

Heritage Agreement Method Statement for the Installation of Instrumentation & Monitoring to the Two Lodges in Euston Square Gardens

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HERITAGE AGREEMENT METHOD STATEMENT FOR THE INSTALLATION OF INSTRUMENTATION & MONITORING TO THE TWO LODGES IN EUSTON SQUARE GARDENS

1CP01-MDS_ ARP-EV-REP-SS08_SL20-990026 - C01

Revision Key:

P =Preliminary Documents/Drawings – P01, P02, P02
C = Contractual Documents/Drawings – C01, C02, C03
X = As Built Mark-Up Drawings – X01, X02, X03
Z = As Built Record Drawings – Z01, Z02, Z03

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C01	ABN	JWI	JWI	2022-06-21	First Revision
P01	ABN	JWI	---	---	First Revision
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SECURITY CLASSIFICATION – Official UNCONTROLLED WHEN PRINTED

Mace Dragados | HS2 July 2020

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Rev: P02

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DISCLAIMER: This report takes into account the particular instructions and requirements of our client. It is not intended for and shall not be relied upon by any third party. SDSC shall have no responsibility or liability to any third party.

CONTENTS

1	Introduction	4
1.1	General	4
1.2	Purpose of this document	4
1.3	Project context	5
1.4	Summary of proposed works	6
2	Building Information	6
2.1	Building description & historic background	6
2.2	Significance	9
	Methodology	9
	Assessment	10
3	Proposed works for approval	11
3.1	Monitoring regime	11
3.2	Sensitivity to ground movement	11
3.3	Locations	12
3.4	Instruments & Fixings	12
	General principles	12
	L-Bar prisms	13
	Vandal Proof Prisms	13
	BRE or Levelling Sockets	14
3.5	Removal	14
	Timescales	14
	Monitoring prisms and BRE sockets	14
4	Conclusion	15
	Appendix A – Listing Description: Two Lodges in Euston Square Gardens	16
	Appendix B – Proposed Elevations	19
	Appendix C – Monitoring Equipment	21

1 Introduction

1.1 General

1.1.1 This Heritage Agreement Method Statement seeks approval under Schedule 18 of the High Speed Rail (London – West Midlands) Act 2017 for the installation of monitoring equipment to the fabric of the two Lodges in Euston Square Gardens, in the London Borough of Camden London, following matters with (1) The Mayor and Burgesses of the London Borough of Camden and (2) The Historic Buildings and Monuments Commission for England in accordance with the Deed signed and dated on 5 May 2017 entitled: 'Deed relating to works affecting the listed buildings comprising (i) Alexandra Road Estate, including walls, ramps and steps, (ii) two Lodges in Euston Square Gardens, (iii) railings around Euston Square Gardens, (iv) Gloucester Gate bridge, (v) Parkway tunnel and cutting, (vi) pair of stone piers with lamp standards to east end of Mornington Street railway bridge, Mornington Terrace, and (vii) pair of stone piers with lamp standards to west end of Mornington Street railway bridge, Park Village East, all in the London Borough of Camden.'

1.2 Purpose of this document

- 1.2.1 This Heritage Agreement Method Statement assesses the significance of the Lodges in Euston Square Gardens and provides detail on the proposals for approval by the London Borough of Camden under Schedule 18, which have been established based on an understanding of the significance of the asset. Pre-application advice has been sought from both Historic England and the London Borough of Camden during regular engagement sessions and a site walkover was undertaken on 5th May 2022 to discuss and agree an overarching design approach.
- 1.2.2 The two Lodges are amongst the third party owned buildings within the vicinity of Euston Station which have been identified as possibly being impacted by construction works being undertaken on behalf of High Speed Two (HS2).
- 1.2.3 Monitoring of the two Lodges, which are listed Grade II and are within the Bloomsbury Conservation Area, is proposed to ensure the protection of the special architectural and historic interest of the structures. Monitoring will be used throughout the construction of HS2 works to check that the impact of these works is in line with predicted ground movement and settlement levels.
- 1.2.4 The proposed construction works affecting the two Lodges are described in the Phase 3 Ground Movement Assessment and Scheme Mitigation report East and West Lodge (doc. reference 1CP01-MDS_ARP-ST-REP-SS08_SL31-990001).
- 1.2.5 A detailed desk-based assessment of Euston Square Gardens and the designated and non-designated assets within in was prepared in 2017 on behalf of HS2 (doc.

reference 1D037-EDP-EV-ASM-SS06_SL10-000001). Information from this report and that cited in Chapter 2, including the description of the Lodges, is repeated and referenced within this document.

1.2.6 This statement should be read in conjunction with proposed elevation drawings indicating approximate locations for monitoring targets:

- GEO-RPT-I&M-DRW-30
- GEO-RPT-I&M-DRW-31

1.3 Project context

- 1.3.1 HS2 is a network of new high-speed lines across Britain, being planned and built in two phases: Phase One, which will connect London with Birmingham and the West Midlands; and Phase Two, which will extend the route to Manchester and beyond. Powers to construct and operate the railway have been secured through the High Speed Rail (London – West Midlands) Act 2017 (the Act), which received Royal Assent on 23 February 2017.
- 1.3.2 The Secretary of State has appointed HS2 Ltd as the nominated undertaker responsible for delivering Phase One of HS2. HS2 Ltd is an executive non-departmental public body, sponsored by the Department for Transport.
- 1.3.3 Schedule 18 'Listed Buildings' of the Act concerns how legislation in respect of listed buildings under the Planning (Listed Buildings and Conservation Areas) Act 1990 ("the 1990 Act") applies to the Phase One works. Paragraph 2 of Schedule 18 disapplies some of this legislation, and in particular the requirement for listed building consent, for buildings authorised to be demolished, altered or extended specified in Table 1.
- 1.3.4 Following Royal Assent, HS2 Ltd entered into a Heritage Deed with London Borough of Camden and with the Historic Buildings and Monuments Commission (Historic England) concerning the listed buildings identified in Table 1 of Schedule 18 to the Act within Camden.
- 1.3.5 The Deed requires approval of the 'decontrolled works' to buildings listed in Table 1 of Schedule 18 of the Act by London Borough of Camden in consultation with Historic England.
- 1.3.6 Mace Dragados joint venture has been contracted by HS2 to carry out the main Euston Station construction works. The Station Design Services Contract (SDSC) Team has been instructed to produce this document which works to protect the heritage assets affected by the HS2 works.

1.4 Summary of proposed works

1.4.1 Approval under a Heritage Agreement is sought for the following works to the two listed Lodges within Euston Square Gardens:

- Installation of temporary external monitoring equipment to all facades; and
- Removal of survey targets on completion of the monitoring regime and fixings made good to match the existing adjacent materials.

1.4.2 The proposals for monitoring are based on an understanding of the Lodges' significance and have been designed to cause minimal harm to the special interest of the listed assets. Monitoring is required to protect the listed assets during the construction of nearby HS2 works and is likely to have a low impact to the special interest of the Lodges. Mitigation included within the design proposals comprise:

- Careful consideration of target locations to avoid significant external features;
- Minimal fixings to the fabric of the buildings; and
- Fixing of targets will be into existing joints or areas of previous repair where possible to avoid impacting intact stonework

2 Building Information

2.1 Building description & historic background

2.1.1 The two Grade II listed Lodges and underpass (designated 14 May 1974) were constructed in Portland stone to designs by J. Stansby in 1870. The Lodges flank the axial route of Euston Grove. This division of the gardens into east and west halves was brought about due to the southern extension of Euston Grove through the gardens, to accommodate increased traffic and to provide direct vehicular access between the station and Euston Road. Stansby sought to create a new entrance to the station on Euston Road that both strongly identified the entrance to the original Euston station but also responded to the architectural treatment and scale of the pre-existing residential properties on Euston Square.



Figure 1: The extension of Euston and the new Lodges of c. 1870 (Source: Illustrated London News, 8 October 1870)

2.1.2 Stansby's design for an underpass both met the needs for the new road and sought to retain the coherent identity of the gardens and maintain accessibility. The c. 1870 design also featured elaborate cast iron gates stretching between the Lodges along Euston Road, which have been lost. The statue of Robert Stephenson which once stood between the Lodges has also been moved.¹

¹ Detailed Desk Based Assessment of Euston Square Gardens, Document no.: 1D037-EDP-EV-ASM-SS06_SL10-000001 (2017)



Figure 2: The Robert Stephenson statue in its original position between the Lodges (Source: Railway Heritage Trust)

- 2.1.3 The Lodges have symmetrical elevations, founded on several courses of pitched stone masonry. The rusticated quoins of each lodge, which address either Euston Grove or Euston Road, are incised with the names of destinations reached from the station. Reports from the 19th century record that these names were originally painted gold. Carved in relief at each corner is insignia of the L&NWR, and the tympanum of each pediment features allegorical figure groups by Joseph Pitts which represent England, Scotland, Ireland and Wales. Each elevation features a central semi-circular arch with a 'green man' keystone, flanked by channelled ashlar. A moulded string course connects the arch springers on each elevation. Below this, on either side of the jambs, are shallow, blind frames.²
- 2.1.4 The west lodge is accessed via panelled wooden doors on its east elevation, facing Euston Grove. The south window opening is blocked with modern rendered masonry. The north window has been partially filled in, retaining a modern, painted timber casement window in the bottom half of the opening, which looks out onto an external seating area located immediately to the north. The openings are planned to be reinstated to match those in the east lodge. The east lodge is a mirror image of the west lodge in plan. The south, east and north windows have been recently replaced with glazed units in oak frames, the designs of which are based on the original windows.³

² Ibid.

³ Ibid.



Figure 3: View of the two Lodges flanking Euston Grove and framing the War Memorial

- 2.1.5 The external walls of the buildings appear to be in poor condition. An interior walkover of the West Lodge and East Lodge was performed on 15th January 2019. During the building walkover many cracks were detected on the exterior masonry walls. Erosion and discolouration of the façade was observed, particularly intense on the north facade of the building.
- 2.1.6 The Lodges have been converted into public houses and have bar areas installed on the ground floors with mezzanine floors inserted in recent decades. Both Lodges feature a cast iron spiral staircase, providing access to the upper floors with seating for patrons. Outdoor tables on the pavement provide overspill seating.⁴
- 2.1.7 The buildings are load-bearing masonry structures with a gable roof. The structural typology of roof is unknown. The lateral stability of the building is assumed to be provided by the loadbearing masonry walls. No movement joints were observed in the walkover that took place in January 2019.

2.2 Significance

Methodology

- 2.2.1 In determining the significance of the building facades, which are the elements directly and indirectly impacted by the works proposed in this method statement, the following grading and criteria for significance has been used:

Exceptionally significant: Nationally and/or internationally significant; significance may be *archaeological, historic, architectural and/ or artistic*, exceptional, unique, and intact features of highest quality; nationally and/or internationally important associations with people or events; the setting of the heritage asset is an intrinsic part of the overall significance and is largely intact and or well preserved; unquestionable group value.

⁴ Ibid.

Highly significant: important historic or architectural features; high quality of workmanship; potential for nationally important archaeology; largely intact and/or rare examples of a building type or technique; the setting of the heritage asset makes an important contribution to the significance, values, and legibility of the heritage asset – change and alteration to the setting may be present but archaeological, historic, architectural and or artistic values remain; important group value.

Significant: of historical and architectural interest, although this may be at a local or regional, rather than national, level; significance may be based on archaeological, historic, architectural and or artistic values; aesthetic significance may derive from architectural character or elements; potential for significant enhancement of built features and values may exist; setting typically contributes to the heritage asset’s legibility, form and/or scale, but may include extant alterations which have altered or diminished the special interest; some positive group value.

Low significance: little or no architectural or heritage significance or area of lost significance; the setting of the heritage asset has been extensively altered to the point where it has low value and significance to the heritage asset.

Not significant: of no heritage interest.

Detrimental: features or areas that detract from a building’s special significance.

Assessment

- 2.2.2 The 19th century Euston station complex was one of the first inner-city termini to be constructed, and Stansby’s redesign of the gardens provides evidence of the station’s evolution and rail travel’s impact on the city. The inclusion of the Lodges within the gardens along Euston Grove enhanced security, signalled to passers-by the quality of the station beyond and provided users of the gardens with aesthetically pleasing views. The Lodges are of significant historical and architectural interest.
- 2.2.3 The Lodges survive relatively unaltered externally, except for changes to the windows and the reordering of the attached railings. In recent years, the Lodges have been subject to graffiti, which is planned for removal this year. The entrances to the associated underpass survive but have been infilled; however, the original brick, jack arch ceiling with wrought iron beams survives internally, and part of the underpass can be seen above ground.
- 2.2.4 The Lodges are of architectural interest for their design, which deliberately echoed Hardwick’s architecture, created an ensemble with the station beyond and positively reinforced the rational layout of Euston Grove. The design of the Lodges was sympathetic to surrounding buildings in terms of scale and appearance, notably the residential houses of Euston Square and St. Pancras New Church. They incorporate sculptural details, which demonstrate skilled craftsmanship and associate the Lodges

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with the railway company. The Lodges are significant in terms of their architectural value afforded by their external appearance and design.

- 2.2.5 The two stone Lodges and underpass, together with the railings, are the only features of Stansby's c. 1870 scheme which survive. As they form part of a specific phase of the gardens, they have historic interest and group value, and help the gardens to cohere as a single space. They also form a group with the War Memorial, framing intended views of the memorial along Euston Grove.⁵

3 Proposed works for approval

3.1 Monitoring regime

- 3.1.1 Three-dimensional survey and monitoring will be carried out on a regular basis to confirm the level and position of the building facades in relation to the baseline. The survey frequency will change throughout the project duration depending on the nature of construction work carried out at the time and assessment of monitoring data; survey frequency typically ranges from daily, weekly, monthly to three monthly intervals.
- 3.1.2 Three-dimensional coordinates are collected from all the survey targets before commencement of construction works adjacent to the buildings. This data provides a baseline confirming the level, position and horizontal and vertical alignment of the building facades before commencement of the HS2 works.
- 3.1.3 Subsequent survey data collected during the project duration is then compared to the baseline to confirm how much building movement and ground movement may have occurred. This data is used to monitor buildings and ground movements throughout the HS2 works to ensure the buildings are moving as predicted.
- 3.1.4 Buildings naturally move as a result of weather conditions and the use of the building and surrounding environment. Nearby construction work is expected to cause a slight impact to the two Lodges in terms of additional building and ground movement. Monitoring work is one method of protecting the listed buildings and of ensuring compliance with predicted building settlement, and other legal obligations set out in High Speed Rail (London – West Midlands) Act 2017 and the Heritage Deed agreement.

3.2 Sensitivity to ground movement

- 3.2.1 A ground movement analysis was undertaken in 2020 to assess the predicted levels of disturbance caused by HS2 construction works. The assessment found that the works may have a moderate to slight impact to the two Lodges as a result of

⁵ Ibid.

additional ground movement and settlement, pending further investigation of the nature of the foundations.

- 3.2.2 The design of HS2 Euston station is evolving and as such the conclusions of the 2020 ground movement analysis will be re-visited in due course throughout the scheme design and detailed design phases of the project. Should the conclusions significantly alter the recommended monitoring covered by this Heritage Agreement Method Statement, a review will be undertaken with Historic England and the London Borough of Camden to consider if an update to this document.

3.3 Locations

- 3.3.1 The proposed installation of external monitoring apparatus to the facades of the two Lodges comprises the following items:

- 6no. targets to all four elevations comprising levelling sockets and L-bar prisms.

3.4 Instruments & Fixings

- 3.4.1 The below section describes the proposed monitoring equipment to be used and how they are to be fixed to the building.

General principles

- 3.4.2 Survey targets will be drilled and fixed into the façade of the two buildings. An 8 to 12mm diameter hole will be drilled to a maximum depth of 50mm into existing joints or areas of previous repair where possible with an expansion sleeve or nylon plug. Stainless steel screws and washers are to be used to prevent staining to the façade.
- 3.4.3 Elevations in Appendix B show the approximate proposed locations of survey targets and indicate which type of target will be used in each instance.
- 3.4.4 The exact locations of each target will be agreed with the HS2 project heritage specialist prior to install. Target positions will be sought in discreet locations and aligned vertically and horizontally as closely as possible wherever possible to create a survey grid across the façade to minimise visual impact.
- 3.4.5 Detailed visual inspection of the facades is due to take place prior to the installation of the survey targets with the use of cherry pickers and will be used to help identify suitable locations for installation.
- 3.4.6 Where targets require fixing near corners or to projections such as cornices, fixings will be installed at a minimum of 150mm from the front edge to avoid the risk of damage.
- 3.4.7 On removal of targets and associated fixings, stonework will be made good using specialist lime-based repair mortar to match adjacent stonework.

L-Bar prisms



	3D Prism
<i>Width (mm)</i>	90
<i>Height (mm)</i>	80
<i>Thickness (mm)</i>	15
<i>Weight (g)</i>	210

3.4.8 L-bar prisms are installed by drilling a 8-12mm diameter hole into the substrate so that a stainless steel 'shell anchor' can be installed. A stainless-steel survey spigot is then screwed into the anchor and hand tightened. The prism is then pushed into the spigot and rotated and aligned to the total station positions. This is achieved by rotating the 'L-shaped' bracket and prism head. The prism alignment can be subsequently adjusted and realigned to new station positions if the base station positions change, with no need to change the prism position on the building façade. Depending on how monitoring progresses and the results obtained, it may be necessary to install a limited number of new prism positions.

3.4.9 Given the minimal impact to the building fabric and the protection that monitoring will afford, this document therefore seeks agreement that minor alteration to prism positions can be authorised by the HS2 project heritage specialist without further formal approval by London Borough of Camden.

Vandal Proof Prisms



	3D Vandalproof Prism
<i>Width (mm)</i>	38
<i>Height (mm)</i>	Diameter 60
<i>Thickness (mm)</i>	
<i>Weight (g)</i>	415

3.4.10 Vandal proof prisms are installed the same way as standard L-Bar prisms with the same nature and number of fixings, however they are encased by a protective cover and are shallower in profile than L-Bar prisms so as to avoid knocking or damage by members of the public. As the Lodges remain in use as pubs, it is proposed to install these prisms at low level where there is higher risk of knocking or damage, which will interfere with monitoring data.

BRE or Levelling Sockets



3.4.11 BRE Level bolts are fixed to the façade at low level to allow a surveyor and assistant to be able to take a reading on each bolt on a regular basis. They are installed by drilling an 8-10mm diameter hole into the substrate, preferably in existing joints or stable areas of previous repair, with an expansion sleeve or nylon plug so that stainless steel 'shell anchor' can be installed. Stainless steel is specified so as to prevent staining. A survey level bolt is then screwed into the anchor and hand tightened, once the survey reading is taken, the level bolt is removed leaving only the 'shell anchor' in place with little visual impact. Levelling sockets are used for precise manual reading by surveyors and are shallow in profile, making them less susceptible to damage from passers-by.

3.5 Removal

Timescales

3.5.1 Monitoring of the Lodges facades will be undertaken throughout the construction of the Euston Square Station, Euston Station Interchange and the associated utilities diversion works, requiring the monitoring equipment to be installed until this construction is complete. The monitoring equipment will be removed once the construction works are complete and movement of no more than +/- 2mm is observed annually.

Monitoring prisms and BRE sockets

3.5.2 The prism and 'L-shaped' bracket will be gently pulled away from the stainless steel spigot and the spigot will be unscrewed from the shell anchor. An old spigot or fixing will then be screwed a couple of turns into the shell anchor leaving a gap between the spigot and joint surface. The spigot will then be lightly tapped on the sides to loosen the shell, whilst pulling on the spigot to pull the anchor from the hole.

3.5.3 Once the fixing is removed the open hole will be filled with a specialist mortar to match the colour and composition of the existing mortar. The repair will be finished flush with the surrounding mortar joint and textured to match the existing. Where fixings are to be made good into stone, specialist lime-based mortar will be used to infill holes to match the stone in colour and texture.

4 Conclusion

- 4.1.1 The proposals set out within this statement are based on extensive analysis of predicted impacts to the two Lodges in Euston Square Gardens from ground movement as a result of HS2 construction activities. Investigation into the structure of the buildings is required to enhance this understanding and is not anticipated to cause harm to the special interest of the listed buildings. The additional mitigation measures included within this statement ensure that the special interest of these significant buildings is preserved throughout the construction of HS2.

Appendix A – Listing Description: Two Lodges in Euston Square Gardens

Official list entry

Heritage Category: Listed Building

Grade: II

List Entry Number: 1342042

Date first listed: 14-May-1974

Statutory Address 1: TWO LODGES IN EUSTON SQUARE GARDENS, EUSTON SQUARE

Location

Statutory Address: TWO LODGES IN EUSTON SQUARE GARDENS, EUSTON SQUARE

The building or site itself may lie within the boundary of more than one authority.

County: Greater London Authority

District: Camden (London Borough)

Parish: Non Civil Parish

National Grid Reference: TQ 29640 82548

Details

CAMDEN

TQ2982NE EUSTON SQUARE 798-1/89/424 (South side) 14/05/74 Two Lodges in Euston Square Gardens

GV II

2 detached Lodges to former Euston Station. c1870. By JB Stansby, London & North Western Railway company engineer. Portland stone with leaded roofs. Rectangular plan with symmetrical facades on each face. Single storey. Plain ashlar podiums; blind central arches with mask keystones and linked by impost bands (those facing Euston Grove with doorways and double, panelled wooden doors with overlights). Arches flanked below impost bands with panels. Rusticated quoins to impost level at all angles with names of stations served by the company. Enriched panels over. Entablature with modillion cornice. North and south facades with pediments containing sculptured allegorical figures in relief representing England, Scotland,

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Rev: P02

Ireland and Wales by Joseph Pitts. INTERIORS: not inspected. HISTORICAL NOTE: these Lodges, with the statue of Robert Stephenson (qv) which stood between them, are the only survivors of the formal 1870 layout to Euston Station which, with the Doric Arch, was destroyed in 1962. (Survey of London: Vol. XXI, Tottenham Court Road and Neighbourhood, St Pancras III: London: -1949: 114).

Listing NGR: TQ2964082548

Legacy

The contents of this record have been generated from a legacy data system.

Legacy System number: 477262

Legacy System: LBS

Sources

Books and journals

'Survey of London' in Survey of London - Tottenham Court Road and Neighbourhood St Pancras Part 3: Volume 21, (1949), 114

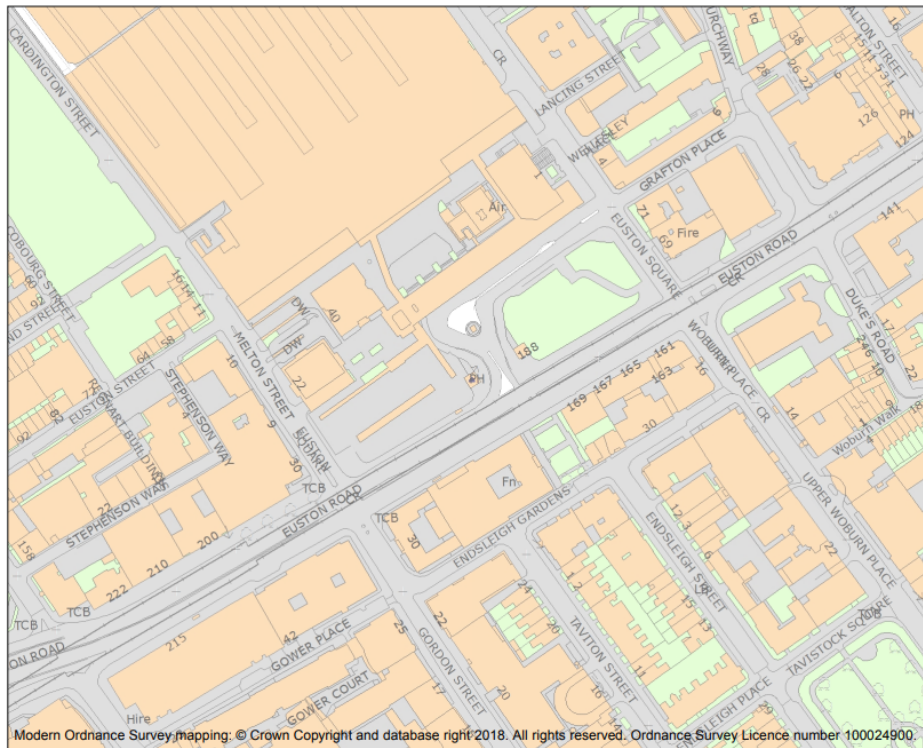
Legal

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

Map

Ordnance survey map of TWO LODGES IN EUSTON SQUARE GARDENS

This map is for quick reference purposes only and may not be to scale. This copy shows the entry on 30-Mar-2022 at 09:29:28.



Modern Ordnance Survey mapping; © Crown Copyright and database right 2018. All rights reserved. Ordnance Survey Licence number 100024900. This is an A4 sized map and should be printed full size at A4 with no page scaling set.

Name: TWO LODGES IN EUSTON SQUARE GARDENS

Heritage Category:	
	Listing
List Entry No :	1342042
Grade:	II
County: Greater London Authority	
District: Camden	
Parish: Non Civil Parish	

For all entries pre-dating 4 April 2011 maps and national grid references do not form part of the official record of a listed building. In such cases the map here and the national grid reference are generated from the list entry in the official record and added later to aid identification of the principal listed building or buildings.

For all list entries made on or after 4 April 2011 the map here and the national grid reference do form part of the official record. In such cases the map and the national grid reference are to aid identification of the principal listed building or buildings only and must be read in conjunction with other information in the record.

Any object or structure fixed to the principal building or buildings and any object or structure within the curtilage of the building, which, although not fixed to the building, forms part of the land and has done so since before 1st July, 1948 is by law to be treated as part of the listed building.

This map was delivered electronically and when printed may not be to scale and may be subject to distortions.

List Entry NGR:	TQ 29640 82548
Map Scale:	1:2500
Print Date:	30 March 2022



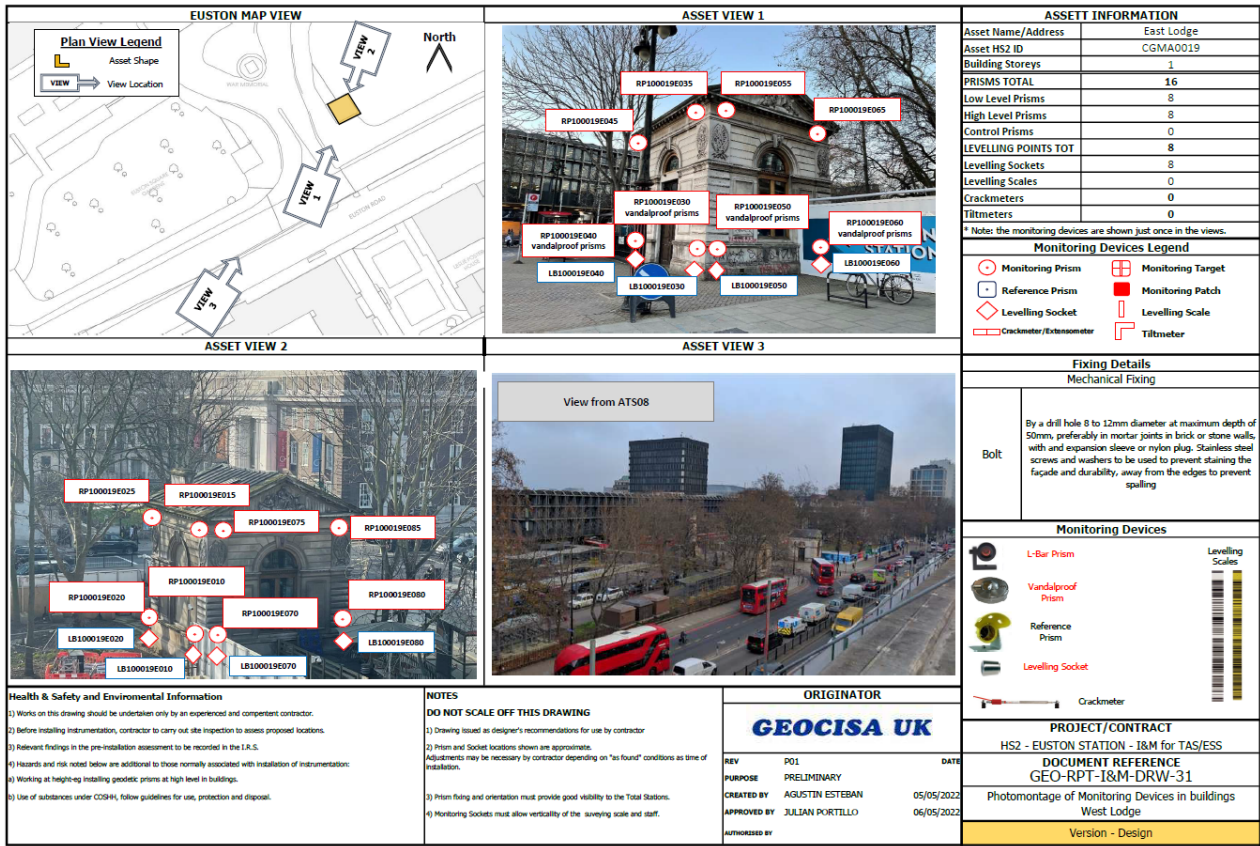
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End of official list entry

Appendix B – Proposed Elevations

<p>EUSTON MAP VIEW</p> <p>Plan View Legend Asset Shape View Location</p>	<p>ASSET VIEW 1</p>	<p>ASSET INFORMATION</p> <table border="1"> <tr><td>Asset Name/Address</td><td>West Lodge</td></tr> <tr><td>Asset HS2 ID</td><td>CGMA0019</td></tr> <tr><td>Building Storeys</td><td>1</td></tr> <tr><td>PRISMS TOTAL</td><td>16</td></tr> <tr><td>Low Level Prisms</td><td>8</td></tr> <tr><td>High Level Prisms</td><td>8</td></tr> <tr><td>Control Prisms</td><td>0</td></tr> <tr><td>LEVELLING POINTS TOT</td><td>8</td></tr> <tr><td>Levelling Sockets</td><td>8</td></tr> <tr><td>Levelling Scales</td><td>0</td></tr> <tr><td>Crackmeters</td><td>0</td></tr> <tr><td>Tiltmeters</td><td>0</td></tr> </table> <p><small>* Note: the monitoring devices are shown just once in the views.</small></p> <p>Monitoring Devices Legend</p> <table border="0"> <tr> <td> Monitoring Prism</td> <td> Monitoring Target</td> </tr> <tr> <td> Reference Prism</td> <td> Monitoring Patch</td> </tr> <tr> <td> Levelling Socket</td> <td> Levelling Scale</td> </tr> <tr> <td> Crackmeter/Extensometer</td> <td> Tiltmeter</td> </tr> </table>	Asset Name/Address	West Lodge	Asset HS2 ID	CGMA0019	Building Storeys	1	PRISMS TOTAL	16	Low Level Prisms	8	High Level Prisms	8	Control Prisms	0	LEVELLING POINTS TOT	8	Levelling Sockets	8	Levelling Scales	0	Crackmeters	0	Tiltmeters	0	Monitoring Prism	Monitoring Target	Reference Prism	Monitoring Patch	Levelling Socket	Levelling Scale	Crackmeter/Extensometer	Tiltmeter
Asset Name/Address	West Lodge																																	
Asset HS2 ID	CGMA0019																																	
Building Storeys	1																																	
PRISMS TOTAL	16																																	
Low Level Prisms	8																																	
High Level Prisms	8																																	
Control Prisms	0																																	
LEVELLING POINTS TOT	8																																	
Levelling Sockets	8																																	
Levelling Scales	0																																	
Crackmeters	0																																	
Tiltmeters	0																																	
Monitoring Prism	Monitoring Target																																	
Reference Prism	Monitoring Patch																																	
Levelling Socket	Levelling Scale																																	
Crackmeter/Extensometer	Tiltmeter																																	
<p>ASSET VIEW 2</p>	<p>ASSET VIEW 3</p> <p>View from ATS08 . Line of sight</p>	<p>Fixing Details</p> <p>Mechanical Fixing</p> <p>Bolt</p> <p>By a drill hole 8 to 12mm diameter at maximum depth of 50mm, preferably in mortar joints in brick or stone walls, with an expansion sleeve or nylon plug. Stainless steel screws and washers to be used to prevent staining the facade and durability, away from the edges to prevent spalling.</p> <p>Monitoring Devices</p> <table border="0"> <tr> <td> L-Bar Prism</td> <td> Levelling Scales</td> </tr> <tr> <td> Vandalproof Prism</td> <td></td> </tr> <tr> <td> Reference Prism</td> <td></td> </tr> <tr> <td> Levelling Socket</td> <td></td> </tr> <tr> <td> Crackmeter</td> <td></td> </tr> </table>	L-Bar Prism	Levelling Scales	Vandalproof Prism		Reference Prism		Levelling Socket		Crackmeter																							
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<p>Health & Safety and Environmental Information</p> <ol style="list-style-type: none"> Works on this drawing should be undertaken only by an experienced and competent contractor. Before installing instrumentation, contractor to carry out site inspection to assess proposed locations. Relevant findings in the pre-installation assessment to be recorded in the I.R.S. Hazards and risk noted below are additional to those normally associated with installation of instrumentation: Working at height-eg installing geodetic prisms at high level in buildings. Use of substances under COSHH, follow guidelines for use, protection and disposal. 	<p>NOTES</p> <p>DO NOT SCALE OFF THIS DRAWING</p> <ol style="list-style-type: none"> Drawing issued as designer's recommendations for use by contractor Prism and Socket locations shown are approximate. Adjustments may be necessary by contractor depending on "as found" conditions at time of installation. Prism fixing and orientation must provide good visibility to the Total Stations. Monitoring Sockets must allow verticality of the surveying scale and staff. 	<p>ORIGINATOR</p> <p>GEOCISA UK</p> <table border="1"> <tr><td>REV</td><td>PO1</td><td>DATE</td></tr> <tr><td>PURPOSE</td><td>PRELIMINARY</td><td></td></tr> <tr><td>CREATED BY</td><td>AGUSTIN ESTEBAN</td><td>05/05/2022</td></tr> <tr><td>APPROVED BY</td><td>JULIAN PORTILLO</td><td>06/05/2022</td></tr> <tr><td>AUTHORISED BY</td><td></td><td></td></tr> </table>	REV	PO1	DATE	PURPOSE	PRELIMINARY		CREATED BY	AGUSTIN ESTEBAN	05/05/2022	APPROVED BY	JULIAN PORTILLO	06/05/2022	AUTHORISED BY																			
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		<p>PROJECT/CONTRACT</p> <p>HS2 - EUSTON STATION - I&M for TAS/ESS</p> <p>DOCUMENT REFERENCE</p> <p>GEO-RPT-I&M-DRW-30</p> <p>Photomontage of Monitoring Devices in buildings West Lodge</p> <p>Version - Design</p>																																



Appendix C – Monitoring Equipment

Asset Name/Address		East Lodge				
Asset HS2 ID	CGMA0019	FIXING DETAILS				
Building Storeys	1	Monitoring Device	Drill holes per device (8-12 mm diameter)	Total per device in asset	Total per building	
PRISMS TOTAL	16					
Low Level Prisms	8	3D Monitoring Prism	1	8	46	
High Level Prisms	8	3D Vandalproof Prism	3	24		
Control Prisms	0	Levelling Socket	1	14		
LEVELLING POINTS TOTAL	14					
Levelling Sockets	14					
Levelling Scales	0					

Asset Name/Address		West Lodge				
Asset HS2 ID	CGMA0019	FIXING DETAILS				
Building Storeys	1	Monitoring Device	Drill holes per device (8-12 mm diameter)	Total per device in asset	Total per building	
PRISMS TOTAL	16					
Low Level Prisms	8	3D Monitoring Prism	1	8	46	
High Level Prisms	8	3D Vandalproof Prism	3	24		
Control Prisms	0	Levelling Socket	1	14		
LEVELLING POINTS TOTAL	0					
Levelling Sockets	14					
Levelling Scales	0					

East and West Lodges			
MONITORING SENSORS DIMENSIONS AND WEIGHT			
Device			
	3D Monitoring Prism	3D Vandalproof Prism	Levelling Socket
Height (mm)	80	38	20
Width (mm)	90	Diameter 60	20
Thickness (mm)	15		20
Weight (g)	210	415	25
	