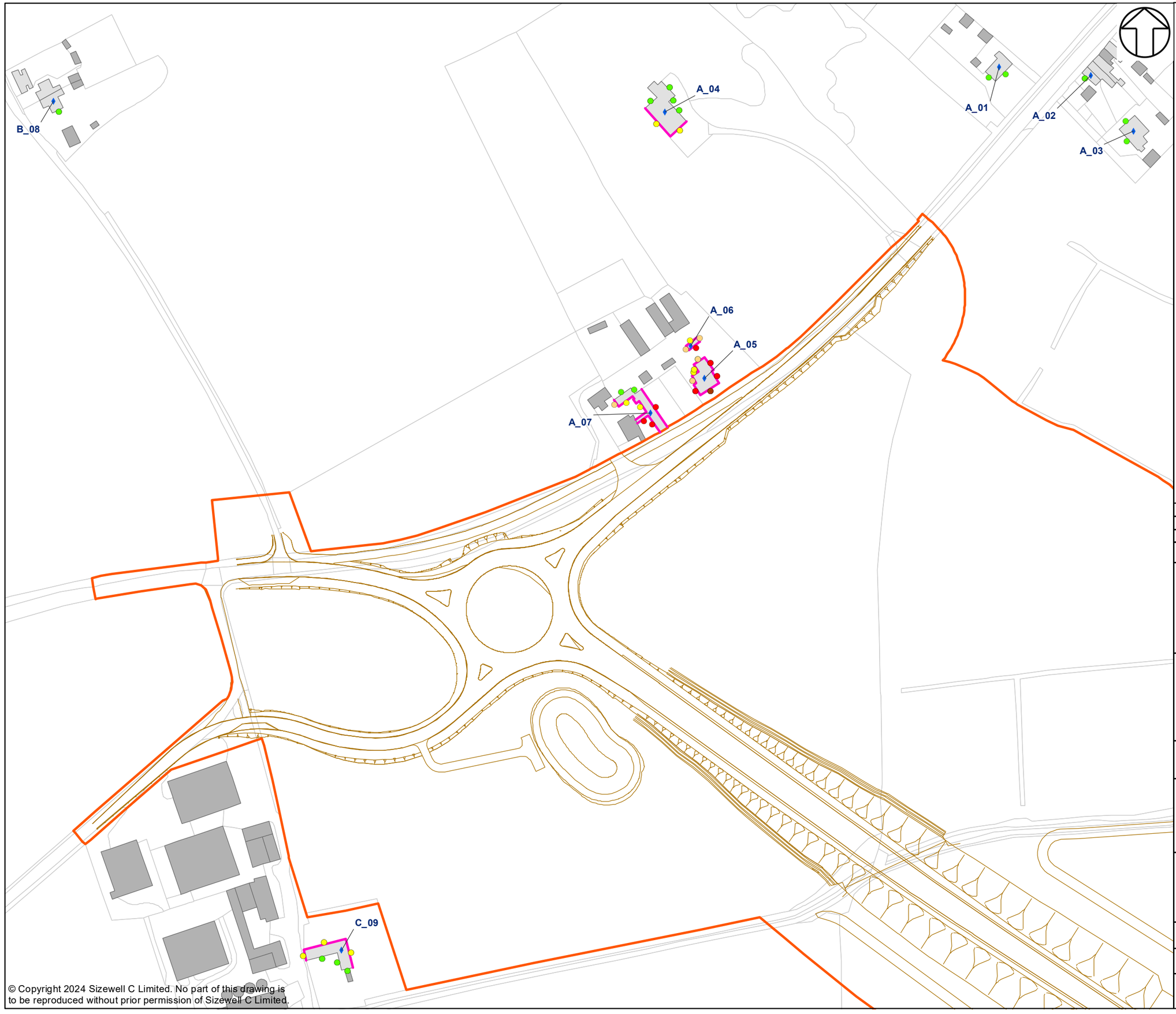
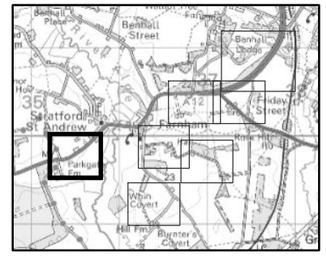
Figure 2. Two Village Bypass Construction NMS Qualification



KEY:

Daytime Construction Noise Level LAeq, T dB facade

- 79.5-84.4 Shoulder hours threshold for temporary re-housing
- 74.5-79.4 Weekday and Sat am threshold for noise insulation and Sat pm temporary re-housing
- 69.5-74.4 Shoulder hours threshold for noise insulation
- 64.5-69.4 Sat pm threshold for noise insulation
- <64.5 No Qualification
- Construction noise receptors (with label)
- Façade qualifying for noise insulation
- Residential building
- Non-residential building
- Red Line Planning Boundary
- Scheme design



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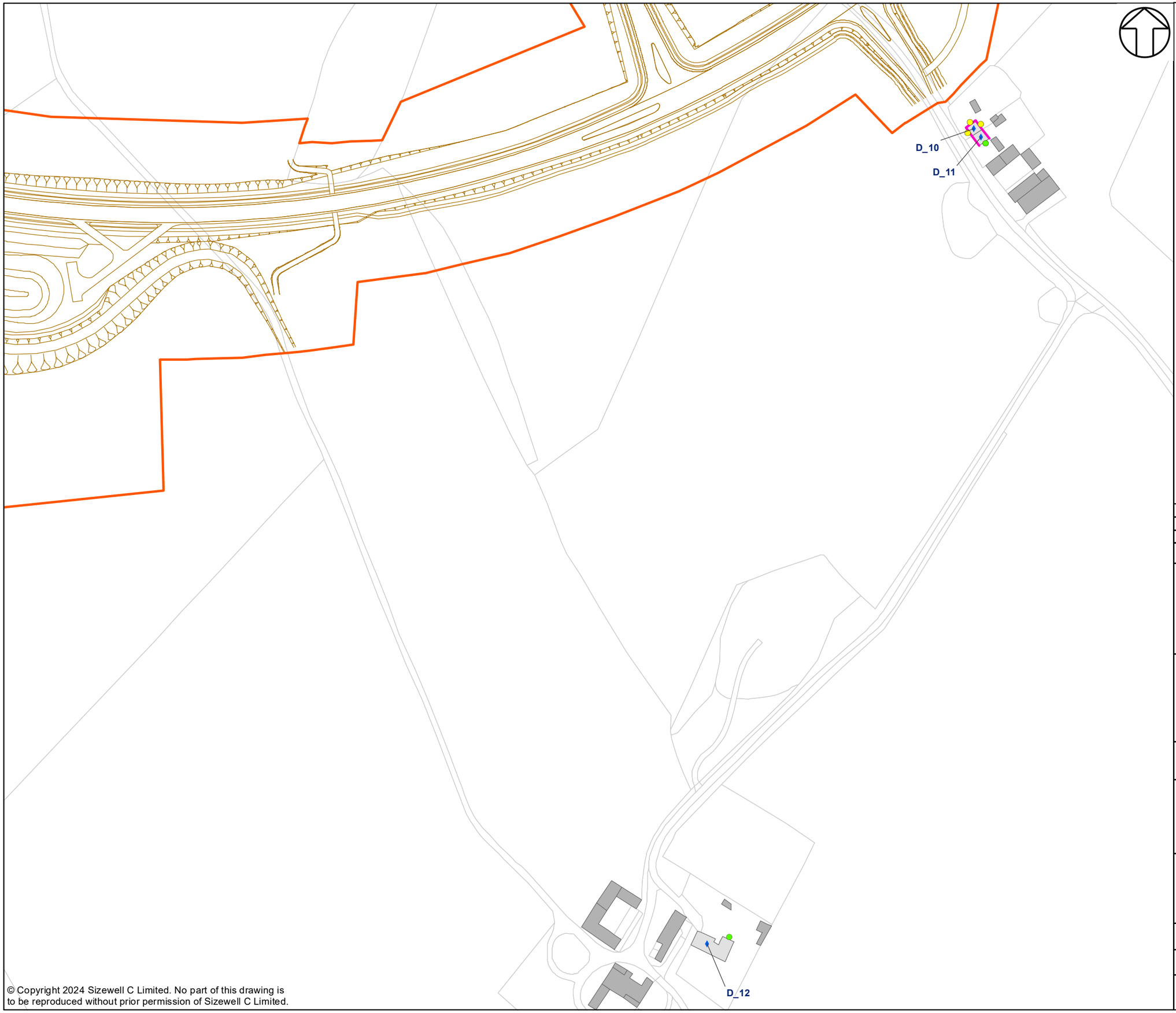
DRAWING TITLE:
TWO VILLAGE BYPASS
CONSTRUCTION NMS QUALIFICATION
SHEET 1 OF 7

DRAWING NO:	REVISION:
FIGURE 2	01

DATE:	DRAWN:	SCALE:
FEB 2024	O.B.	1:1,750 @A3

SCALE BAR:
0 10 20 30 40 50 M



KEY:

Daytime Construction Noise Level LAeq, T dB facade

- 79.5-84.4 Shoulder hours threshold for temporary re-housing
- 74.5-79.4 Weekday and Sat am threshold for noise insulation and Sat pm temporary re-housing
- 69.5-74.4 Shoulder hours threshold for noise insulation
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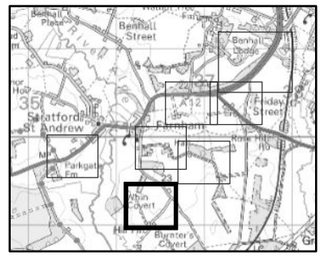

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TWO VILLAGE BYPASS
CONSTRUCTION NMS QUALIFICATION
SHEET 2 OF 7

DRAWING NO: FIGURE 2

REVISION: 01

DATE: FEB 2024

DRAWN: O.B.

SCALE: 1:1,750 @A3

SCALE BAR:
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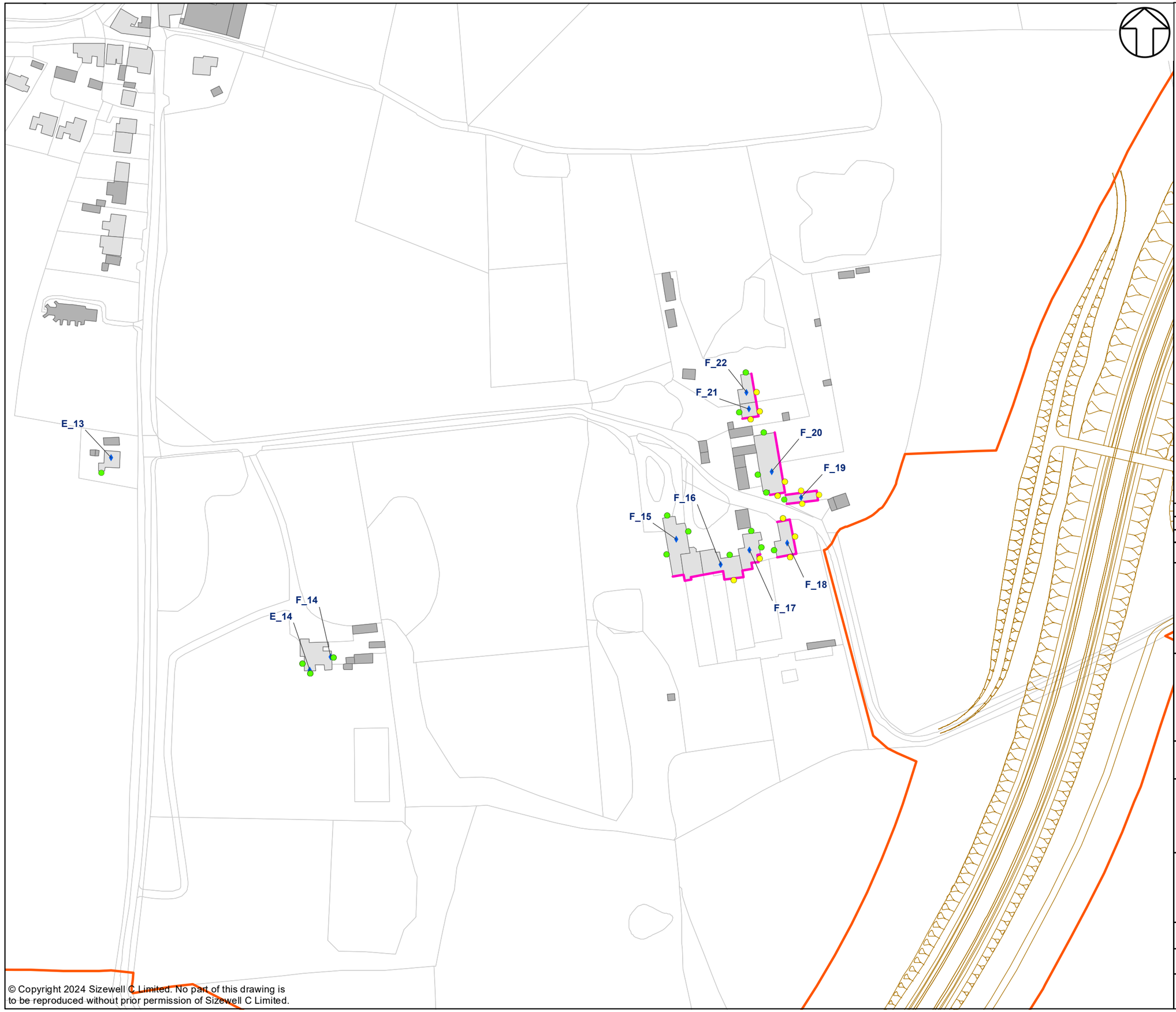

KEY:

Daytime Construction Noise Level LAeq, T dB facade

- 79.5-84.4 Shoulder hours threshold for temporary re-housing
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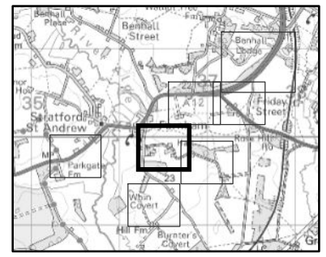

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TWO VILLAGE BYPASS
CONSTRUCTION NMS QUALIFICATION
SHEET 3 OF 7

DRAWING NO:
FIGURE 2

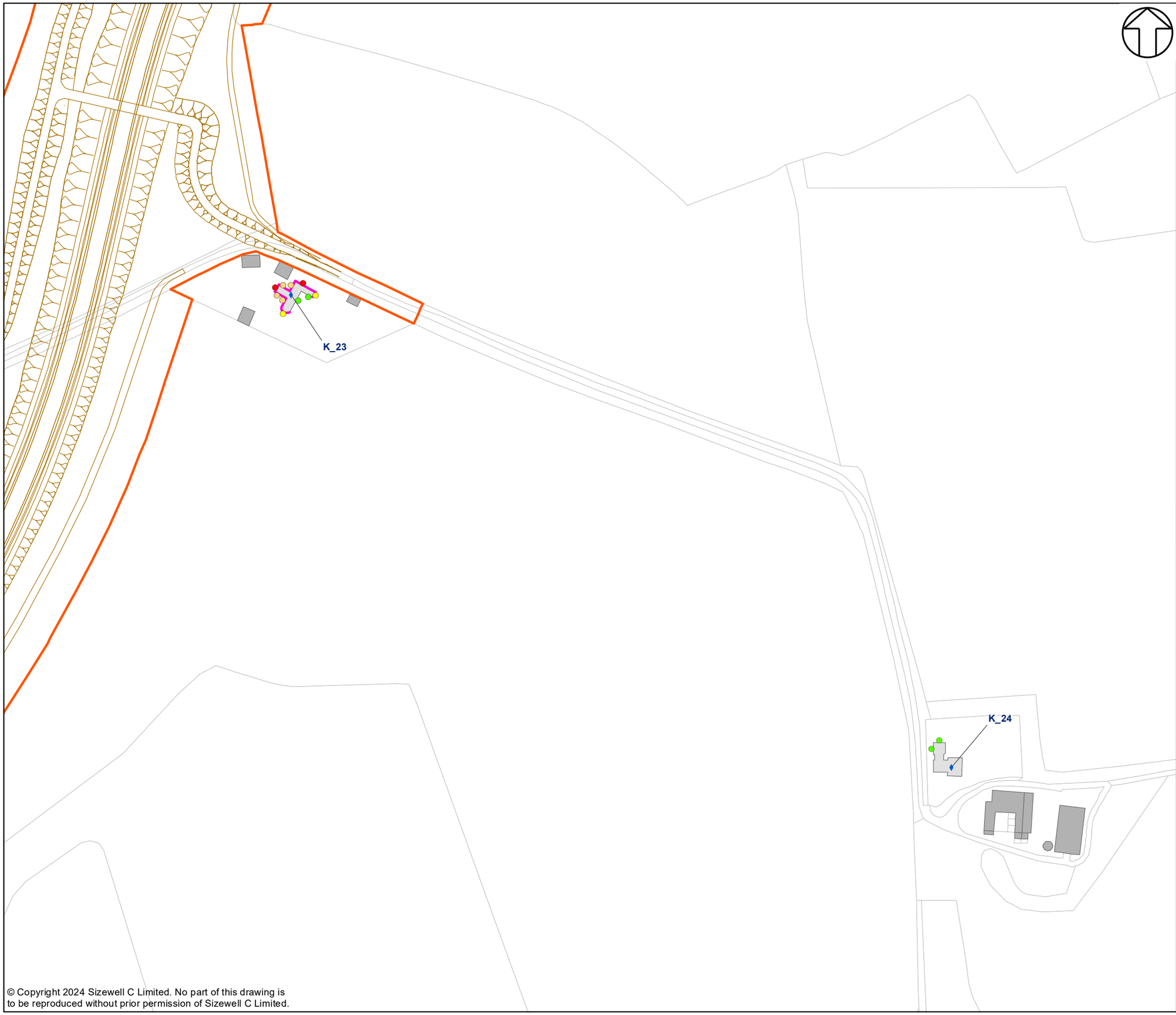
REVISION:
01

DATE:
FEB 2024

DRAWN:
O.B.

SCALE:
1:1,750 @A3

SCALE BAR:
0 10 20 30 40 50 M



KEY:

Daytime Construction Noise Level LAeq, T dB facade

- 79.5-84.4 Shoulder hours threshold for temporary re-housing
- 74.5-79.4 Weekday and Sat am threshold for noise insulation and Sat pm temporary re-housing
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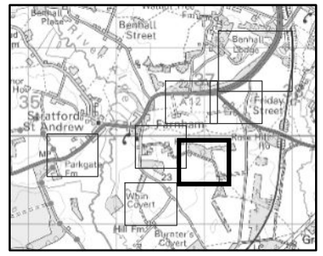

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NOT PROTECTIVELY MARKED

Sizewell C
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SIZEWELL C

DOCUMENT:
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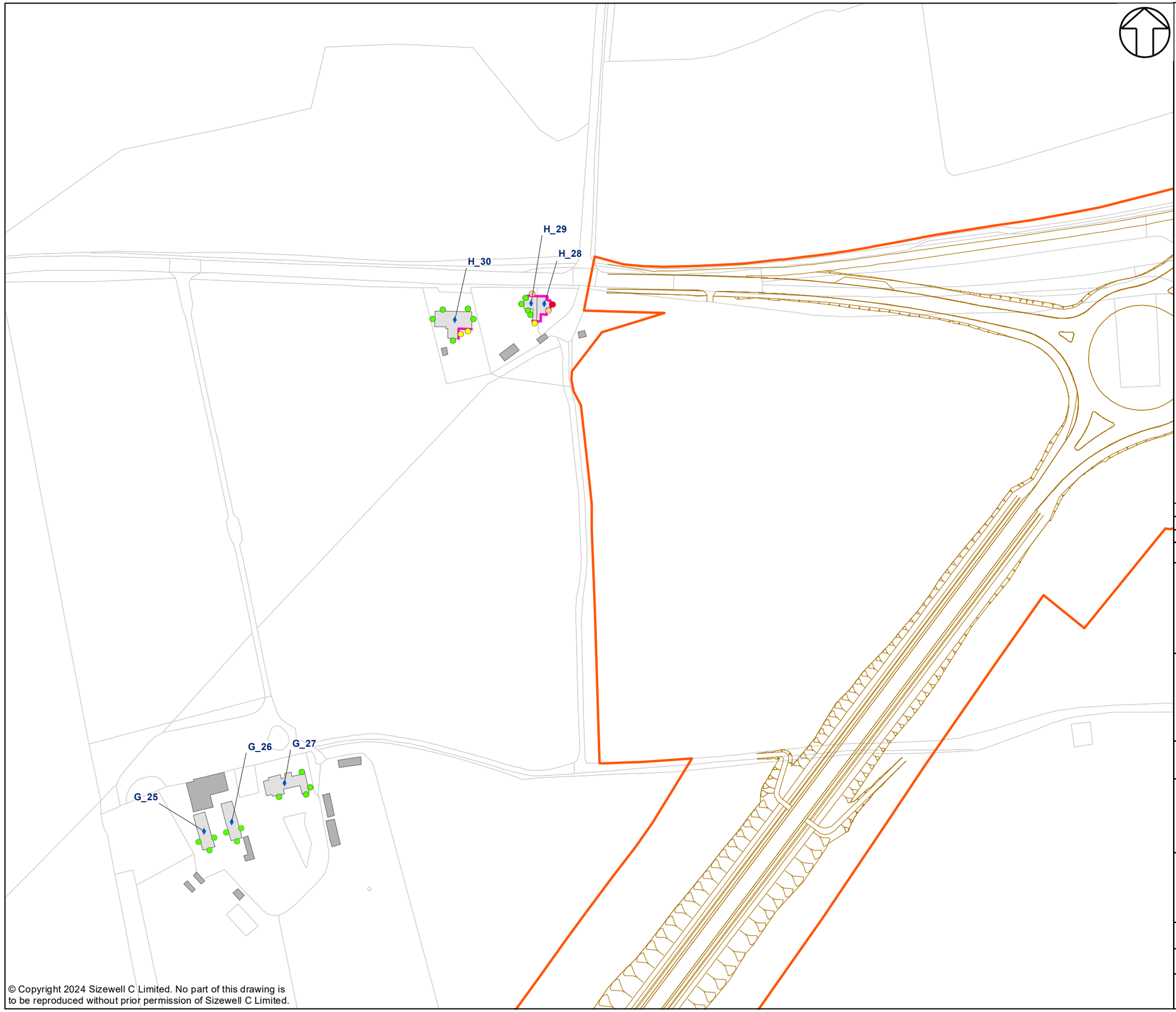
DRAWING TITLE:
TWO VILLAGE BYPASS
CONSTRUCTION NMS QUALIFICATION
SHEET 4 OF 7

DRAWING NO: FIGURE 2
REVISION: 01
DATE: FEB 2024
DRAWN: O.B.
SCALE: 1:1,750 @A3

SCALE BAR:
0 10 20 30 40 50 M



KEY:

Daytime Construction Noise Level LAeq, T dB facade

- 79.5-84.4 Shoulder hours threshold for temporary re-housing
- 74.5-79.4 Weekday and Sat am threshold for noise insulation and Sat pm temporary re-housing
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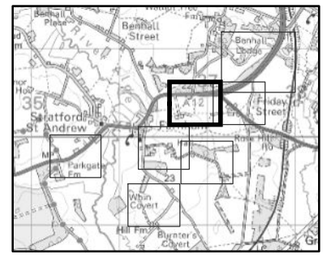
- 64.5-69.4 Sat pm threshold for noise insulation
- <64.5 No Qualification
- Construction noise receptors (with label)
- Façade qualifying for noise insulation
- Residential building
- Non-residential building
- Red Line Planning Boundary
- Scheme design



REVISION	DATE	DRAWN	CHECKED	REASONS FOR REVISION / COMMENTS	APPROVED
01	21/02/24	O.B.	S.S.	FIRST ISSUE	C.S.

NOT PROTECTIVELY MARKED

Sizewell C
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PROJECT:
SIZEWELL C

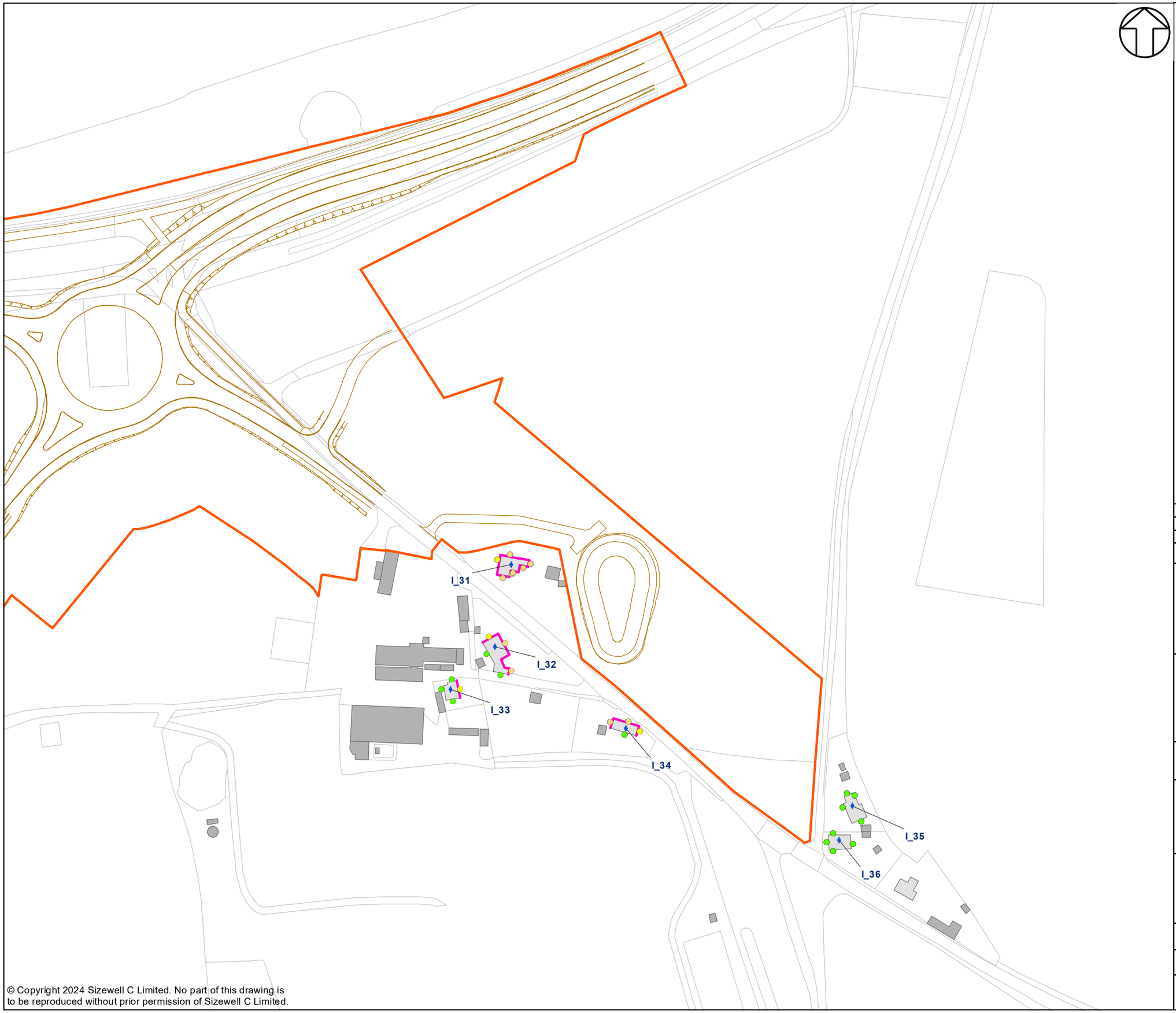
DOCUMENT:
60679030_NI_TVB_CONST_1

DRAWING TITLE:
TWO VILLAGE BYPASS
CONSTRUCTION NMS QUALIFICATION
SHEET 5 OF 7

DRAWING NO: FIGURE 2
REVISION: 01

DATE: FEB 2024
DRAWN: O.B.
SCALE: 1:1,750 @A3

SCALE BAR: 0 10 20 30 40 50 M



KEY:

Daytime Construction Noise Level LAeq, T dB facade

- 79.5-84.4 Shoulder hours threshold for temporary re-housing
- 74.5-79.4 Weekday and Sat am threshold for noise insulation and Sat pm temporary re-housing
- 69.5-74.4 Shoulder hours threshold for noise insulation
- 64.5-69.4 Sat pm threshold for noise insulation
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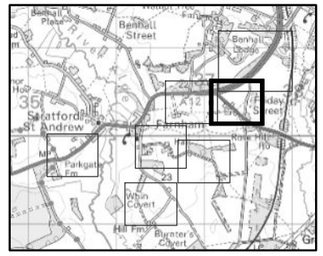

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TWO VILLAGE BYPASS
CONSTRUCTION NMS QUALIFICATION
SHEET 6 OF 7

DRAWING NO: FIGURE 2
REVISION: 01
DATE: FEB 2024
DRAWN: O.B.
SCALE: 1:1,750 @A3

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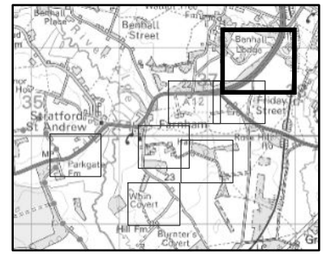

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TWO VILLAGE BYPASS
CONSTRUCTION NMS QUALIFICATION
SHEET 7 OF 7

DRAWING NO:	REVISION:
FIGURE 2	01

DATE:	DRAWN:	SCALE:
FEB 2024	O.B.	1:2,500 @A3

SCALE BAR:
0 25 50 75 100 125 M