

1MCo3 Main Works – Contract Lot S1

HERITAGE AGREEMENT METHOD STATEMENT HAMS - MONITORING AND CONSERVATION MANAGEMENT OF GROUND MOVEMENT DUE TO BELOW GROUND CONSTRUCTION AT 22 PARK VILLAGE EAST - ADP-ESCT-02

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1 Introduction

1.1 Project Context - Schedule 18: Listed Buildings

- 1.1.1 High Speed Two (HS2) is a network of new high speed lines across Britain: Phase One will connect London with Birmingham and the West Midlands. 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.
- 1.1.2 The Secretary of State appointed High Speed Two (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.
- 1.1.3 Skanska Costain Strabag Joint Venture (SCSjv) is the Main Works Contractor constructing thirteen miles of twin-bore tunnels on the HS2 route to its southern terminus at Euston.
- 1.1.4 Schedule 18 'Listed Buildings' to 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 1 of Schedule 18 disapplies aspects of this legislation from the Phase One works. There is no requirement for listed building consent for the purpose of:
 - demolition, alteration or extension in respect of the listed buildings set out in Schedule 18 Table 1, or which are listed on or after 30 September 2013
 - heritage or monitoring works in respect of the listed buildings set out in Schedule 18 Table 2, or which are listed on or after 30 September 2013.
- 1.1.5Following Royal Assent, HS2 Ltd entered into Heritage Agreements with London Borough of
Camden and with Historic England (dated 20th February 2017) concerning the Schedule 18
listed buildings within the London Borough of Camden.
- 1.1.6 Clause 2.1 of the Heritage Agreement permits HS2 to undertake works to Schedule 18 listed buildings, subject to a Heritage Agreement Method Statement (HAMS). This details the proposed works and is submitted to the local authority for their approval, in consultation with Historic England where required.

1.2 Purpose

- 1.2.1 This HAMS:
 - addresses the requirement of Clause 2.1 of the Heritage Agreement to prepare a method statement describing heritage and monitoring work designed to protect heritage significance and avoid or minimise harm to the historic fabric and setting that contribute to the significance of 22 Park Village East.
 - It outlines an asset protection management strategy, design rationale and

> technical method statement for installing monitoring devices, for undertaking generic remedial repairs to historic fabric and arranging urgent temporary works if building damage predictions are exceeded and present additional risk to building structure/serviceability

• is the subject of a Schedule 18 application requesting approval for the monitoring and conservation management of ground movements due to below ground construction at 22 Park Village East. This Schedule 18 application is prepared according to procedures set out in HS2 Phase One Heritage Consents Strategy (HS2-HS2-EV-STR-000-000008).

1.2.2 The HAMS informs:

- stakeholders, including the consenting authority it explains how SCSjv will:
- avoid or minimise harm to heritage significance during tunnel construction by careful installation of building movement monitoring at 22 Park Village East
- use monitoring information to manage timely responses to building movement and undertake conservation repair works at 22 Park Village East in co-ordination with tunnel construction.
- Asset Protection Teams describes heritage conservation measures to be incorporated in sub-contractors' Risk Assessment and Method Statements (RAMS) when undertaking works for heritage and monitoring purposes at 22 Park Village East.
- **1.2.3** This HAMS contains the following information:
 - an up-to-date location plan (Figure 1)
 - statement describing the heritage significance of the listed building (section 4 Building Information)
 - a description of the relevant HS₂ below ground construction works and predicted building damage (section 5. Ground Movement and Building Damage Assessment)
 - a specification for the proposed monitoring instrumentation and a method statement for installation, maintenance, removal and conservation repairs (sections 7 Monitoring)
 - drawings at a suitable scale showing the specified instrumentation locations (Appendix A and B).
- 1.2.4This HAMS also describes a mitigation design rationale (section 6 Mitigation) and
conservation management plan (section 8 Conservation Management) for remedial repair to

avoid or minimise the potential risk of harm or loss of heritage significance at the listed building.

1.3 Scope

- 1.3.1 22-24 Park Village East is a semi-detached 3 -storey (with lower ground floor) masonry building on the west side of the Network Rail (NR) cutting approach to Euston Station (Figure 1 (based on 1:560 OS)).
- 1.3.2 22 Park Village East (Figures 2, 3 and 4), a grade II* listed building (list entry 1322056) is included in Schedule 18 (Table 2: Buildings authorised to be altered or extended for heritage or monitoring purposes), as is the attached residential property at 24 Park Village East.



Figure 1 - Site location showing property boundary to 22 Park Village East (not to scale)





Figure 3 - 22 Park Village East side (north) elevation



Figure 4 22 Park Village East Garden (west) elevation



- 1.3.3 This method statement relates solely to 22 Park Village East. A separate HAMS details corresponding proposal for 24 Park Village East (Document ref: 1MCo3-SCJ-EV-MST-SSo1_SLo3-000023). Both HAMS define procedures to identify ground movements and consequent building structural responses so that appropriate protective measures can be deployed and engaged to prevent harm to heritage significance.
- 1.3.4 Specifically, monitoring instruments will provide data to inform remedial measures that are further outlined in this method statement as dynamic components of a conservation management plan designed as a response to HS2 tunnel construction.

1.4 Engagement

London Borough of Camden and Historic England

- 1.4.1HS2 Phase One Heritage Consents Strategy (Document no.: HS2-HS2-EV-STR-000-000008)
require pre-submission discussion with the relevant local authority and Historic England
(where applicable) on works affecting Schedule 18 listed buildings. The purpose of this
discussion is to agree action to protect the significance of Schedule 18 Listed Buildings.
- 1.4.2Pre-submission consultation with London Borough of Camden and Historic England on
proposals for temporary installation of monitoring devices by fixing to the listed building
occurred during a regular monthly meeting held on 1 February 2023.

- 1.4.3 In response the London Borough of Camden Senior Planner (Conservation) advised SCS Railways that a HAMS for 22 Park Village East monitoring and conservation management should be submitted for Schedule 18 consent.
- 1.4.4 The Camden conservation team have further advised on the proposals detailed in this HAMS. The monitoring and conservation management design set out in the HAMS benefits from the technical advice provided.

The Crown Estate

1.4.5 HS2 asset protection monitoring and remedial repair works to 22 Park Village East detailed in this method statement are incorporated in a Global Agreement covering arrangements at The Crown Estate freehold properties.

1.5 Assumptions & Limitations

- 1.5.1 This method statement has been produced using information generated by SCSjv/Design House, SCSjv sub-consultants and sub-contractors and from online resources available at the time of writing.
- 1.5.2 The SCS Asset Protection, Engagement and Monitoring Teams visited the site to undertake internal measured survey, external inspection and a CCTV drainage survey. Further sources of information include historical building plans & sections obtained from the London Borough of Camden and Network Rail. Information and images presented in this method statement include the result of these site observations, surveys and archive searches.
- 1.5.3 Relevant technical guidance that informs this HAMS includes:
 - HS2-HS2-CV-STD-000-000004 Po3 Technical Standard Civil Engineering Instrumentation and Monitoring ·
 - HS2-HS2-TN-STD-000-000005 Po5 Technical Standard Ground movement and assessment from underground construction
 - HS2 Specification for Civil Engineering Works' Series 4500 Instrumentation and Monitoring' (HS2-HS2-CV-SPE-000-014500)
 - HS2-H S2-EN-STD-000-000009Technical Standard Sound, Noise and Vibration Instrumentation and Monitoring · High Speed Rail London-West Midlands)
 - HS2 Environmental Minimum Requirements Annex 1: Code of Construction Practice Para 13.2.18 to 13.2.31 <u>https://www.gov.uk/government/publications/environmental-minimum-requirements</u>
 - SCSjv Phase 3 Ground Movement Assessment Report Building Assessment Euston Cavern and Shaft - Euston Throat West S1 (1MCo3-SCJ_SDH-GT-REP-SSo1_SLo3-000018 Co3.2) - with baseline data simulating the phased

construction of the excavation and tunnelling works obtained from the 'North' and 'Central' ETW LS-DYNA models

- SCSjv Phase 3 Ground Movement Assessment Report 22-24 Park Village East -Euston Throat West S1 (1MC03-SCJ_SDH-GT-REP-SS01_SL03-000063)
- SCSjv Contractors Monitoring Plan 22-24 Park Village East Asset Protection Euston - APD-ESCT-02, Document no.: 1MC03-SCJ-GL-PLN-SS01_SL03-000003
- SCSjv Phase 1 Geotechnical Desk Study, Document no.: 1MCo3-SCJ_SDH-GT-NOT-SSo1_SLo3-000014
- SCSjv Technical Note Phase 2 Geotechnical Desk Study Park Village East Wall, Document no.: 1MCo3-SCJ_SDH-GT-NOT-SSo1_SLo3-000015
- Purcell (2014) The Crown Estate Guidelines and Standard Specification to Architects for the Regent's Park, Kensington Palace Gardens, St. James's, Pall Mall South, Haymarket and Lower Regent Street Residential and Commercial Estates, Seventh Edition

2 Definitions and abbreviations

Table 1 – List of abbreviations and definitions used in this document

Abbreviation	Definition
APES	Additional Provision Environmental Statement
DC	(Building) Damage Category
DH	Design House
EMR	Environmental Minimum Requirements
ES	Environmental Statement
GIS	Geographical Information Systems
GMA	Ground Movement Assessment
HAMS	Heritage Agreed Method Statement
HS2	High Speed 2 Ltd
I&M	Instrumentation and Monitoring
OS	Ordnance Survey
PDF	Portable Document Format
NR	Network Rail
RAMS	Risk Assessment Method Statement
`rus in urbe'	an illusion of countryside within the built environment

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Abbreviation	Definition
SCjv	Skanska Costain Joint Venture
SCL	Sprayed Concrete Lining
SCSjv	Skanska Costain Strabag Joint Venture
SES	Supplementary Environmental Statement
ТВМ	Tunnel Boring Machine

3 Responsibilities

3.1 Management and design

- 3.1.1 HS2 is responsible for meeting the commitments described in HS2 Information Paper C3: Ground Settlement. Following the processes set out in Information Paper C3, SCSjv has considered how harm to third party property assets can be avoided or minimised in advance of tunnel construction and is planning for appropriate preparations and remedial works during or following construction.
- 3.1.2 Asset Protection activities within each SCS contract area are the responsibility of the SCSjv Area Technical Lead, supported by the Asset Protection core team, including the SCSjv Heritage Technical Lead.
- 3.1.3 Technical design specialists provide additional support:
 - Byrne Looby (2021), Surveys for Design Assessment [Heritage] 22 Park Village East, London, NW17PZ, SCSMW_03265, Document Reference 1MC03-SCJ_OTB-PM-REP-S000-000282,
 - Fielden + Mawson (2023) Historic Building Report & Impact Assessment, Document Reference 1MC03-SCJ_HWS-AR-REP-SS01_SL03-000001
 - Hewson (2022) 22 Park Village East, Regents Park, NW1 7PZ Desktop Structural Appraisal, 1MC03-SCJ_HWS-ST-REP-SS01_SL03_000001
 - Hewson (2023) Asset Specific Mitigation Designer's Monitoring Plan, 22-24 Park Village East, Asset Protection Area East-Euston Throat West Buildings Package 2 ADP-ESCT-02, 1MC03-SCJ_HWS-ST-PLN-SS01_SL03-000001
 - Hewson (2024) 22 Park Village East, Regents Park, NW1 Existing Structure and Proposed Alterations Document no: 1MC03-SCJ_HWS-ST-REP-SS01_SL03-000002
 - Watts (2021), WP166 Pre-construction Condition Surveys, 22 Park Village East, London, NW1 7PZ, SCSMW_03265, Document Reference 1MC03-SCJ_WGL-PM-REP-S000-000369, SW1-100

> Watts (2023) WP166 Preconstruction Condition Survey Report - 22 Park Village East London NW1 7PZ, Document Reference 1MC03-SCJ_WGL-PM-REP-Sooo-005086_C02

4 Building Information

4.1 Asset Identification

- 4.1.1 22 Park Village East E (also named 'Sussex Cottage') is part of one of the detached and semidetached residential villas laid out between 1824 and 1832 to John Nash's Regent's Park village suburb design. 22 Park Village East is a three-storey semi-detached residence attached to 24 Park Village East. Both are grade II* listed residential properties.
- 4.1.2 Originally the street included villas on the east side. These directly overlooked fields that shortly later became a corridor for the London to Birmingham Railway. These villas were subsequently removed to accommodate expansion of the rail cutting at the beginning of the 20th century. As a result, 22 Park Village East, like the other surviving Nash villas, faces the parapet wall of the expanded railway cutting rather than the intended semi-rural setting.

4.2 Extent & Context

4.2.1 Nash's Regent's Park masterplan envisioned a place of leisure for London's social, political and aristocratic elite. It provided ornamental parkland for the exclusive use of residents of villas and grand terraces bordering the Park to the east, south and west (Figure 5). The parkland comprised a huge circle and central lake. Intended to contain a Royal summer palace, it was linked by a processional boulevard (Broad Walk/Portland Place/Regent's Street) to the Prince Regent's London residence at Carlton House.



Figure 5 - Plan based on Regent's Park masterplan (Park Village East highlighted)

- 4.2.2 The palatial neo-classical Gloucester Terrace, Cumberland Terrace and Chester Terrace occupy the eastern edge. The neighbouring Park Villages (East and West), located to the northeast, are designed as suburbs of Italianate and Tudor-Gothic villas.
- 4.2.3 Both Park Village villa suburbs were developed as Nash's own personal speculative private venture, with cottages built progressively to match demand. He infilled two small building leases of otherwise limited commercial interest, to create London's first architect designed villa suburb. On his death the suburbs were completed by his protégé and successor James Pennethorne.
- 4.2.4 At Park Village East, semi-detached cottages designed to look like mansions and detached villas, each in spacious gardens, originally lined both sides of a serpentine street. 22 and 24 Park Village East is on the surviving even numbered side. The architecture of each principal façade was intended to respond to the contrasting character of a dual aspect provided by:
 - the Collateral Cut, a branch of the Regent's Canal which terminated to the south at Cumberland Basin and Cumberland Market. Nash referred to this as a 'wooded valley', providing a treelined waterfront setting to the west and dividing Park Village East from is sister suburb at Park Village West;
 - streetscape and the former greenfield land beyond, overlooking the

Southampton Estate which separated Park Village East villas from the nascent Camden Town and provided a semi-rural aspect to the east (Figure 6).

Figure 6 Greenwood Map of London 1828 (detail showing York & Albany Tavern, Stanhope Terrace and 6-16 Park Village East)



- 4.2.5 The 1838 opening of the London to Birmingham Railway dramatically changed the Park Village East setting (Figure 7). The railway emerged from a tunnel into a cutting that followed the rear garden boundary to the villas on the east side of Park Village East. Railway construction coincided with start of development of residential streets on the Southampton Estate immediately to the east.
- 4.2.6 Housing development continued concurrent with railway construction until the Southampton Estate fields were completely infilled. At Mornington Terrace semi-detached villas bordered the east side of the cutting applied a similar design code to that used by Nash, in effect mirroring Park Village East (Figure 7). Together with Albert Street, Arlington Road and Delancey Street a new pattern of contiguous residential streets linked Regents Park and Camden High Street via numerous railway crossings.
- 4.2.7 Expansion of the London & North Western Railway (LNWR) railway cutting occurred between 1900 and 1905. Thirteen semi-detached villas on Mornington Terrace and the adjoining railway retaining wall were demolished to widen the cutting. A further twenty detached and semi-detached Park Village East villas, along with Stephenson's railway cutting retaining wall, were demolished on the west side (Figure 8). Mornington Street Railway Bridge, a steel bridge with brick vaulting supporting an asphalt deck with brick parapets, provided a new Camden Town gateway to Park Village East. It replaced the Serpentine Road Bridge connecting Park Village East to Mornington Crescent and also Stanhope Road Bridge connecting Mornington Terrace through to the New Road (Euston Road), via Stanhope Road which formed the

Southampton Estate boundary along the east side of Nash's Cumberland Market, Clarence Gardens and Munster Square.



Figure 8 - 1916 Ordnance Survey

4.2.8 The new 60 m wide 17m deep cutting was supported by monumental brick retaining walls that employ closely spaced shallow buttresses, carried up to form piers with decorative ball finial stone caps at street level. Architectural design aesthetics match the quality and refinement of Stephenson's older work but use blue engineering brick instead of the earlier red stock brick; does not rely on the curved batter for structural integrity; and at street level replaces

Stephenson's distinctive open decorative iron railing with brick panels. The original walls were re retained on the east side of the cutting in the approaches to and throughout the Upper Parkway tunnel. Sections of original railing survive along the parapets to the rear of the adjoining properties, including 57 Mornington Terrace.

- 4.2.9 Designed as a single architectural scheme, Mornington Street Bridge and the cutting retaining walls express an innovative urban design that integrated the railway into the historic, social and architectural fabric of Camden Town and Regent's Park:
 - at street level the Park Village East retaining wall incorporates architectural features that complement the immediate neighbouring streetscape, using a red brick facing and dressed Portland stone coping and ball finials (Figure 9). A matching dwarf wall, originally designed with brick piers to support ornate metal railings and gates, forms planting beds for shrubs and trees, intended to soften the imposing street level retaining wall and maintain Nash's 'wooded valley'
 - similar architectural and landscaping refinements are omitted from the Mornington Terrace retaining wall on the Camden side of the cutting, which simply continues the blue engineering brick materiality and detailing of the cutting through to the street level parapet, finishing with a simple stone coping.

Figure 9 'L.&.N.W.R. EUSTON WIDENING Details of Boundary walls and Ironwork', 1900. (Source: Network Rail Archives)



BOUNDARY AND DWARF WALL TO PLANTATION (TWO CATES TO EACH PLANTATION)



- 4.2.10 During World War II many of the nearby Regent Park terraces provided office accommodation for the UK Ministry of Works. The area suffered heavy bombing during the 1940 London Blitz, including extensive damage to a number of Park Village East properties and associated townscape (Figure 10):
 - 18 and 20 Park Village East were damaged beyond repair and demolished
 - 22 and 24 Park Village East were rated as "Seriously damaged but repairable at cost" (The London County Council Bomb Damage Maps 1939- 1945, Page 49 and 2010/3675/P) and subsequently partially rebuilt
 - the dwarf wall forming the planter north of Mornington Street Bridge was rebuilt but without previous ornate brickwork, architectural stonework or iron railings. Railings were also removed and associated ornate brick piers reduced to the planter sections south of Mornington Street Bridge, with only the dwarf wall retained
 - the canal was infilled in 1940. Gardens of Park Village East were extended to incorporate the towpath and canal. Viewed from Gloucester Gate Bridge the infilled canal bed now appears as a secluded and semi-wild area of mature trees and undergrowth.



Figure 10 – London Bomb Damage 1945 (based on 1916 OS)

4.2.11 Post-war reconstruction at Park Village East coincided with a change in governance under the newly created The Crown Estate, the controversial 1950-60s reconstruction of the Nash Regent's Park Terraces; and transfer of ownership of 32 acres of land to St Pancras Borough Council, which it redeveloped as social housing i.e. Cumberland Market and Regents Park Estates.



Figure 11 - Reconstruction of roof and side (north) elevation to 22 Park Village East



Figure 12 - Rebuilt side (north) elevation to 22 Park Village East



Figure 13 – Reinstatement of stucco architectural detailing to 22 & 24 Park Village East

4.3 Description

4.3.1 The Historic England list entry number 1322056 (first listed 14 May 1974) provides a brief architectural description.

PARK VILLAGE EAST (West side) 4 Nos.2-16, 22-34, 36A & B (Even) and attached railings

Street of 12 semi-detached and 4 detached, related villas. 1825-36. Designed and laid out by John Nash and his assistants. For the Commissioners of Woods, Forests and Land Revenues. Picturesque series of 2 and 3 storey stucco detached villas of varying styles.

EXTERIOR: Nos 22 & 24 (Sussex Cottage and Albany Cottage): pair of villas. Rusticated stucco with plain stucco 1st floor band and 1st floor window bays. Low pitched slated roof with deeply projecting bracketed eaves; gables on front and south elevations forming pediments. Centrally positioned large slab chimneystack. 2 storeys 4 windows. No.22, side entrance in porch; No.24, front porch, both

with panelled wooden doors and fanlights. Tripartite ground floor sashes. Names of cottages inscribed on 1st floor band. Architraved sashes to 1st floor. Front pediment with blind oculus in tympanum. Left-hand return with blind lunette in tympanum and tripartite 1st floor window.

4.3.2 The Survey of London (1949) describes the exterior architectural composition based online drawings prepared by Miss B. G. Bryan Brown for the National Buildings Record (Figure 11). The National Buildings Record was created in 1941 to collate and create photographic and drawn surveys of historic or significant buildings deemed to be under threat from bombing, so that, in the event of a building's destruction, a record of it would be preserved. It was initially based at the Royal Institute of British Architect (RIBA) offices at 66 Portland Place.

Nos. 22 and 24....., show an elaborate classical design, the stucco being deeply channelled with horizontal joints to imitate masonry. A picturesque effect is cleverly contrived from an almost symmetrical plan by slightly recessing the left part of the front and cantering the remainder on the window of the front rooms of No. 22, over which the deep eaves are sloped up in pedimental form. There is much play with slightly-recessed surfaces and the jointing is omitted here and there. The accidental effect is increased by the different treatment of the entrances. No. 22 is entered from a side porch, aided by dwarf balustraded terraces, while No. 24 has a front porch in its recessed façade. The back elevation is of equal interest. It is of three storeys, completely balanced in its parts. A large pediment spans the centre, which has a veranda and an elaborate roofed trellis balcony to the middle floor. The side windows in this storey has semicircular arches.



Figure 14 - Survey of London (from National Building Record) 22 -24 Park Village East

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4.3.3 Much like the National Building Record collection, the Pilgrim Trust's 'Recording Britain' project was set up at the outset of war. It employed artists on the home front to capture a record of British lives and landscapes at a time of imminent change. Phyllis E Ginger's watercolour 'Park Village East, Albany Street. NW1' is part of the collection now held by the V&A Museum (Figure 12). It depicts Park Village East closed, possibly due to bomb damage, with a barrage balloon in the distance. It captures both a sense of impending threat that proved to be so destructive and an appreciation of the villa setting as an elegant design relationship between the Regency picturesque and an Edwardian interpretation of architectural classicism expressed in the LNWR Mornington Street Bridge and the Park Village East cutting retaining wall and planter.



Figure 15 Phyllis E Ginger's watercolour 'Park Village East, Albany Street. NW1'

- 4.3.4 An updated detailed description of 22 Park Village East, highlighting alterations to the original design, has been prepared to inform SCS asset protection considerations, taking into consideration alterations since 1894.
- 4.3.5 This incorporates available documentary evidence of the known sequence of changes, which is outlined in Table 2.

Table 2 – Schedule of historic alterations

1894	Layout of the lower ground floor shown on drainage plans from
	Camden Archives, including sitting room, kitchen, old kitchen,
	washroom, cellar and studio. Structural alterations undertaken to the
	walls, with new openings being formed. The drainage was modified

	with a new manhole constructed near the entrance, discharging to the sewer in the street.
1910	Photograph shows a non-original projecting window at first floor and a large masonry construction at garden level, recorded as a billiard room (also shown on Survey of London plans).
1940-1945	Women draughtsperson and artist capture visual record of architectural details of the Nash villas and complimentary LNWR townscape before extensive bomb damage to Park Village East:
1945	22PVE significantly damaged during WW2. Lost features include rustication, dormer window on garden side, casement windows (subsequently changed to sash windows), upper part of the balcony (the original balcony had trellis work and a roof), heavily rusticated garden studio room. Garden studio was partially replaced with a boiler room, coal cellar and WC.
1948	Layout of the lower ground floor shown on drainage plans from Camden Archives with substantial alterations from the previous (1894) layout.
1950	Post-war restoration work completed.
1964	House subject to damage as a result of the movement of the railway retaining wall (approx. 18 inches) and subsidence of the roadway. As a result of this sub-soil disturbance the front gate piers and forecourt paving required renewing and a basement store and cloakroom were affected by damp and needed repair. British Railways offer compensation of 50% towards the cost of works.
1977	Letter from Crown Commissioners office to Miss Hero Granger- Taylor: "[the] premises were considerably war damagedand were restored by the Commissioners just after the last war from a total ruin, during which works considerable alterations and improvements were carried out, particularly in the planning and layout of the lower ground floor, and the premises as they now exist are somewhat different from their original form."
1979	Proposals for alterations to the building submitted to Camden Council by Jefferson Sheard & Partners including structural alterations to the existing wall layout, opening up and new floors throughout at lower ground floor as well as amendments to the main hallway by the staircase.
1982	Coal cellar and lavatory converted into a bathroom.

2017	Proposals to open up and amend the lower ground floor to the north
	of the main entrance submitted to Camden Council.

General arrangement

- 4.3.6 22PVE (also named 'Sussex Cottage') is a semi-detached brick building on a sloping site comprising three storeys; two above street level and one below. The lower level is accessible via internal and external stairs and from the rear garden.
- 4.3.7 The building is of traditional timber floor and roof construction, built off solid load bearing brick masonry walls, with concrete ground bearing slab throughout the lower ground floor, and existing drainage below. The masonry party wall and chimneys are shared with the adjoining 24 Park Village East. The chimney breast has been retained across all floor levels.
- 4.3.8 From the front gate the main entrance to the house is from the small porch to the north façade. A series of external stairs lead from a street level external terrace to the lower ground floor front door and the rear garden.
- 4.3.9 Street front, rear garden and side façades articulate a neo-classical architectural decorative stucco scheme that came to typify fashionable late Georgian and early Victorian tastes.

Exterior

Street (east) façade

4.3.10 The street (east) façade is decorated with rusticated bandings at ground and first floor. A small blind oculus is framed by sunburst rustication within a pedimented gable positioned offcentre over the principal windows to 22 Park Village East. All three windows under the deep gable eaves are stacked central to the pediment apex. A wide plain entablature separates the ground floor and 1st floor. The front elevation has two recessed tripartite sash windows at ground floor and a third tripartite sash window to the lower ground floor/light well. Two sash windows illuminate the 1st floor, each set within a recessed panel of plain stucco.

Garden (west) façade

4.3.11 To the garden (west) façade, stucco banding forms a unified design across ground, first floor level and previously to the former lower ground floor garden studio room. A wide plain entablature at 1st floor level continues from the street and side (north) façade to divide the recessed north rear bay but terminates at the beginning of the central bay. As with the front elevation, the recessed outer 1st floor window is set within a plain stucco panel. A large central bay gable pediment with tympanum and stucco voussoirs/keystone to the ground floor arched window are surviving decorative architectural elements of the original design. The rear fenestration arrangement facing the garden closely matches the street elevation other than the windows under the centrally positioned gable are stacked off-centre; the outer ground floor window is arched, whereas all other front and rear elevation windows fit a flat lintel; the lower ground floor tripartite window is in the form of French doors rather than sash; and a small recessed sash window and door are later inserts associated with ground floor internal

modifications to incorporate utility and boiler rooms in residual spaces following removal of the garden studio room.

Side (north) façade

4.3.12 The side (north) façade carries the ground, first floor level stucco banding and entablature across from the street to the garden façade. The entablature architrave ties in the plainly rendered porch. A tripartite 1st floor window is stacked above the porch, both central to the gable pediment apex. A blind lunette sits under the eaves, within an arched tympanum detailed with stucco voussoirs. Recessed blind arches to the side of the porch matched the round arch that leads to the panelled double wooden door with plain fanlight above.

Garden and boundaries

- 4.3.13 The garden is largely lawn with informal herbaceous planting, sloping to the west, with a low terrace to the incorporated section of former towpath and infilled canal bed at the far end:
 - The boundary with 24 Park Village East is defined by a brick panel wall with brick coping and supported by brick piers. This has recently been repaired to correct defects (cracks and displacement) associated with historic ground subsidence
 - The boundary with 18/20 Park Village East (Nash House) is a similar exposed brick wall other than the section associated with the ground level terrace and stairs from street level down to the rear garden. These sections are rendered to match the north elevation of the house. Cracking and displacement are evident due to tree growth and the terminal pier is tilting towards the street.
 - The front boundary is a rendered low brick wall and piers with simple stone coping supporting replacement iron railings.

Post-war alterations

- 4.3.14 The National Buildings Record line drawings may incorporate minor inaccuracies, but it highlights architectural and decorative alterations made during the post-war reconstruction. Changes are most prevalent in the garden (west) lower ground floor and side (north) lower ground and ground floor façades:
 - an ornate colonnade and arched trellis veranda spanning the shared rear central bay have been replaced by the simple 1st floor open concrete balcony supported by octagonal columns
 - centrally placed blind windows infill the 1st and ground floor façade to balance the fenestration across the shared rear central bay. Both are shown as fully glazed in National Buildings Record line drawings, although this seems a misrepresentation given the position coincides with the party wall
 - plain stucco is present where formerly ashlar detailed render appeared to have been applied to the rear central ground floor bay and across the lower ground floor elevation

- the large attached single story lower ground floor garden studio room with rusticated external elevation has been removed and replaced with a lower ground floor boiler room/utility/WC extension created within the main building footprint. This arrangement has since been further modified internally
- the side (north) gable and entrance porch were rebuilt, terrace balustrade replaced, and entire roof structure rebuilt using the original timber, after direct exposure to bomb impact that totally destroyed the neighbouring semi-detached villa.

Interior

- 4.3.15 Designed as a modest family home the interior originally comprised three floors, each with a specific set of functions:
 - lower ground floor- kitchen, laundry and domestic living spaces, inc. sitting room
 - ground floor main reception rooms drawing room, dining room and parlour or study
 - 1st floor principal bedrooms
- 4.3.16 Documentary evidence and visual inspection highlight numerous internal alterations to 22 Park Village East due to:
 - changes in room layout, related to external architectural alterations associated with post-war re-construction
 - modifications in plan form and room function that reflect late 20th century lifestyle changes.



Figure 16 1894 lower ground floor internal layout

Figure 17 1948 lower ground floor internal layout



- 4.3.17 The 1894 and 1948 layouts of lower ground floor show significant changes (Figure 13 and 14). The sitting room/dining room, which still retains its form and decorative detailing, gained new access to the garden via French doors. Other changes are more utilitarian:
 - former cellars, coal store and laundry room are reconfigured to create larger lightwell below the street. This illuminates a new window insert to the 'old kitchen', now referred to as 'maid's room'.
 - reconfiguration of stair hall which is enlarged, taking a portion of the kitchen and adding a larder with small window and access from the new kitchen (which itself has been reduced in size by approximately half).
 - removal of WC to form route through into the new boiler room.
 - reconfiguration of space after removal of garden studio to incorporate boiler room and relocated WC
 - reduction of former cloakroom (adjacent to internal stairs) to allow for a new doorway in north wall into the stair hall.
- 4.3.18 There are fewer obvious alterations to the original ground floor layout design. Despite changes to the entrance hall, slight modifications to the wooden stairs and the addition of new internal door openings, the well-proportioned and well-lit ground floor reception rooms are generally unchanged and retain ornate period architraves and cornices. The choice of replacement fireplaces and the interior decorative scheme is generally consistent with the building's period character.
- 4.3.19 Other than a bathroom refit and an adaptation of a bedroom to kitchen there are few modifications to the 1st floor internal arrangement. Decorative cornices and architraves in the bedroom are typically plain mouldings rather than the egg and dart design of the 1st floor reception rooms.

4.4 Setting

- 4.4.1 The setting contributes to historic and architectural interest at 22 Park Village East, especially in terms of its group value as part of the surviving Park Village East village suburb.
- 4.4.2 Park Village East:
 - contributes to the wider significance of Regent's Park Conservation Area and is a key element to London's single largest and most comprehensive Georgian metropolitan improvement
 - comprises an architect designed street of residential villas that represent innovation in elite late Georgian suburban planning, architecture and landscape design composition
 - has been modified as a consequence of social and cultural interactions associated

with 19th/20th century transport planning and urban design.

- 4.4.3 22 Park Village East has encountered dramatic changes in setting since construction, which applies equally to the neighbouring villas. Notably the loss of the canal, the 1901-1906 widening of the Euston Approaches railway cutting and associated demolition of the villas along the eastern side of Park Village East.
- 4.4.4 These complex changes disrupt the intended suburban setting but reflect culturally important early and mid-20th century urban design narratives that both clash and interplay with Nash's intended illusion of 'rus in urbe':
 - the gentrified character, picturesque aesthetic and the variety of classic and traditional inspired architectural design employed at the Park Village East villas contributes a lingering sense of Nash's architectural and landscape design vision within a contemporary, dynamic urban environment;
 - the villas express an architectural design vocabulary that represents fashionable late Georgian tastes. This informed subsequent Victorian and Edwardian urban design evident in surrounding streets. It particularly influenced the public realm interface of historic railway infrastructure, such as the materiality and the lighter style of classicism expressed in the 1900-1906 brick railway structures, such as Mornington Street Bridge.
- 4.4.5 Whilst 22 Park Village East itself was fairly faithfully reconstructed by The Crown Estate in the 1950s, wartime bombing impact to the setting that contributes to the significance of the Park Village East villas is unequivocal and remains apparent today. Modifications affect the historic and architectural interest of the once stylish Park Village East townscape, especially north of Mornington Street Bridge. Portland Stone architectural flourishes to the parapet wall were removed and a utilitarian low brick planter wall built to replace the brick and Portland Stone plinth and piers supporting ornate ironwork railings. Latterly the planting had reverted to scrub.

4.5 Condition

4.5.1

.1 22 Park Village East is in fair-good condition, given the age and following recent maintenance work. The most recent condition survey (1MCo3-SCJ_WGL-PM-REP-Sooo-oo5086) taken shortly after remedial crack repairs and redecoration works summarises the conditions as:

- externally the property has recently been decorated and is showing few signs of significant defects.
- internally, the property has been refurbished and is in good condition overall. However, there are numerous cracks to the basement walls, ceiling and floors and there are multiple sections of damp.

4.6 Significance

- 4.6.1 Park Village East is integral to the Regent's Park masterplan designed by the noted Regency architect John Nash in 1825-36. 22 Park Village East and its semi-detached neighbour, no. 24, possess intrinsic architectural and historic interests, but derive most of their significance from their place within the wider Park Village East composition
- 4.6.2 Nash's quirky mix of Neoclassical and Tudor-Gothic exteriors were hallmarks of his vision for a verdant and stylish residential suburb. The picturesque style "rus in urbe", playfully blending classical architectural styles and motifs, proved highly fashionable in the early first half of the 19th century.
- 4.6.3 Nash's quaint yet sophisticated conception of an idealised landscape composition as a setting for highly stylised domestic architecture influenced the design and layout of early Victorian villa suburbs (Tyack 1993, p74), including Decimus Burton's Calverley estate at Tunbridge Wells (1828-39), Rock Park in Birkenhead (1837-50) and the Park estate in Nottingham (1829-1918).
- 4.6.4 The setting retains elements of the original design alongside modifications associated with railway expansion. Taken together these design elements illustrate a pivotal moment of social and cultural change at the beginning of the 20th century. The 1900-1906 demolition of early 19th century aspirational residences appears audacious but is perhaps in part a reflection of Nash's tarnished reputation at the time and growing public confidence and support for the expanding railway network.
- 4.6.5 Bold engineering design expressed in restrained stylistic refinements is a celebration of early 20th century national transport infrastructure promoting physical and socio-economic mobility. The introduction of a fresh architectural design, whilst also acknowledging the diverse character of local communities, captures the disruptive impact of the railway as an agent of modernisation.
- 4.6.6 Historic railway infrastructure introduced townscape features definitive of the railway, such as railway bridge and cutting retaining walls (all locally listed), that represent a design aesthetic inspired by both Stephenson's engineering and Nash's Park Village East architectural style and setting. The subtle use of materials and stylistic details highlight historic, geographical, and social distinctions embodied in the respective identities of Regent's Park and Camden Town.
- 4.6.7 In particular the juxta position with the epitome of Regency architectural design associated with privilege within a more rigid society makes a positive contribution to the significance of the Park Village East listed villas. Key architectural and landscape design features that contribute to the significance of Nash's 22 Park Village East include:
 - A dual aspect design of stuccoed façades contributes to an experience and appreciation of Nash's vision of the 'picturesque' by responding to differences in landscape design associated with the east and west facades. The relative

> simplicity of the slightly asymmetric east facing street elevation contrasts with the more expressive elevation on to the gardens that originally overlooked the tow path to the former Collateral Cut, a spur off the Regent's Canal directly west of the properties. An external 1st floor balcony adds character and variety to the way in which this aspect of the house and garden was/is experienced. Despite the loss of waterside setting, the former presence of the canal is still discernible as an overgrown lower garden 'terrace';

- the property is bordered with walls and railings, surrounded by trees in a relatively quiet, tranquil part of London that still evokes a sense of the suburban picturesque.
- 4.6.8 Key features of the later setting that contribute to the significance of 22 Park Village East are shown in figure 11, including:
 - matching pairs of decorative Portland stone piers and ornate iron lamp standards (grade II listed) frame the access points to Mornington Street Railway Bridge, which serves as a gateway to the Crown Estate via Park Village East
 - planting beds, originally contained within ornate ironwork railing (now removed), retain shrubs and trees to soften the imposing street level parapet to the railway cutting fronting Park Village East, maintaining Nash's concept of a 'wooded valley'.
 - the Park Village East parapet south of Mornington Street Bridge retains architectural features honouring late classism that formerly extended along Park Village East, which defined the streetscape, including the use of red brick, Portland stone coping and Portland stone ball and finials.
 - similar architectural and landscaping refinements are omitted from the retaining wall on the east side of the cutting, reflecting historic social and cultural demarcations.
- 4.6.9 Post-war urban restoration following extensive bomb damage and the infilling of the Collateral Cut resulted in the loss of the waterside aspect to the setting. In addition, loss or change to the original 1901-1906 railway expansion architecture and decorative design, and compromises in the quality of post-war design, materials and workmanship that affect the wider urban setting, are all factors of the setting that detract from significance.
- 4.6.10 The contribution of historic interests to the significance of 22 Park Village East benefits from archival sources specifically intended to document places and property at risk of war-time destruction. These are important documents in terms of understanding the buildings but also have significance as a representation of conservation work undertaken by women engaged in wartime roles on the National Buildings Record and the Pilgrim Trust's 'Recording Britain' programmes.

5 Ground Movement and Building Damage Assessment

5.1 Ground Movement Technical Standard

- 5.1.1 A process for determining potential harm to property because of ground movement caused by HS2 underground construction is outlined in HS2 Information Paper C3: Ground Settlement. This process informs a HS2 technical standard and SCSjv asset protection mitigation strategy; and generates information used to define the scope of monitoring and conservation management works detailed in this method statement.
- 5.1.2 HS2 Technical Standard HS2-HS2-TN-STD-000-000005 Ground Movement and Assessment from Below Ground Construction further details the three phase Ground Movement Assessment (GMA) process.
- 5.1.3 22 Park Village East is located within the HS2 project zone of influence, as defined by Phase 2 GMA 1mm contour (SCS Railways JV Maps GIS system (Figure 14) and is at risk due to potential ground movements induced by HS2 construction.
- 5.1.4 As 22 Park Village East is a listed building it meets sensitivity criteria that require a Phase 3 GMA.



Figure 18 Phase 2 GMA contour

5.2 Phase 3 GMA

- 5.2.1 Phase 3 Ground Movement Assessment Report Building Assessment Euston Cavern and Shaft - Euston Throat West S1 (1MCo3-SCJ_SDH-GT-REP-SSo1_SLo3-000018) considered structural and heritage impact to 22 Park Village East due to permanent construction works:
 - Euston Tunnel (TBM)
 - Sprayed Concrete Lining (SCL) Crossover Tunnels
 - Euston Cavern Shaft
 - Euston Cavern
 - Connections between Euston Cavern, Euston Cavern Shaft and SCL tunnels.
- 5.2.2 Historic records of ground movements have also been considered alongside the modelling data. There has been a history of landslips associated with the infilled Collateral Cut canal, most notably the collapse of the canal tow path retaining wall c 1935. In addition, there are historic records of ground movements along Park Village East associated with the railway cutting retaining wall.
- 5.2.3 Historic geotechnical factors have been further explored and findings inform the analysis and the recommended monitoring and mitigation measures set out in this method statement
 - historical information on the ground characteristics, ground movements, damage and works carried out on the Park Village East properties associated with both the infilled canal and the railway cutting has been assessed (SCS Phase 1 Geotechnical Desk Study (Doc. No. 1MCo3-SCJ_SDH-GTNOT-SSo1_SLo3-000014).
 - additional geotechnical survey and desk study has been undertaken which demonstrates a degree of deformation to some Park Village East properties where historically there may have been a dominant geotechnical mechanism towards the railway cutting (SCS Technical Note - Phase 2 Geotechnical Desk Study – Park Village East Wall S1 Document no.: 1MCo3-SCJ_SDH-GT-NOT-SSo1_SLo3-000015).

5.3 Building Damage Assessment

- 5.3.1 The Phase 3 GMA includes a Building Damage Assessment that considers material properties consistent with the building typology and age. Burland et al. (1977) define six damage categories that distinguished between three principal criteria:
 - Burland damage categories o to 2 only affects to visual appearance
 - Burland damage categories 3 & 4 affects to serviceability or function
 - Burland damage category 5 affects to building stability.

- 5.3.2 22 and 24 Park Village East are jointly assigned Building Damage Category 4 (severe) due to a combination of:
 - predicted HS2 induced vertical and horizontal ground movements
 - different foundation typologies between 22 PVE and 24 PVE exacerbating the impact of predicted differential ground movements
 - historic factors that may compromise the integrity of the building, including post-war reconstruction and recent subsidence induced rotation towards neighbouring Ash tree.
- 5.3.3 There are no unresolved critical assumptions likely to change the Phase 3 GMA Building Damage Assessment and Heritage Sensitivity outcomes.
- 5.3.4 A Phase 3 GMA refinement study (1MCo3-SCJ_SDH-GT-REP-SSo1_SLo3-000063) summaries recent subsidence experienced at 22 and 24 Park Village East and describes the apparent consequence of underpinning works to 24 Park Village East. Evidence suggests that the cracks within 22 PVE attributed to foundation subsidence have not closed up as expected following underpinning of 24 Park Village East. These may have opened up further and 22 Park Village East appears to be rotating away from 24 Park Village East towards the north.
- 5.3.5 Phase 3 GMA concludes that the calculated vertical settlements between the adjacent properties may cause damage in the superstructure as 22 PVE begins to drop away from the underpinned 24 PVE. Risk of loss of building serviceability and/or stability is significant:
 - damage will likely occur on the interface between the party wall and the crosswalls or roof of 22 PVE, resulting in cracks opening at roof level and through the associate elevations. The garden façade will experience the greatest differential settlement, specifically damaging the focal decorative stucco design within the central gable overlooking the garden
 - cracks could lead to water-ingress at roof level and potentially loss of bearing of rafters or joists supported on the party wall. The movements may also cause windows and door frames to be distorted, the floor to be noticeably sloping, and service pipe and rainwater guttering to be disrupted or fractured.

Heritage Sensitivity and Magnitude of Effects

- 5.3.6 The sensitivity of the listed building and magnitude of heritage impact considers ground movement effects on aspects of the building that make a positive contribution to its heritage significance, as described in section 4.6.
- 5.3.7 A system of scoring, following London Underground Movement Guidelines (HS2 Technical Standard - Ground Movement and Assessment from Below Ground Construction (HS2-HS2-TN-STD-000-000005, Table 10), considers two criteria:

- sensitivity of the structure to ground movements and interaction with adjacent buildings
- sensitivity to movement of particular features within the building.
- 5.3.8 22 Park Village East is assigned:
 - a structural sensitivity score of 1: the semi-detached building lacks a single coherent foundation system. Predicted differential ground movements increase the potential for structural damage that harms the architectural interest of the listed building;
 - feature sensitivity score of 1: risk of cracks affecting external architectural appearance, particularly the neo-classical architectural decorative scheme, specifically rusticated stucco with moulded entablature and gable pediment. This contributes to the architectural interests and the group value of the Park Village East villas.
- 5.3.9 In summary, the magnitude of heritage impact is potentially high (HS2 Technical Standard -Ground Movement and Assessment from Below Ground Construction (HS2-HS2-TN-STD-000-000005, Table 11).
- 5.3.10 Both the DC4 (severe) Building Damage Assessment and the high magnitude heritage effect require a mitigation response that complies with the HS2 Technical Standard - Ground Movement and Assessment from Below Ground Construction (HS2-HS2-TN-STD-000-000005).
- 5.3.11 Specifically, the predicted movements require a conservation approach that combines:
 - a structural mitigation design solution to remedy existing defects and ensure limited differential structural movements between 22 PVE and 24 PVE
 - a monitoring and remedial repair strategy to minimises the potential adverse effects of any residual superficial cracking of external and internal stucco/plaster finishes due to ground movements resulting from HS2 tunnelling.

Environmental Minimum Requirement

- 5.3.12 The HS2 scheme design and associated construction and logistics planning has continued to be developed following publication of the HS2 London-West Midlands Environmental Statement (ES) (and subsequent Supplementary Environmental Statements (SES) and Additional Provision Environmental Statements (AP ES)).
- 5.3.13 The controls contained in the HS2 Environmental Minimum Requirements (EMR) ensure that impacts which have been assessed in the relevant ES will not be exceeded and, if possible, reduced.

Table 3-Environmental Statement Assessment

Name	Designation	Value	Construction Impact		
			Nature of impact	Scale	Effect
Park Village East	Listed building, conservation area	High	The asset is located within the 10mm settlement contour associated with the construction of the Proposed Scheme portal and the revetment replacement works. Mitigation will involve the monitoring of settlement impacts and the use of tunnel construction and revetment construction techniques that reduce and	Medium	Major adverse
			stabilise settlement.		

- 5.3.14 Table 3 summarises the construction impact based on the design assessed in the November 2013 ES, as amended by subsequent Additional Provision ES documents. Both 22 and 24 Park Village East were assessed as part of Regent's Park Conservation Area.
- 5.3.15 The ES anticipated a medium scale impact that this would be mitigated by tunnel construction stabilisation techniques and monitoring to ensure the structural effects of ground movements are minimised.
- 5.3.16 The Phase 3 GMA demonstrates the latest design produces a Building Damage Category 4 (severe) and a heritage sensitivity score 2 which presents a potential high heritage impact. This highlights the vulnerability of 22 Park Village East to ground movements is partly due to structural defects associated with historic geotechnical conditions.
- 5.3.17 These factors were not considered in the ES. Therefore, further mitigation (Targeted Structural Intervention) is proposed (refer to section 6 Mitigation) in addition to the broader requirements identified in the November 2013 ES, as amended by subsequent Additional Provision ES documents.
- 5.3.18 Section 5 of this HAMS outlines a strategy for coordinating additional structural mitigation with the established requirement for monitoring of settlement impacts. Targeted Structural Interventions (underpinning works) are to be further detailed in a separate HAMS.
- 5.3.19 Sections 7 and 8 of this HAMS fully details a method statement for monitoring and conservation management in accordance with SCS Asset Protection and Inspection & Monitoring (I&M) plans and procedures.
- 5.3.20 Additional mitigation ensures there are no additional significant environmental effects to those described in the ES assessment. It will resolve underlying building defects that otherwise would likely result in significant harm even if no tunnel induced ground movements were to occur. Consequently, the effect of proposed SCSjv asset protection measures is beneficial rather than major averse.

6 Mitigation

6.1.1 Information generated through the Phase 3 GMA informs asset protection processes used to define the mitigation strategy that responds to the potential harm to 22 Park Village East.

6.2 Asset Protection Management Plan

- 6.2.1 SCS Asset Protection Management Plan (1MCo3-SCJ-EN-PLN-Sooo-ooooo2) sets out the framework for the design and implementation of measures that respond to the Building Damage Assessment presented in the GMA report. It establishes procedures that ensure Third Party Assets are suitably protected from ground movements arising from S1/S2 London Tunnels Contract tunnelling and excavation activities.
- 6.2.2 Intended measures for protecting 22 Park Village East accord with the Management Plan comprising:
 - Targeted Structural Interventions in advance of construction (Asset Protection Mitigation Strategy Category 1), alongside
 - Monitor, React and Repair Strategy (Asset Protection Mitigation Strategy Category 2b) prior, during and following construction.

6.3 22 Park Village East Mitigation Strategy

- 6.3.1 22 Park Village East, Regents Park, NW1 Existing Structure and Proposed Alterations (Document no: 1MCo3-SCJ_HWS-ST-REP-SSo1_SLo3-000002) has been developed on the basis that a combination of Targeted Structural Intervention with a Monitor, React and Repair Strategy is most suitable, especially from a heritage conservation perspective.
- 6.3.2 These components form the key elements of a mitigation strategy:
 - Targeted Structural Interventions to improve the general robustness of the building. This comprises installation of an underpinning system that is consistent with that previously installed at 24 Park Village East, as outlined in 22 Park Village East, Regents Park, NW1 Existing Structure and Proposed Alterations Document no: 1MCo3-SCJ_HWS-ST-REP-SSo1_SLo3-000002. This aspect of the mitigation strategy is intended to prevent any disproportionate damage occurring and to reduce the risk of cracking in sensitive areas where subsequent repairs might be more difficult. [These works are excluded from this method statement and will be detailed in a separate HAMS for proposed structural improvements that require modifications to the existing building fabric.]
 - close attention to monitoring movements at 22 -24 Park Village East. Current baseline monitoring systems shall be maintained (SCSjv Designers Monitoring Plan - Area East Buildings Package 2 (EB2) - S1MDL Code: Document no.: 1MC03-SCJ_SDH-GT-PLN-SS01-000002). Supplementary monitoring proposals

> detailed in section 7 Monitoring are based on further design considerations (Asset Specific Mitigation Designer's Monitoring Plan, 22-24 Park Village East, Asset Protection Area East-Euston Throat West Buildings Package 2 ADP-ESCT-02, 1MC03-SCJ_HWS-ST-PLN-SS01_SL03-000001 and Contractors Monitoring Plan - 22-24 Park Village East - Asset Protection Euston - APD-ESCT-02 1MC03-SCJ-GL-PLN-SS01_SL03-000003)

- a risk-based Asset Action Plan will define specific monitoring trigger values that will determine further safeguarding actions based on the timely management of mitigation interventions in response to actual movements registered during and following tunnel construction, as outlined in section 8 of the Conservation Management
- site inspections will determine appropriate measures and the timing of remedial or repair works. All repair and remedial repair works conducted at the property will meet required quality and conservations standards. Subject to freeholder/leaseholder agreement, SCSjv intend to adopt The Crown Estate Guidelines and Standard Specification to Architects for the Regent's Park, Kensington Palace Gardens, St. James's, Pall Mall South, Haymarket and Lower Regent Street Residential and Commercial Estates, Seventh Edition January 2014
- repair of predicted cracks will follow completion of permanent construction works, as outlined in section 8.4 Conservation (repair) schedules. More generic remedial repairs may also be aligned with freeholder maintenance schedules.
- 6.3.3 Emergency Works will be undertaken if predictions are exceeded, and the observed rate or magnitude of ground movement pose a risk to health and safety or to the preservation of the listed building. Framework contractors are on standby to undertake any necessary interventions, i.e. damage to utility connections, or damage to waterproofing systems that compromise serviceability or inhabitability of buildings. Emergency works will be undertaken in collaboration with the London Borough of Camden and Historic England, as set out in the Heritage Agreement (5 May 2017) clause 27.

7 Monitoring

7.1.1 Monitoring proposals take into consideration the existing ground movement baseline (section 7.2) and apply further guidance and requirements detailed in:

- HS2 Specification for Civil Engineering Works Series 4500: Instrumentation and Monitoring – Construction Document no.: HS2-HS2-CV-SPE-000-014500
- SCSjv Instrumentation and Monitoring Statement S1 and S2 Document no.: 1MC03-SCJ-CL-STA-S001-000001
- SCSjv Designers Monitoring Plan Area East Buildings Package 2 (EB2) S1MDL

Code: Document no.: 1MC03-SCJ_SDH-GT-PLN-SS01-000002

- SCSjv Asset Specific Mitigation Designer's Monitoring Plan, 22-24 Park Village East, Asset Protection Area East-Euston Throat West Buildings Package 2 ADP-ESCT-02 Document no.: 1MC03-SCJ_HWS-ST-PLN-SS01_SL03-000001
- SCSjv Contractors Monitoring Plan 22-24 Park Village East Asset Protection Euston - APD-ESCT-02, Document no.: 1MC03-SCJ-GL-PLN-SS01_SL03-000003

7.2 Ground movement baseline trends

- 7.2.1 Comprehensive ground movement records for Park Village East have been collected by both the Early Works (CSjv) and Main Works (SCSjv) contractors as part of the 'Network Rail Ground Movements Mitigation Scope'. The focus has been on understanding how mitigation works to Network Rail's Park Village East Retaining Wall could influence ground movements affecting property and rail assets in the vicinity. The adopted approach is based on Designers Monitoring Plan - Area East Buildings Package 2 (EB2) - S1MDL Code (1MCo3-SCJ_SDH-GT-PLN-SSo1-00002).
- 7.2.2 This provides a robust baseline record of seasonal movements and local spatial trends with reference to key third party assets, including 22-24 Park Village East.
- 7.2.3 The current baseline situation relevant to 22-24 Park Village East is as follows:
 - horizontal movement data from routine patch scanning has been taken on the front elevation of 22 Park Village East since 2020 (SCjv/SCSjv) show no significant movement. Recorded measurements do not exceed technical margin of error (+/- 3mm).
 - levelling data has been recorded on the pavement outside 22-24 Park Village East from the end of June 2018 to the present day. The precise manual levelling shows varying seasonal movements that fluctuate by up to 5mm in vertical movement.
 - satellite monitoring data from the period 2011-2020 has also been used to gauge historic patterns of ground deformation prior to the commencement of the HS2 Park Village East Retaining Wall mitigation works (Sixense, November 2022, Atlas InSAR Ground Displacement Monitoring HS2 S1S2 East Variation of Works Historical Study). As with the patch scanning data, any apparent movements are within the range of margin of error arising from methodological limitations.
- 7.2.4 There is no movement data for the rear or within the garden.
- 7.2.5 The Network Rail Ground Movements Mitigation monitoring system will be maintained as a continuous baseline record of ground movements attributable to seasonal and current/future construction and related events across the wider area. Specifically, localised ground movement data will determine:

- tunnel ground movements and any variance against Phase 2/3 GMA predictions.
- potential association with observed deflections and cracking of all listed building within the 1mm settlement contour.

7.3 Additional monitoring requirements and options

- 7.3.1 Specific monitoring proposals for individual residential buildings scoring Damage Category 3
 (DC3) or above, including 22 Park Village East, are intended to supplement the Network Rail Ground Movements Mitigation Scope monitoring strategy.
- 7.3.2 Additional instrumentation and monitoring will focus on recording specific measurements to inform conservation and mitigation measures to protect 22 and 24 Park Village East from the effect of below ground construction, including:
 - monitoring asset response and performance of the installed piled raft underpinning system, in accordance with Asset Specific Mitigation Designer's Monitoring Plan, 22-24 Park Village East, Asset Protection Area East-Euston Throat West Buildings Package 2 ADP-ESCT-02 Document no.: 1MC03-SCJ_HWS-ST-PLN-SS01_SL03-000001 (Appendix A)
 - monitoring asset response (deflections and cracks to elevations), in accordance with SCSjv Contractors Monitoring Plan - 22-24 Park Village East - Asset Protection Euston - APD-ESCT-02, Document no.: 1MC03-SCJ-GL-PLN-SS01_SL03-000003 (Appendix B),
- 7.3.3 Both elements of the additional monitoring will:
 - provide additional asset baseline data
 - verify if asset is behaving as predicted in the Phase 3 GMA, prior, during and after construction
 - provide early warning that initiates timely interventions required to avoid potential harm to the asset, in accordance with an established hierarchy of trigger values linked to a monitoring action plan (refer to section 8.3).
- 7.3.4 Ground movement and asset specific data will be reviewed in combination to:
 - re-calibrate trigger values if ground movement data/asset specific obversions are not consistent with Phase 2/3 GMA predictions.
 - update the monitoring action plan to make appropriate adjustments for timing and type of preventative/mitigation measures and implementation in sequence with key construction trigger activities.
- 7.3.5 In accordance with HS2 Technical Standard Civil Engineering Instrumentation and Monitoring (HS2-HS2-CV-STD-000-000004), monitoring will continue until the rate of settlement (or heave) is equal to or less than 2mm per annum (as determined by a minimum

> of four readings over a period of 4 months). The rate considered will exclude seasonal effects. For third-party assets, the cessation of monitoring will be subject to agreement with the third party.

7.4 Preferred monitoring system

- 7.4.1 Subject to site access, baseline data gathering will be a combination of manual and automated data logging.
- 7.4.2 Manual and fully/part automated monitoring systems have been considered for measuring vertical settlement and horizontal displacement to the building. Instrumentation has been selected so that different options remain available should circumstances require a change in method:
 - fully automated system would provide data enabling movements to be tracked hourly and daily. A secure set-up arrangement is required to ensure no loss of visual and digital connectivity over the extended timescales that monitoring is required to operate. It could also require instrumentation that has a greater visual presence.
 - a manual system relies on brief regular (weekly/monthly) access to the property (including private outdoor space) to collect data using a mechanical Total Station to read measurements from reflective prisms attached to the building. It produces a less frequent record of building movements but is less constrained by connectivity and only requires discrete instrumentation attached to the property.
- 7.4.3 The risk of interruptions to connectivity resulting in loss of continuity in monitoring data and the level of intrusion affecting residents have been considered. High frequency automated monitoring data recording is not essential, and the predicted effect of ground movement can be effectively and safely managed through a part-manual system.
- 7.4.4 Primary method of data collection will manually log data, using a mechanical Total Station to read 3D prisms and measure levelling studs.

7.5 Monitoring Specification

- 7.5.1 Monitoring instruments will measure:
 - settlement and horizontal displacement
 - relative movement between each side of a crack
- 7.5.2 Primarily 3 D prisms of various sizes (Figure 15), precise levelling bolts/studs and crack width gauges will be used. Devices will measure movements affecting both properties that form the semi-detached building elevations. Devices illustrated are typical examples, but specific instruments used may vary according to situation.

7.5.3 Table 4 details the minimum monitoring system instruments required at 22 Park Village East (corresponding arrangements for 24 Park Village East are included for sake of completion).
 Proposed locations across both properties are shown in full in Instrumentation Design Drawings (Appendices A and B).

Asset/Item	Instrumentation	Monitored	Number	Comments	Frequency of data
		parameters			recording
Buildings	3D prism targets on building façades	Settlement Horizontal displacement	16 maximum	Monitoring at locations identified on drawings in Appendix B.	Minimum monthly for baseline monitoring. Increased frequency during construction works adjacent to site TBC.
	Precise levelling stud		17 maximum	Monitoring at locations identified on drawings in Appendix A.	
Pavements	Precise levelling studs	Settlement	9	At 5m C/C along zone of existing settlement and 10m centres.	Minimum monthly for baseline monitoring. Increased frequency during construction works adjacent to site TBC.
Crack width for major crack	Crack width gauge, remote electronic or manual, as agreed with contractor and Visual Inspection engineer.	Change in crack width	TBC	Locations as shown on drawings in Appendix A. Potential for additional locations where further cracks are identified. Cracks to be monitored to be selected by contractor and Visual Inspection engineer. Cracks to be monitored separately in the horizontal and vertical directions (not perpendicular to the crack).	Remote read out to central computer or manual readout, depending on accessibility and as agreed with contractor and Visual Inspection engineer
	All frequencies to be be proposed by the f meetings.	adjusted accordii Engineering Mana	ng to progress Iger for discus	s of works and movement sion and agreement at Mo	trends. Changes to onitoring Review

Table 4- Instrumentation specification

Building

7.5.4 3D prisms (data recorded using mechanical Total Station) attached to external walls at the top and bottom of each façade. (If colour options can be sourced and are available, instruments that best match the external building appearance will be installed).





On appearance, internal and external cracks will be monitored using tell tales or monitoring studs (Figure 17).

Figure 20 Example manual crack monitor (top) and automatic crack sensor (bottom)



Ground surface

7.5.5 Settlement of the external spaces within the influence zone of the HS2 works will be monitored by means of precise levelling studs, at 5m or 10m centres.

7.6 Installation, maintenance, removal and repair

Location

7.6.1 Instrument locations shown in Appendix A and B are approximate and will be adjusted as necessary by the sub-contractor, depending on the as found conditions and the owner's agreement. Final locations for prisms will provide good visibility to the Total Stations.

Installation

- 7.6.2 All works to comply with hold point procedures, including 'Permits to Drill' as detailed in:
 - Method Statement and Risk Assessment Installation and Monitoring of Instrumentation and Monitoring on Parkway Third Party Assets - Document no.1MCo3-SCJ_SOU-CL-MST-SSo1_SLo3-000006.
 - Task Briefing Sheet Installation and Monitoring of Instrumentation and Monitoring equipment at Edinboro Castle - EUSTON CAVERN SHAFT -Document No. 1MCo3-SCJ_SOU-CL-REC-SSo1_SLo3-000012.

- 7.6.3 Instruments attached to the building will be firmly secured in line with the manufacturer's instructions to ensure effective monitoring and accurate measurements throughout the required period of operation. This is nominally taken as a minimum of 5 years, but total duration will be determined in line with the criteria as required under HS2 Technical Standard Civil Engineering Instrumentation and Monitoring (HS2-HS2-CV-STD-000-000004).
- 7.6.4 Instrument fixings that require bolting to the building will employ the minimum number of drilling points to comply with safety requirements and ensure effective operation of the instrument.
- 7.6.5 Drilling will take place into plain stucco surfaces or into exposed brickwork mortar joints. All drill locations will avoid decorative mouldings and stringcourses. Location of fixing points will avoid proximity to edges (i.e., less than 80mm) or areas of fragile render, which could result in surface spalling or excessive damage to surface finishes. This applies to all edges, including those created by deep stucco channels that imitate masonry joints.
- 7.6.6 Holes of 8-10mm diameter will be drilled at a maximum depth of 50mm and fitted with an expansion sleeve or nylon plug. Stainless steel screws and washers are to be used, to ensure durability and prevent staining.
- 7.6.7 The sub-contractor's task specific Method Statement and Risk Assessment (RAMS) will include a description of the listed asset and define hold points to ensure implementation of control measures for working on and in its proximity, as detailed in the approved HAMS and SCSjv generic Method Statement and Risk Assessment - Installation and Monitoring of Instrumentation and Monitoring on Parkway Third Party Assets - Document no.1MCo₃-SCJ_SOU-CL-MST-SSo1_SLo₃-ooooo6. Prior to installation work commencing, a copy of the sub-contractor's RAMS will be provided to the London Borough of Camden Conservation team and Historic England.
- 7.6.8 A Toolbox Talk will be issued to all those working on the asset at the start of the shift and a SCS heritage specialist will undertake regular inspections and oversee installation work.

Removal

- 7.6.9 Following completion of monitoring all instrumentation and fixings will be removed and the fixing holes filled to match the surrounding surface render/mortar:
 - clean surface and remove loose render/mortar.
 - new mortar to match the colour of existing mortar/render.
 - point and form mortar joints/rendered surfaces to match existing profiles.
 - repaint where required, to maintain a consistent colour and texture.

Access

7.6.10 Careful consideration will be given to access systems for installation and removal of monitoring instruments that avoids the use of scaffolding directly tied to the listed structure.

Alternatives include mobile elevated working platforms (MEWPs), cherry pickers and freestanding platforms.

7.6.11 However, given the constraints of the properties and disruption to residents, a temporary fixed scaffold may be the only viable solution. Careful installation and remedial work will minimalize any permanent visual impact of any scaffolding works. Scaffold contractors will agree a fully detailed design specification for the listed building.

Scaffolds

- 7.6.12 Scaffold access systems, if required will be designed to minimise harm to the listed asset while providing safe access at height to install monitoring devices.
- 7.6.13 All HS2 scaffolding works are carried out in accordance with SG4:15 Preventing falls in scaffold operations7. Within these guidelines it states that "Scaffolds must be erected in accordance with the relevant British and European Standards and Technical Guidance (e.g. NASC TG20) so that they are adequately stable. Where ties and stability measures (e.g. buttressing, kentledge, guys and anchors etc.) are required they should be installed and removed as work progresses to ensure optimum stability against overturning or collapse of the structure". To comply:
 - there will be a maximum of 2no. fixings per floor level at first and second (where appropriate).
 - fixings will not be inserted into sensitive features such as decorative stucco, cornicing, window or door architraves or pilasters.
 - where possible, fixings will not be aligned horizontally or vertically so that when the scaffold ties are removed, there is not an uncharacteristic regular pattern of repair.
 - where inserted into exposed brick work the ties will be located into the centre of a brick to minimise the damage to only one brick in each location unless the fixing can be fitted into a mortar joint without risk of damaging adjacent bricks on insertion or removal.
 - the scaffold frame will be self-supporting, with a majority of the load being applied vertically through the standards (uprights) down to the pavement (up to a maximum of 14kN), however due to the above factors, tie bars to the façade must be used to protect against additional winding/lateral loads.
 - scaffold will be constructed in phases, from basement to ground floor and ground floor to first floor etc. The scaffold itself will not be tied into the façade until the pull-out tests to the anchors have been carried out at each level to guarantee load capabilities.
 - the tie system to be used on site is an M12 Diameter Excalibur dual fixing. The applied shear load to each anchor will be 2.10kN / 2 anchors = 1.10kN x 125%

(initial safety factor) = 1.375kN, the equivalent of around 150KG. To ensure the scaffold is safe to work on the ties need to be tested over and above this figure. The fixings are therefore tested prior to tie installation, up to 3.5 KN (the equivalent of around 350kg). The results of the pull test therefore have a factor of safety of around 2.5x. Only once the pull test figure of 3.5KN is reached and the anchor is secure, shall the scaffold be tied.

- ties will be drilled into external brickwork using a rotary percussion SDS drill and tightened using a handheld ratchet spanner.
- Once the installation is complete, the scaffolding will be struck by removing the ties from the brickwork and removing the scaffold board and frame. All tube and fittings will be removed from the tie bars and the 12mm Excalibur bolts will be removed using a ratchet spanner and 8mm socket.
- Fixing locations will be recorded by the Contractor and remedial repairs will be undertaken as described in 7.6.9.

8 Conservation Management

8.1 Visual Inspection

- 8.1.1 The property will be visually inspected by an appropriately experienced structural engineer Inspections will occur monthly during or after critical construction activities predicted to affect the property. A report will be produced and re-issued for each inspection so that each visit is recorded in a single document.
- 8.1.2 This report will include high-resolution photographs supplemented by sketches as required, detailing all visual and measured changes, such as:
 - new cracks or enlargement of existing cracks.
 - evidence of spalling of masonry or plaster.
 - any other new defects.
 - signs of new water ingress.
 - evidence of subsidence.
- 8.1.3 The frequency of visual inspections may increase in response to Monitoring Trigger Levels.
- 8.1.4 Change in frequencies of the visual inspections are to be confirmed at the regular SCSjv Monitoring Review Meetings.

8.2 Trigger Values

- 8.2.1 Trigger values are based on the Phase 3 GMA of HS2 permanent works only (i.e. excludes temporary works). Seasonal and daily variation due to background environmental effects will be considered when applying the trigger values.
- 8.2.2 Trigger values for building crack widths are:
 - Construction Alert commence monitoring upon noting first emergence of crack/defect.
 - Green 3mm
 - Amber 5mm
 - Red 15mm
 - Numerical Black triggers are not applicable for these assets.
- 8.2.3 No trigger levels are set for levelling studs recording ground movements.

8.3 Monitoring Action Plan

- 8.3.1 The Monitoring Action Plan includes procedures for:
 - the production, assurance, interpretation, and presentation of monitoring data.
 - actions to be taken by specified parties in the event of monitoring trigger values being exceeded.
 - actions to be taken in the event of interruption to monitoring during the construction phase (e.g., due to monitoring system malfunctions).
 - arrangements for regular reporting on the items detailed above to the London Borough of Camden Conservation team and Historic England.
- 8.3.2 The following monitoring actions are to be taken at the breach of trigger levels:
 - Green review frequency of visual inspection.
 - Amber increase frequency of visual inspection, review movements of the asset and crack widths against prediction of movement and update subsequent predictions to account for movement. Cracks that reach amber trigger level should be exposed (stucco render/plaster removed in a 200mm x 200mm zone and masonry inspected).
 - Red increase frequency of visual inspections. Review specific cracks and assess stability of building. Introduce temporary works if required.

- 8.3.3 The structural engineer inspecting the properties will routinely assess the building for stability and safety and recommend any temporary measures that may be immediately required, regardless of whether instrument trigger levels are met.
- 8.3.4 Any breach of trigger levels requiring temporary works will be reported and temporary works designs issued to London Borough of Camden Conservation team and Historic England for information prior to works proceeding.

8.4 Conservation (repair) schedules

- 8.4.1 All required repairs will follow the design principles, standard brief, specification, technical details and safe working practices described in The Crown Estate Guidelines and Specification to Architects for the Regent's Park, Kensington Palace Gardens, St. James's, Pall Mall South, Haymarket and Lower Regent Street Residential and Commercial Estates 7th Edition.
- 8.4.2 A conservation (repair) schedule will be prepared prior to installation of monitoring instruments and subsequently maintained as planned actions are updated. The conservation (repair) schedule will be routinely reviewed until monitoring requirements have been fully met, instrumentation removed, and all necessary repairs completed.
- 8.4.3 The conservation (repair) schedule will include:
 - identification of the property.
 - a list of all repair items required, to be described room-by-room or by reference to external elevation, including reference to the Inspecting Engineer's and other specialist reports and requirements.
 - an inventory of the historic items, including fixtures and fittings to be preserved or restored.
 - programme and timescale allowed for the works.
 - the standard specification for workmanship and materials including painting and stucco repairs.
 - a list of drawings that are approved by leaseholder/freeholder.
 - details of the monitoring procedure for the work, including the contact details of a Conservation Consultant Architect who will confirm works have been carried and completed in accordance with The Crown Estate covenants included in the lease or building agreement.
- 8.4.4 Other than the drilled bolt fixing holding the monitoring instruments in place, typical damage resulting from the tunnelling works is expected to be cracks within the masonry walls perpendicular to the street.
- 8.4.5 The Crown Estate Guidelines and Specification to Architects describes a typical repair strategy as:

- remove surrounding render to check for propagation of crack within masonry.
- cracks <5mm should be infilled/repointed
- cracks greater than 5mm will have mortar joints raked out, tie-bars installed across the crack and infilled/repointed.
- render/mortar composition/type to be determined and matching material reapplied to complete repair.
- internal and external redecoration.
- 8.4.6 All conservation (repair) schedules and detailed design (technical drawings and RAMS) will be issued to London Borough of Camden Conservation team and Historic England for review and comment prior to works proceeding.

9 Heritage Conservation Summary

- 9.1.1 Installation of monitoring instruments is a temporary arrangement to ensure accurate monitoring of the heritage asset prior to, during and following HS2 permanent construction works. It is a precautionary procedure to identify ground movements and resulting building structural responses so that appropriate measures to protect the asset can be deployed and engaged to prevent potential systemic or structural harm that may result in loss of serviceability and/or stability and impact to heritage significance.
- 9.1.2 Specifically, monitoring instruments will provide data to inform decisions on managing and mitigating effects on heritage assets during the planned HS₂ tunnelling operations, providing a record of ground movements that will:
 - observe and record changes affecting the building to:
 - check and validate modelled predictions
 - calibrate mitigation responses with the sequence of construction activities
 - ensure interventions required to mitigate potential harm to heritage assets are undertaken in timely accordance with an established hierarchy of trigger values and related pre-planned actions.
- 9.1.3 Installation of monitoring instruments does not result in loss of heritage significance and offers specific protections and benefits as part of a conservation management process.
- 9.1.4 There is negligible harm to historic fabric because:
 - monitoring instruments are to be installed with minimum fixings.
 - all devices will be removed on completion of monitoring requirements and there are no permanent additions or alterations to the listed building.

- 9.1.5 The temporary visible presence of monitoring devices does not change the contribution of setting to the significance of the heritage asset. Instrument visibility is limited by the minimum use of devices required to meet the monitoring requirements, retaining the optional use of more intrusive devices that will only be deployed if circumstances require additional monitoring capabilities.
- 9.1.6 Following completion of HS2 asset protection measures there will be no permanent change to setting.

10 References

Table 5- References

Title	Reference
Atlas InSAR Ground Displacement Monitoring HS2 S1S2 East Variation of Works Historical Study	Sixense, November 2022
Byrne Looby (2021), Surveys for Design Assessment [Heritage] 22 Park Village East, London, NW1 7PZ, SCSMW_03265	1MC03-SCJ_OTB-PM-REP-S000-000282
Fielden + Mawson (2023) Historic Building Report & Impact Assessment	1MC03-SCJ_HWS-AR-REP-SS01_SL03- 000001
Guidelines and Standard Specification to Architects for the Regent's Park, Kensington Palace Gardens, St. James's, Pall Mall South, Haymarket and Lower Regent Street Residential and Commercial Estates	The Crown Estate, Seventh Edition January 2014
Hewson (2022) 22 Park Village East, Regents Park, NW1 7PZ Desktop Structural Appraisal	1MC03-SCJ_HWS-ST-REP- SS01_SL03_000001
Hewson (2023) Asset Specific Mitigation Designer's Monitoring Plan, 22-24 Park Village East, Asset Protection Area East-Euston Throat West Buildings Package 2 ADP-ESCT-02	1MC03-SCJ_HWS-ST-PLN-SS01_SL03- 000001
Hewson (2024) 22 Park Village East, Regents Park, NW1 Existing Structure and Proposed Alterations Report	1MC03-SCJ_HWS-ST-REP-SS01_SL03- 000002
Hewson (2024) Asset Specific Mitigation Designer's Monitoring Plan, 22-24 Park Village East, Asset Protection Area East-Euston Throat West Buildings Package 2 ADP-ESCT-02	1MC03-SCJ_HWS-ST-PLN-SS01_SL03- 000001
HS2 Information Paper C3: Ground Settlement	
HS2 Technical Standard - Civil Engineering Instrumentation and Monitoring	HS2-HS2-CV-STD-000-000004 P04
HS2 Technical Standard - Ground movement and assessment from underground construction	HS2-HS2-TN-STD-000-000005 P03
HS2 Specification for Civil Engineering Works' Series 4500 – Instrumentation and Monitoring	HS2-HS2-CV-SPE-000-014500
HS2 Technical Standard – Sound, Noise and Vibration Instrumentation and Monitoring · High Speed Rail London-West Midlands	HS2-H S2-EN-STD-000-000009

Title	Reference
HS2 Environmental Minimum Requirements Annex 1: Code of Construction Practice <u>https://www.gov.uk/government/publications/environmental-minimum-requirements</u>	CS755 02/17
John Nash and Park Village	Tyack, Geoffrey 1993 The Georgian Group Journal vol. III, pp68-74.
SCSjv Instrumentation and Monitoring Statement S1 and S2	1MC03-SCJ-CL-STA-S001-000001
SCSjv Phase 3 Ground Movement Assessment Report - Building Assessment Euston Cavern and Shaft - Euston Throat West S1	1MC03-SCJ_SDH-GT-REP-SS01_SL03- 000018 C03.2
SCSjv Phase 3 Ground Movement Assessment Report - 22-24 Park Village East - Euston Throat West S1	1MC03-SCJ_SDH-GT-REP-SS01_SL03- 000063
SCSjv Designers Monitoring Plan - Area East Buildings Package 2 (EB2) - S1	1MC03-SCJ_SDH-GT-PLN-SS01-000002
SCSjv Contractors Monitoring Plan - 22-24 Park Village East - Asset Protection Euston - APD-ESCT-02	1MC03-SCJ-GL-PLN-SS01_SL03-000003
SCS Asset Protection Management Plan	1MC03-SCJ-EN-PLN-S000-000002
SCSjv Phase 1 Geotechnical Desk Study	1MC03-SCJ_SDH-GT-NOT-SS01_SL03- 000014
SCSjv Technical Note - Phase 2 Geotechnical Desk Study – Park Village East Wall,	1MC03-SCJ_SDH-GT-NOT-SS01_SL03- 000015
The Crown Estate Guidelines and Standard Specification to Architects for the Regent's Park, Kensington Palace Gardens, St. James's, Pall Mall South, Haymarket and Lower Regent Street Residential and Commercial Estates, Seventh Edition	Purcell (2014)
Watts (2021), WP166 Pre-construction Condition Surveys, 22 Park Village East, London, NW1 7PZ, SCSMW_03265	1MC03-SCJ_WGL-PM-REP-S000-000369, SW1-100
Watts (2023) WP166 Preconstruction Condition Survey Report - 22 Park Village East London NW1 7PZ	1MC03-SCJ_WGL-PM-REP-S000- 005086_C02

Appendix A – Instrumentation Design Drawings (as proposed in Asset Specific Mitigation Designer's Monitoring Plan, 22-24 Park Village East, Asset Protection Area East-Euston Throat West Buildings Package 2 ADP-ESCT-02 Document no.: 1MC03-SCJ_HWS-ST-PLN-SS01_SL03-00001)



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Appendix B – Instrumentation Design Drawings (as proposed in SCSjv Contractors Monitoring Plan - 22-24 Park Village East -Asset Protection Euston - APD-ESCT-02, Document no.: 1MC03-SCJ-GL-PLN-SS01_SL03-00003)

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Figure 4: 22-24 Park Village East – South Elevation (No. 24 side)

