HS2

High Speed Rail (London – West Midlands) Act 2017

HS2 Ltd

London Borough of Camden

Park Village East Berm Wall and Euston Scissor Cut

Schedule 17 Plans and Specifications Written Statement for Information

LBC.S112.PS.20

Document Reference: 1MC03-SCJ_SDH-IN-STA-SS01_SL03-000001

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1.1 Background Information

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Site	Details
Scheme	High Speed Two
Applicant	High Speed Two (HS2) Limited
Applicant Address	*c/o Agent:* SCS Railways Joint Venture (SCS) Third Floor, Victoria House 37-63 Southampton Row London WC1B 4DA
Site Address	Park Village East, London Borough of Camden. NW1 2DU
Description	Submission under Schedule 17 of the High Speed Rail (London-West Midlands) Act for approval of the Park Village East Wall Berm Support Structure, Parapet and Upstand Beam; and Euston Scissor Cut (Open Section) East Retaining Wall, Parapet, Capping beam and Props. The Park Village East Wall Berm and Upstand Support Structure is a six metre by three metre supporting berm and upstand located in the railway cutting, adjacent to the existing PVE retaining wall and extending from Euston Scissor Cut (Open Section) to Parkway Tunnel. The Euston Scissor Cut (Open Section) is an open box that will structurally support the portal and provide an air gap between the Euston Tunnels and Scissor Cut, located within the railway cutting bound by Mornington Street and Granby Terrace Bridge.

1.2 Terms of Reference

1.2.1 This Written Statement is compiled in accordance with the High Speed Two (HS2) Phase 1 Planning Memorandum and Planning Forum Notes (PFNs) as required by the planning regime established under Schedule 17 of the High-Speed Rail (London – West Midlands) Act 2017.

1.2.2 The submission documents that have been prepared to support the Plans and Specifications submission under Schedule 17 of the Act have been prepared in accordance with the PFN1, PFN2 and PFN3. The engagement undertaken to inform the preparation of this Plans and Specification submission has been in compliance with PFN4 and PFN5.

1.2.3 This statement provides the London Borough of Camden with information to assist with the determination of the Plans and Specifications submission under Schedule 17, in relation to the above description of works.

1.2.4 The information in this Written Statement is provided for information to assist in determining the request for approval. It is not for approval.

1.3 Introduction to High Speed 2

1.3.1 HS2 is a new high-speed railway network that will connect major cities in Britain. It will bring significant benefits for inter-urban rail travellers through increased capacity and improved connectivity between London, the Midlands and the North. It will release capacity on the existing rail network and so provide opportunities to improve existing commuter, regional passenger and freight services.

1.3.2 Phase One of HS2 will provide a dedicated high-speed rail service between London, Birmingham and the West Midlands. It will extend for approximately 230km (143 miles). Just north of Lichfield, high speed trains will join the West Coast Main Line for journeys to and from Manchester, the North West and Scotland.

1.3.3 For further information on HS2 and the route through the London Borough of Camden please refer to the Planning Context Report for the London Borough of Camden, deposited with the Council by HS2 Ltd.

1.4 High Speed Rail (London – West Midlands) Act 2017

1.4.1 The High-Speed Rail (London – West Midlands) Act 2017 ('the Act') provides powers for the construction and operation of Phase 1 of High Speed Two. HS2 Ltd is the nominated undertaker in relation to the works subject to this Plans and Specifications submission.

1.4.2 Section 20 to the Act grants deemed planning permission for the works authorised by it, subject to the conditions set out in Schedule 17. Schedule 17 includes conditions requiring the following matters to be approved or agreed by the relevant LPA.

- Construction arrangements (including large goods vehicle routes);

- Plans and specifications;
- Bringing into use requests; and
- Site restoration schemes.

1.4.3 This is therefore a different planning regime to that which usually applies in England (i.e. the Town and Country Planning Act) and is different in terms of the nature of submissions and the issues that the LPAs can have regard to, in determining requests for approval.

1.4.4 Schedule 17 of the Act sets out the grounds on which the LPA may impose conditions on approvals or refuse requests for approval.

1.4.5 This Written Statement includes information supporting the Plans and Specifications submission in relation to the matters outlined in **Table 2** below.

Table 2 Schedule 17 Plans and Specifications Submission Details

Site	Details
Plans and Specifications (permanent works)	• Earthworks – PVE Wall Berm Support Structure and Upstand Beam [1], Scissor Cut (open section) east retaining wall (Paragraph 3) • Fencing / wall – Berm Support Structure parapet, Scissor Cut parapet (Paragraph 3) • Building works – Scissor Cut Capping Beam and Props (at grade level) (Paragraph 2)

1.4.6 With respect to the details identified as earthworks, paragraph 3 (9) defines "earthworks" as, "*terracing, cuttings, embankments or other earthworks*." The Retaining Walls are earthworks because they are not a wall in the usual sense of forming a boundary or enclosure; instead they form part of the earthwork itself, being the external part of it and consequently an integral and necessary part of the cutting.

1.4.7 The works to which this application relates, and the cumulative impact of the works in conjunction with other HS2 development, have been assessed and are compliant with paragraph 1.1.3 (bullet point 2) of the HS2 Phase 1 Environmental Minimum Requirements General Principles[2].

[1] The Park Village East Wall Berm and Upstand Support Structure is a structural support for the existing retaining wall. Further detail on the purpose and design of the berm is outlined in paragraph 3.3.11.

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/618074/General_principles.pdf

1.5 High Speed Two: Environmental Minimum Requirements

1.5.1 The Environmental Statement (ES) (as amended) is an assessment of the likely significant environmental effects of the proposed HS2 railway and the proposals to avoid, reduce or remedy these likely significant environmental effects.

1.5.2 HS2 Ltd as the nominated undertaker is contractually bound to comply with the controls set out in the Environmental Minimum Requirements (EMRs). These controls along with the powers contained in the High-Speed Rail (London – West Midlands) Act and the Undertakings and Assurances will ensure that impacts which have been assessed in the ES will not be exceeded.

1.5.3 The EMRs comprise the following suite of documents:

- Code of Construction Practice (CoCP);
- Planning Memorandum;
- Heritage Memorandum;
- Environmental Memorandum; and
- Undertakings and Assurances.

1.6 High Speed Two: Code of Construction Practice

1.6.1 HS2 Ltd as the nominated undertaker is contractually bound to comply with the controls set out in the Environmental Minimum Requirements. The Environmental Minimum Requirements include the High Speed Two Code of Construction Practice (CoCP).

1.7 Structure of Written Statement

1.7.1 This Written Statement is structured as follows:

- A description of the location and main characteristics of the works area is provided in **Section 2**;
- **Section 3** describes the main works being undertaken in the area, as set out in Schedule 1 of the Act, and those that are the subject of this Schedule 17 Plans and Specifications submission;

- The design criteria and rationale for the works which are the subject of this Schedule 17 Plans and Specifications submission are described in **Section 4**;
- **Section 5** summarises the pre-submission consultations that were undertaken, including a list of the consultees, dates, attendees at meetings and a brief summary of the outcome of these discussions;
- A high-level programme for the works and how they fit into the wider programme for other works in the area, as set out in Schedule 1 of the Act, is provided in **Section 6**; and
- **Section 7** identifies any other main consents, or known forthcoming consents associated with the works.

2 Site Location and Characteristics

2.1 Site Location

2.1.1 Park Village East is a residential road in the London Borough of Camden that runs parallel to the West Coast Main Line (WCML) cutting, just to the north of Euston Station. Park Village East adjoins Granby Terrace in the south, and Gloucester Gate in the north, providing a link through the residential area to the west of Regents Park.

2.1.2 The existing Park Village East (PVE) Retaining Wall Berm runs along the western edge of the WCML cutting between the A400 Hampstead Road Bridge and Granby Terrace Bridge, to the north west of Euston Station. The Euston Scissor Cut Portal is located south of Mornington Street Bridge (**Figure 1)**. The relationship to HS2's alignment is displayed in **Figure 2**.

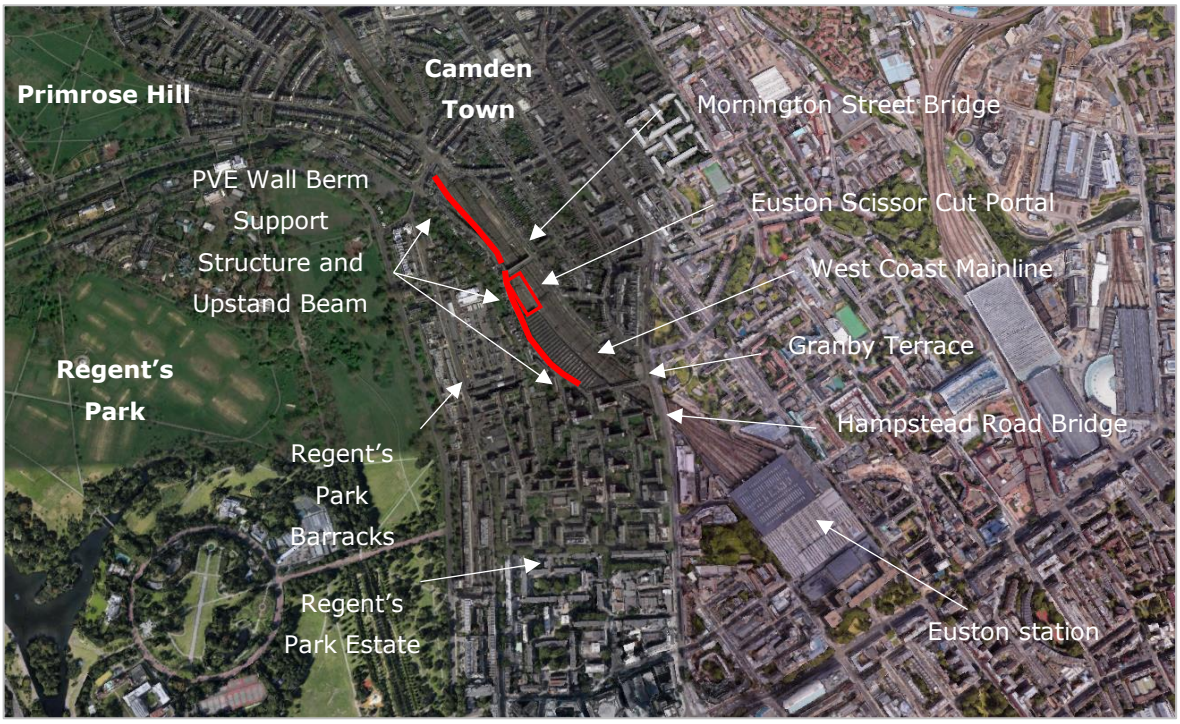

Figure 1 Aerial view of Euston and surrounding area. Approximate site location demarcated in red (Map data Google 2019)

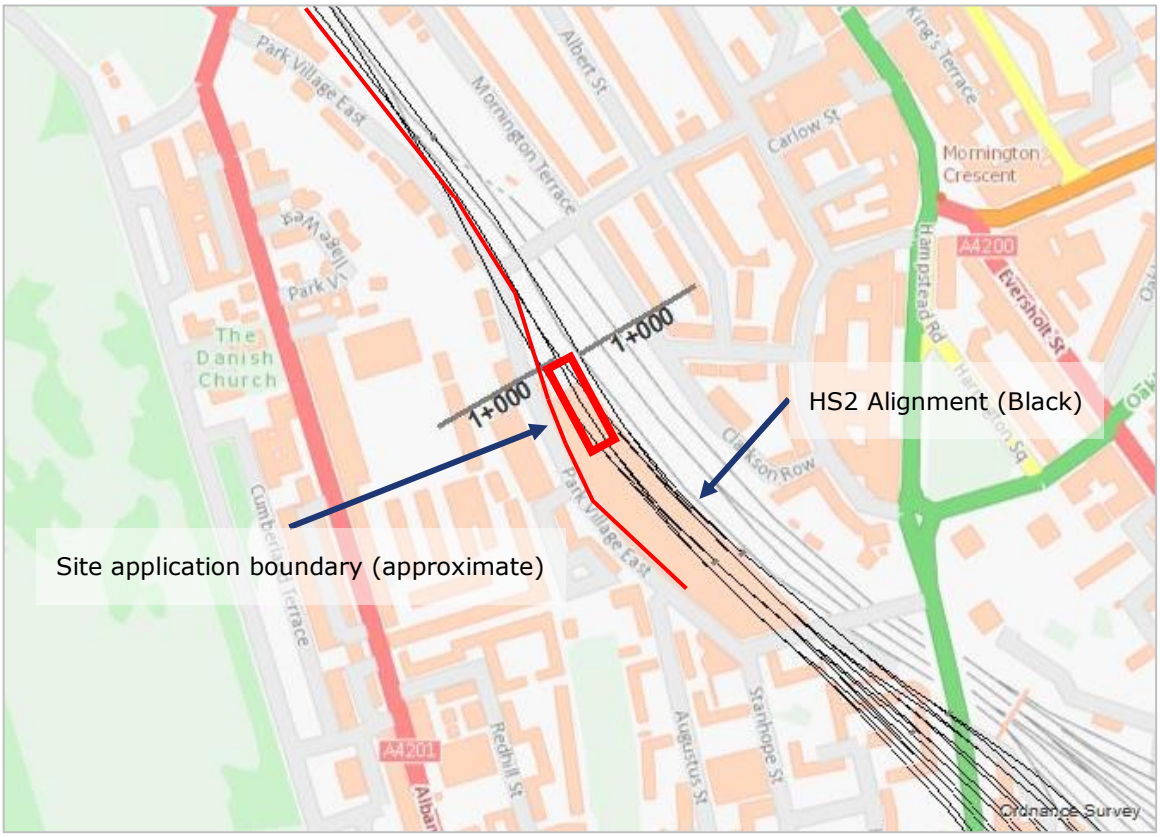

Figure 2 HS2 Track Alignment and Schedule 17 application boundary (demarcated in black and site application boundary in red)

2.2 Adjacent Land Uses

2.2.1 The wider setting contains housing of varying styles, set at a level above the adjacent WCML railway corridor to the north and east. To the south, the Regent's Park Estate consists of medium to high rise social-housing blocks. The area between Park Village East and Regents Park comprises terraced house forms from a variety of ages and appearances and the less formally laid out picturesque villas by John Nash along Park Village East and West. The existing WCML railway corridor forms a physical barrier which separates the villas on Park Village East from the later 'Palace front' terraced housing along Mornington Terrace to the east.

2.2.2 Euston Station, which is one of Britain's busiest main line rail stations and provides connections to the cities north of London (e.g. Birmingham, Liverpool, Manchester, Edinburgh and Glasgow) is located to the south east. Railway tracks and associated operational land are located to the north and east.

2.2.3 Regents Park lies approximately 300m to the west of the site and is one of London's largest and most significant areas of open space. Closer to the site, there are other smaller open spaces and play areas throughout the residential areas immediately to the west. Regents Park Barracks is approximately 150m to the west of the site.

2.3 Environmental Characteristics

2.3.1 Regent's Park Site of Metropolitan Importance (SMI) lies approximately 300m to the west of the application site. The park contains mature parkland trees, a small enclosed woodland, an ornamental lake and a grassland area managed specifically for wildlife.

2.3.2 There are several designated heritage assets in the area, summarised in **Table 3**.

Table 3 Designated heritage assets in proximity to the application site

Listed Asset	Type	Distance to Euston Scissor Cut Portal	Distance to PVE Wall Berm and Upstand Support Structure and Upstand Support Structure and Upstand Beam
Park Village East - numbers 2-16, 22-34, 36a and 36b and attached railings	Grade II*	Adjacent to west	Adjacent to west
Park Village West - numbers 1-8, 10-14 and 17-19 and attached railings	Grade II*	250m north west	150m south west
Parkway Tunnel and Cutting	Grade II	Directly adjacent to north	Directly adjacent to north
Pair of stone piers with lamp standards to east end of Mornington Street railway bridge	Grade II	Directly adjacent to north	Directly adjacent to north
Pair of stone piers with lamp standards to west end of Mornington Street railway bridge	Grade II	Directly adjacent to north	Directly adjacent to north
Regents Park Barracks, block K (The Officers' Mess)	Grade II	100m west	100m west

Listed Asset	Type	Distance to Euston Scissor Cut Portal	Distance to PVE Wall Berm and Upstand Support Structure and Upstand Support Structure and Upstand Beam
Mornington Crescent Numbers 1, 2-35 and 261/263 and attached railings	Grade II	50 – 250m east/north east	100 – 150m east
York and Albany Public House	Grade II	280m north	Adjacent to northern extent
Parkway Numbers 119- 123 and 125 and attached railings	Grade II	300m north	Adjacent to northern extent
Other listed buildings towards Regents Park	Grade II*, II and I	Approximately 330m west	Approximately 330m west
Regents Park Conservation Area	-	Adjacent to west	Adjacent to west
Camden Town Conservation Area	-	North-east of WCML cutting	North-east of WCML cutting

2.3.3 There are also several non-designated heritage assets near the site which contribute to the special character of the area. These comprise the locally listed structures associated with the expansion of the London to Midland Railway at the beginning of the 20th century. These include Mornington Street Bridge, the wall to the west of the rail cutting which runs south from 1 Park Village East to Granby Terrace, and the wall to the east side of the cutting along Mornington Terrace and Clarkson Row.

2.3.4 The rail cutting itself in this area (north of Granby Terrace) is a significant asset as it remains largely as it was altered circa 1905 with elements of the 1870s work evident in some areas. The cutting retains its original rail character and is important in understanding the development of one of the first inter-city railways in the works as conceived by Robert Stephenson.

2.3.5 These features provide a strong historic character to the area and illustrate the development of rail engineering since the mid-19th century and the impact that this had on the character and appearance of the local area.

2.3.6 West of the site is Regent's Park Conservation Area which covers the eastern part of John Nash's Regent's Park masterplan development of the early 19th century. It comprises Nash's picturesque villas on Park Village East to its eastern boundary and part of Regent's Park.

2.3.7 These retaining walls are included as 'street features or other structures' on Camden's Local List (adopted on 21 January 2015), which details non-designated heritage assets within the borough

2.3.8 In addition to the listed buildings within close proximity to the works site outlined in **Table 3**, a large number of heritage assets are located around Regents Park. The concept of development around Regent's Park was established after a design competition in the early 1800's, after which John Nash sold building leases for approved designs. Control over development was implemented for this area via the creation of the Regents Park Conservation Area, which is adjacent to the application site. The Camden Town Conservation Area is also within the application site vicinity.

2.3.9 Although the PVE Wall Berm and Upstand Support Structure is in close proximity to some heritage assets (**Figure 3**), it will be approximately 8-10.5m below the existing street level within the railway cutting, along the length of the Berm and Upstand Support Structure. Similarly, the Euston Scissor Cut Portal will be located at and below street level within the railway cutting.

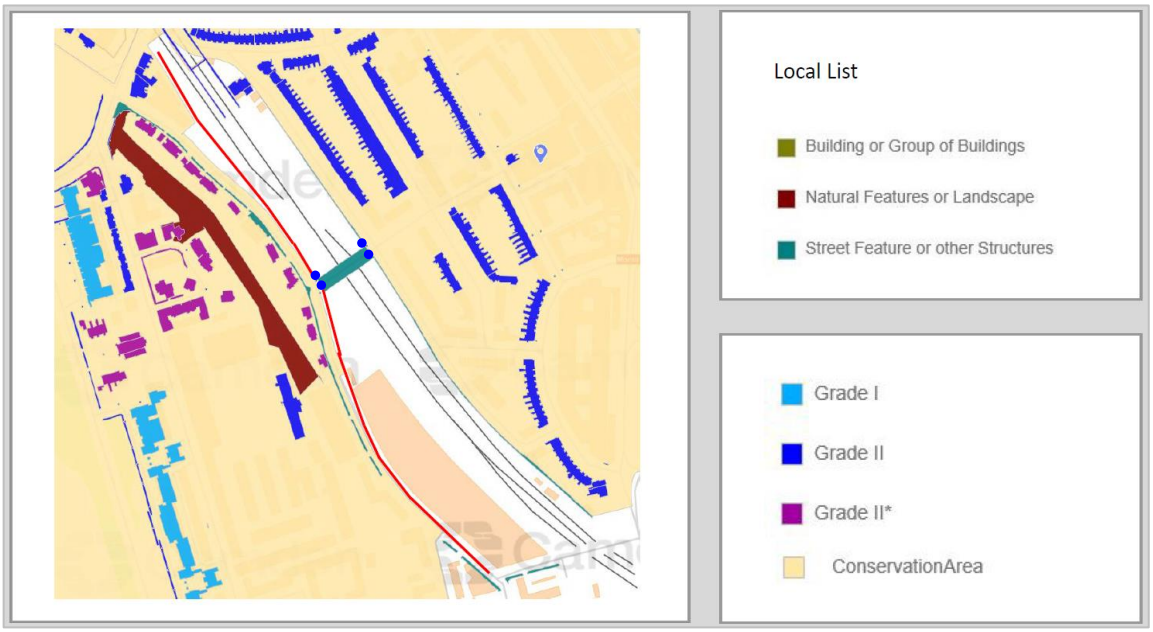

Figure 3 Heritage assets in the area surrounding Park Village East and Euston Scissor Cut Portal (source: Camden Local List)

2.4 Surrounding Highway Network

2.4.1 There are several strategic routes that pass through the area including the Transport for London Road Network (TLRN) roads The A400 Hampstead Road, A503 Camden Road and the A400 Camden Street/Camden High Street. The Kentish Town Road section of the A400 forms part of the Strategic Road Network. Other principal highways through the area include the A5200 York Way, A5202 St Pancras Way, A503 Camden Road, A400 Kentish Town Road and A502 Chalk Farm Road.

2.4.2 Granby Terrace Bridge, which will be realigned as part of a separate package of HS2 works carried out by the Main Works Contractor (MWCC), is also adjacent to the southern extent of the PVE Wall Berm and Upstand Support Structure (**Figure 4**).

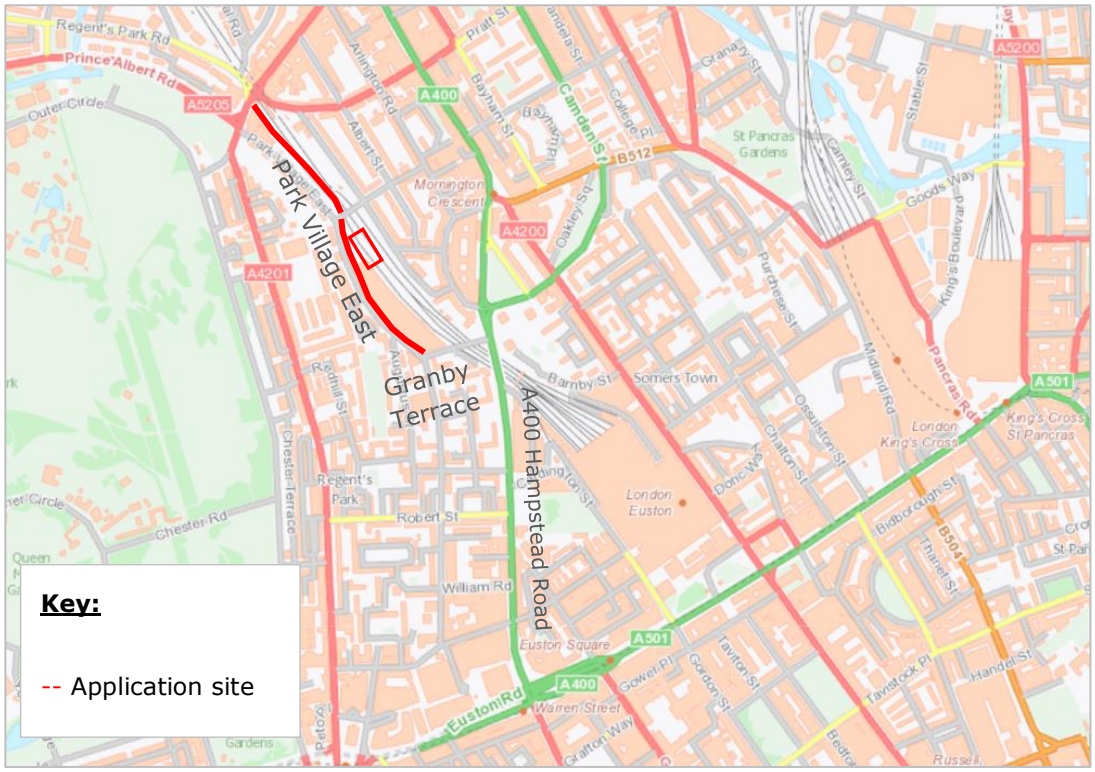

Figure 4 Highway network in area surrounding the application site (source: Ordnance Survey)

3 Description of the Works

3.1.1 This section describes the works for approval under the relevant section of the Act.

3.2 Introduction

3.2.1 This Written Statement supports the Schedule 17 submission for the approval of plans and specifications for both the Euston Scissor Cut (Open Section) and the Park Village East Wall Berm Support Structure and Upstand Beam in the vicinity of Euston Station.

3.2.2 The Plans and Specifications submitted for approval are listed in the pro-forma accompanying the application. A summary of the proposed works for approval is provided in Section 5. Furthermore, **Figure 5** below outlines the key assets discussed in Section 3.3 relative to the surrounding context.

3.3 Works for Approval

3.3.1 For the Euston Scissor Cut (Open Section), the relevant scheduled works under Schedule 1 of the HS2 Act are set out below.

- **Work No. 1/1** - A railway (23.48 kilometres in length) partly in tunnel, commencing at a point 235 metres east of the junction of North Gower Street with Drummond Street passing north-westwards and terminating beneath a point 80 metres north-west of the bridge carrying Ickenham Road over the Marylebone to Aylesbury Railway. Work No. 1/1 includes shafts at Cobourg Street, Mornington Street, Granby Terrace, Parkway, Adelaide Road, Alexandra Place, Canterbury Works and Greenpark Way, a station at Old Oak Common and a Crossover Box at Victoria Road.
- **Work No. 1/16** - A railway (0.57 kilometres in length) partly in tunnel commencing by a junction with Works Nos. 1/1 and 1/15 at a point 40 metres north-east of the junction of Stanhope Street with Granby Terrace passing north westwards and terminating at a point 52 metres south-west of the junction of Delancey Street with Mornington Terrace.

3.3.2 The Park Village East Wall Berm Support Structure and Upstand Beam is not a scheduled work under Schedule 1 of the HS2 Act. It will instead be carried out under the ancillary powers of Section 2 of the Act for the purposes of facilitating scheduled works under Schedule 1 of the Act. The proposed works

are within limits and a detailed assessment of the works has been undertaken to confirm that any new works remain comparable to the ES (as amended) and it has been considered overall that there are no new or different significant effects when compared to those reported in the ES (as amended).

3.3.3 The works submitted for approval are summarised in **Table 4** and **Figure 5**:

Table 4 The works submitted for approval and their grounds for approval under the HS2 act

Proposed works	HS2 Act Grounds for Refusal
Park Village East Wall Berm and Upstand Support Structure	As 'Earthworks' under Sch.17, Part 1, Paragraph 3: 1) That the design or external appearance of the works ought to, and could reasonably, be modified – a) To preserve the local environment or local amenity, b) To prevent or reduce prejudicial effects on road safety or on the free flow of traffic in the local area or, c) To prevent a site of archaeological or historic interest or conservation value. 2) That the development ought to, and could reasonably, be carried out elsewhere within the development's permitted limits
Park Village East Wall Berm – Parapet wall	As 'Fences and walls' under Sch.17, Part 1, Paragraph 3: That the development ought to, and could reasonably, be carried out elsewhere within the development's permitted limits.
Euston Scissor Cut – Parapet walls	
Euston Scissor Cut - East retaining wall (Work No. 1/1 and 1/16)	As 'building works' under Sch.17, Part 1, Paragraph 2: 1) That the design or external appearance of the works ought to, and could reasonably, be modified – a) To preserve the local environment or local amenity, b) To prevent or reduce prejudicial effects on road safety or on the free flow of traffic in the local area or, c) To prevent a site of archaeological or historic interest or conservation value.
Euston Scissor Cut - Capping beams (Work No. 1/1 and 1/16)	
Euston Scissor Cut - Props / Beam (at ground level) (Work No. 1/1 and 1/16)	

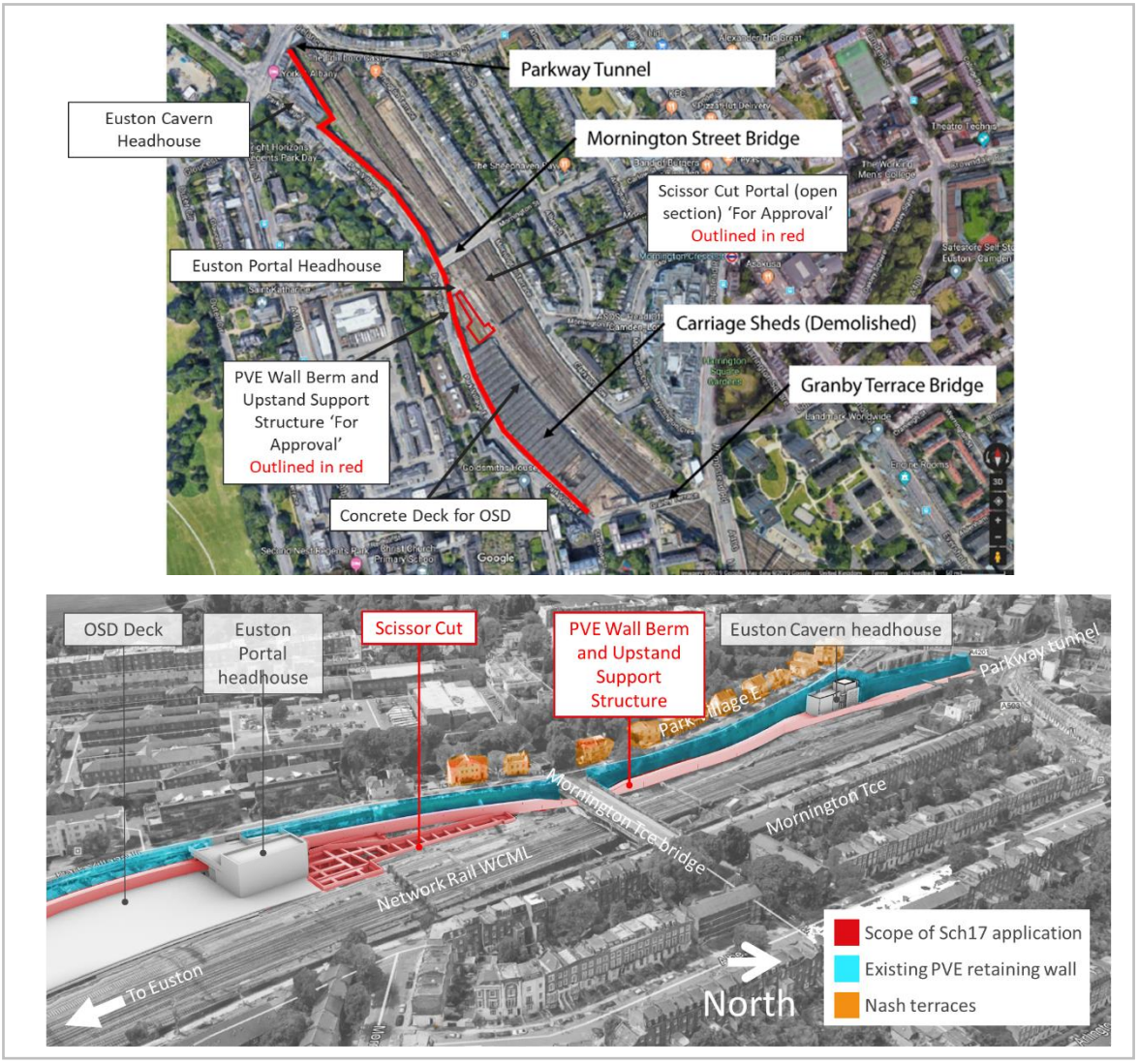

Figure 5 An Aerial identifying key HS2 assets and surrounding context (**Top**) Birdseye view of the Scope of Schedule 17 application (reflected in red) (**Bottom**)

Euston Scissor Cut Portal (Open Section)

3.3.4 Euston Scissor Cut Portal (Open Section) can be defined as a building work in accordance with Schedule 17 of the Act, albeit most of the structure is below ground level. Below-ground elements do not require approval by virtue of Paragraph 30, Schedule 17 of the Act and therefore the below ground elements identified in **Figure 6** are not subject to the controls of Schedule 17.

3.3.5 Elements of the Euston Scissor Cut Portal (Open Section) that are for approval under this Schedule 17 application are:

- Ground level props (Paragraph 2, Schedule 17);
- Ground level capping beam (Paragraph 2, Schedule 17);
- East Retaining Wall (Paragraph 3, Schedule 17);
- Parapet Walls (Paragraph 3, Schedule 17).

3.3.6 **Figure 6** illustrates which elements of the Euston Scissor Cut portal are above or below ground level. Elements in red text are for approval.

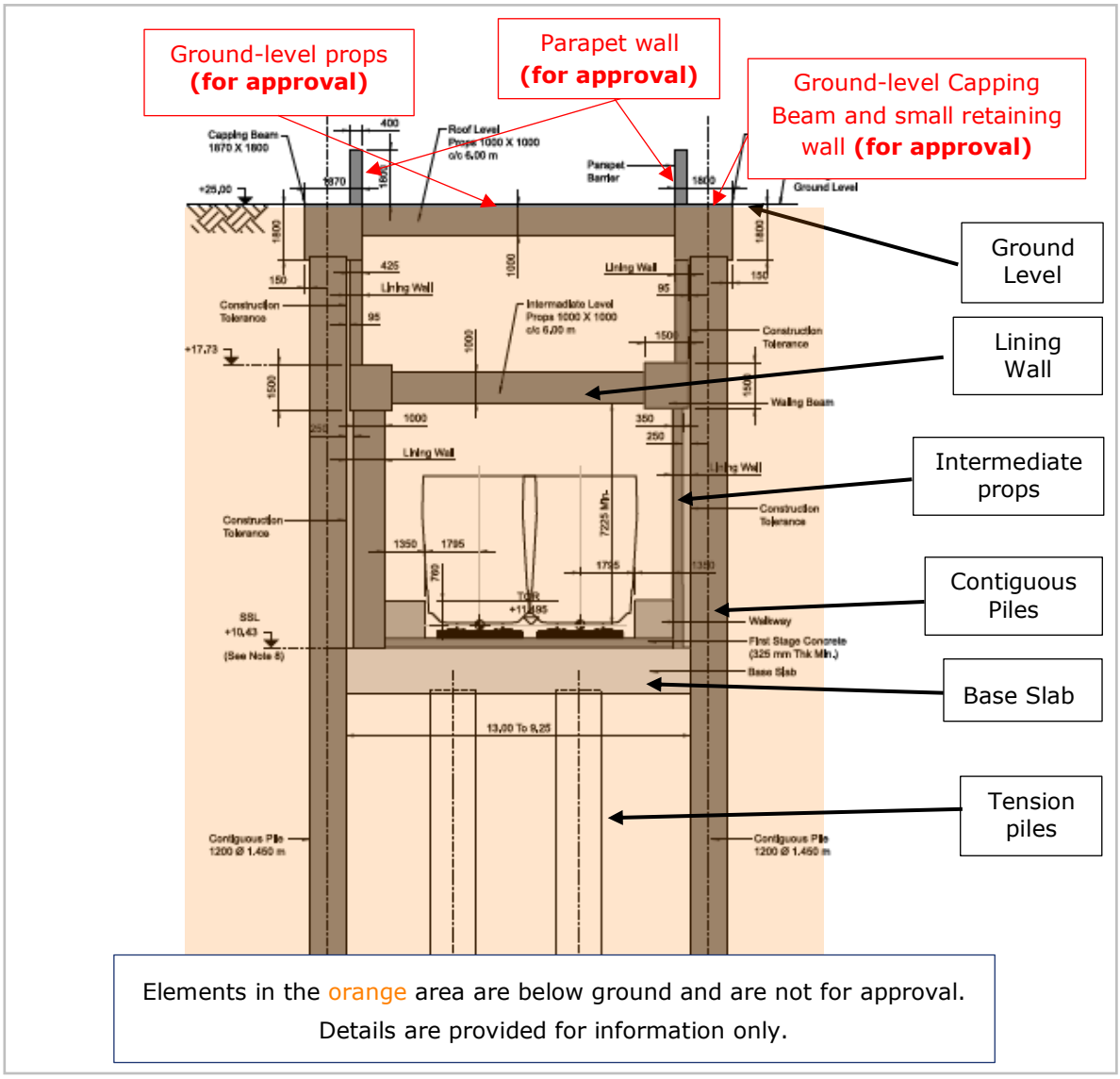

Figure 6 Cross section of the Euston Scissor Cut Portal

Euston Scissor Cut – Context (For Information)

3.3.7 The Euston Scissor Cut forms part of the portal for the S1 Euston Tunnels that will link to the new HS2 Station at Old Oak Common. The Euston Scissor Cut is located directly south of Mornington Street Bridge and to the east of Park Village East (**Figure 7**).

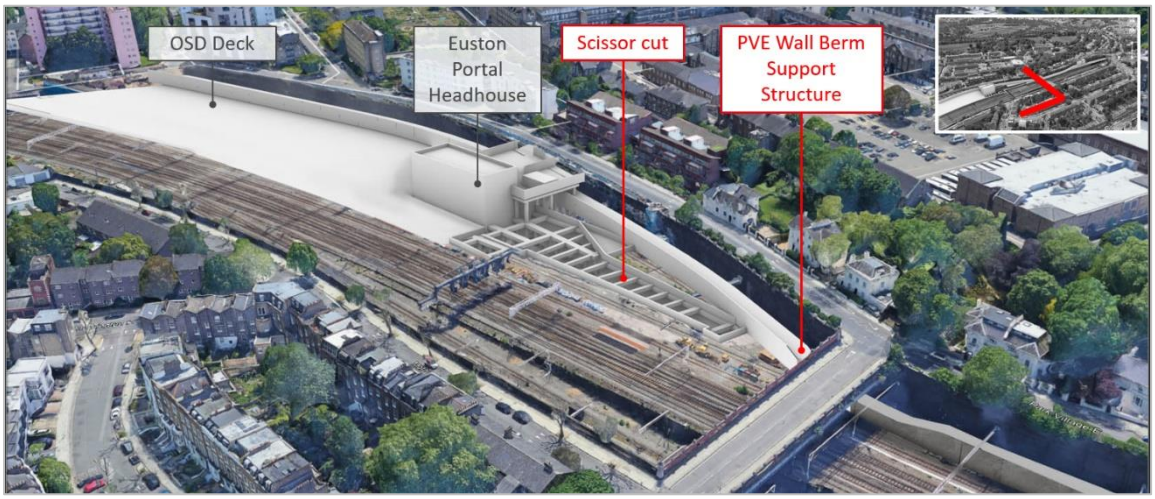

Figure 7 Euston Scissor Cut and surroundings. Items for approval are marked in red. (Google Maps)

3.3.8 The southern portion of the portal is covered by a deck to enable future OSD (over-site development)[3]. The section of the portal north of the Euston Portal Headhouse is an open scissor cut supported with concrete props at grade (track) level with the existing Network Rail tracks to provide an air gap between the Euston Tunnels and the Scissor Cut. This will allow the warm air pulled through the upline tunnel by HS2 trains approaching Euston to escape into the atmosphere, thereby avoiding the recycling of warm air back into the tunnels by downline trains (trains leaving Euston Station). **Figure 8** illustrates the different sections of the portal.

[3] Not included as part of this application for Schedule 17 approval.

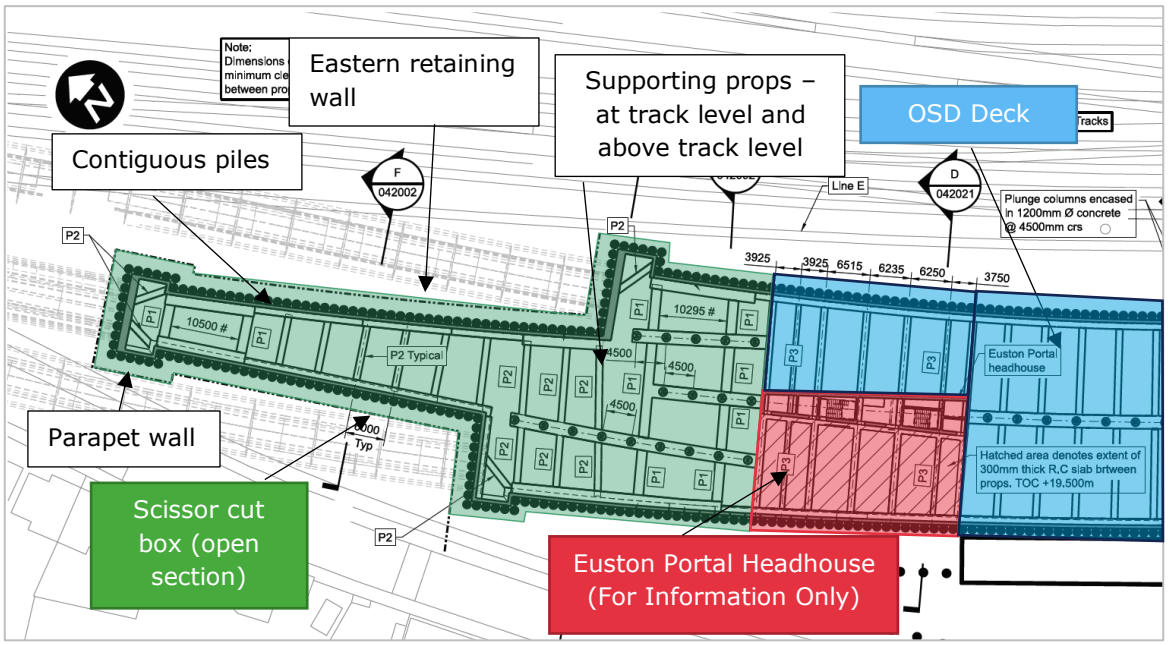

Figure 8 Technical drawing showing components of the Euston Scissor Cut Portal (application area demarcated in green).

3.3.9 The remaining elements that form the Scissor Cut (open section)[4] are illustrated in and summarised below:

- 1.2m diameter contiguous piles which have a length of 35m on both the east and west sides of the portal area;
- A 1.5m thick base slab;
- 1.5m diameter tension piles on a 6m x 6m grid that props the walls at a track level.
- Intermediate level of 1.5m x 1.5m that support the retaining wall, approximately 7.225m above top of track level.

3.3.10 A liner wall within the portal cut will be provided to act compositely with the pile walls.

[4] These elements are not for approval as part of this application because they are located below existing ground level and therefore do not require approval under Schedule 17, as stated under Paragraph 30, Schedule17 of the Act.

Park Village East Berm and Upstand Support Structure

3.3.11 The existing Park Village East (PVE) wall is understood to have undergone historical episodes of movement and been subject to a range of mitigation works. The historical mitigation works are understood to have stabilised the wall and prevented further movements. This is supported by recent monitoring of the wall. However, the wall is not considered to meet modern structural standards. It is, therefore, proposed to undertake a series of mitigation works to improve the stability of the wall, enhance its ability to accommodate ground movements resulting from HS2 construction and ensure the safety of the SCS work force for the duration of the HS2 works.

3.3.12 Following an assessment of a range of options by SCS, the preferred primary mitigation solution is to provide a supporting berm in front (to the east) of the PVE wall. The berm and upstand support structure will be 3m and 4.8m in height respectively, generally comprise granular fill, and will be supported on a reinforced concrete base slab (cast in situ), with pre-cast L-shaped reinforced concrete wall panels. The berm is required to ensure the permanent stability of the existing wall. The upstand support structure is required provide additional structural support to the existing during the passage of the tunnel boring machine. Following construction, the upstand support structure will also provide permanent structural support to the existing PVE wall.

3.3.13 The berm and upstand support structure will be located along the bottom of (adjacent to) the existing PVE retaining wall, on the western side of the WCML cutting between the Parkway Tunnel in the north and Granby Terrace in the south. The existing wall is of masonry construction and was built between 1896 and 1916. The wall's height varies from 2.5m and 11m. Both the pre-existing retaining wall and the berm and upstand support structure are largely obscured from street-level view to the east due to its location along the bottom of the existing railway cutting and the height of the parapet wall along Mornington Terrace. The berm and upstand support structure include a set of stairs adjacent to the proposed Euston Cavern Headhouse and will provide maintenance access to the Parkway Tunnel end of the berm support structure. In addition, drainage pipes will be located on the exterior face of the berm support structure to discharge any collected surface water. Figure 9 illustrates the current retaining wall in situ.

Figure 9 Top: Aerial view showing the existing western PVE wall (Google Maps). Bottom: Southward view of the existing retaining wall toward Mornington Street Bridge (left) and view south of Mornington Street Bridge (right).

3.3.14 The purpose of the berm and upstand support structure during construction and operation of the railway will be to:

- Improve the stability of the existing PVE wall in relation to potential bearing capacity, sliding and overturning failure mechanisms.[5]
- Enhance the existing PVE wall's ability to accommodate ground movements resulting from HS2 works including:
  - Euston Cavern Shaft;

[5] **Sliding failure**: the wall could be pushed forward by the weight of the ground behind whilst remaining upright.

Overturning failure: the base of the wall stays where it is (no sliding) whilst the whole wall rotates. The top of the wall comes forward, pushed by the ground behind.

- Euston Cavern;
- Euston Cavern Headhouse;
- Crossover Tunnels (in close proximity to the wall); and
- Scissor Cut.

- To provide geotechnical stability for the existing PVE western wall.
- Provide a working platform from which the Euston Cavern Shaft, Euston Cavern and headhouse will be constructed.
- Provide a vehicle restraint barrier (the parapet) to protect the operation of the railway while construction traffic operate on top of the berm.

3.3.15 **Figure 10** illustrates the visual impact of the PVE Wall berm and upstand support structure at rail elevation as seen from the WCML railway corridor.

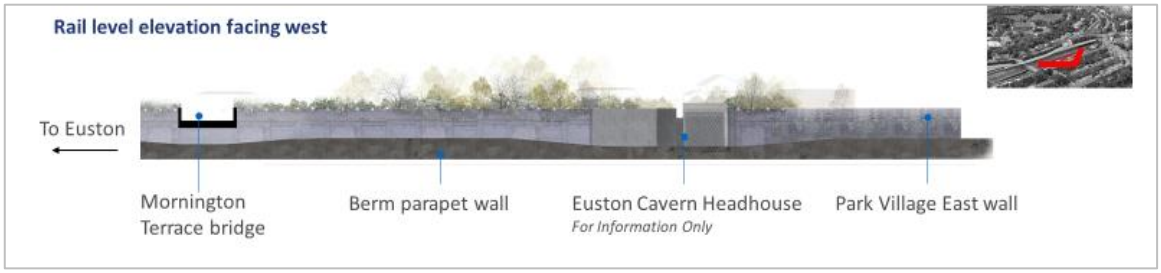

Figure 10 Rail level elevation of the PVE Wall Berm and upstand support structure

3.3.16 Elements of the berm and upstand support structure that are for approval under this Schedule 17 application are illustrated in red in **Figure 11**. These are:

- Berm;
- Upstand support structure; and
- Berm wall parapet.

3.3.17 The Berm, Parapet Wall and Upstand Support Structure will be constructed in dark pigmented concrete north of Mornington Street Bridge which is complimentary to the existing wall and the material of the structure south of Mornington Street will be standard grey engineering concrete to reflect the functional nature of the Scissor Cut. The transition between the two materials will be largely hidden underneath Mornington Street Bridge.

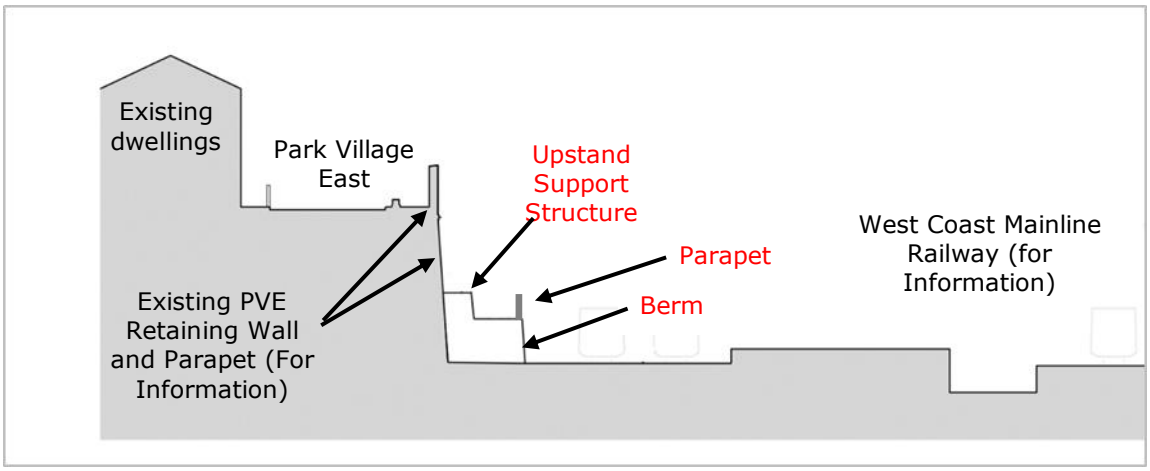

Figure 11 Typical cross-section of the PVE Wall Berm and Upstand Support Structure (extract from Sections Sheet 1 1MC03-SCJ_SDH-AR-DSE-SS01_SL03-040021 submitted with this application). Elements for approval under this Schedule 17 application are labelled in red.

3.4 Ecology

3.4.1 There is no additional loss of habitats or impacts on species as a result of the works for approval when compared to the impacts as assessed in the Environmental Statement (as amended).

3.5 Operational Noise

3.5.1 The design of the Euston Scissor Cut Portal and PVE Wall Berm and Upstand Support Structure wall will not result in new or increased airborne noise impacts at receptors from those assessed within the Environmental statement.

3.5.2 Within the Euston Scissor Cut area, the relocation of the tunnel portal south of Mornington Street Bridge and the introduction of the cut and cover box over the scissor cutting[1] is significantly beneficial in reducing airborne noise levels from the high speed railway as the track is mostly enclosed by the tunnel and scissor box. This is effective in minimising airborne noise, such that predicted railway noise levels at the nearest sensitive receptors to the Euston Scissor Box are below the lowest observed adverse effect levels set out in **Table 1** of Appendix B of Information Paper E20. As such, all

[1] The reference design for the HS2 scheme that supported the HS2 Hybrid Bill included the Euston Portal north of Mornington Street Bridge.

reasonable steps have been taken to reduce noise from the operational railway and no further mitigation is required.

3.6 Indicative Mitigation

3.6.1 No mitigation is required as part of this submission as the works are located entirely within the existing railway cutting.

3.7 Construction Method

3.7.1 This section summarises the general construction methodology and the main temporary works arrangements. The arrangements described may alter, are for information and background only and do not form part of this request for approval.

3.7.2 The works subject to this request for approval of Plans and Specifications will be undertaken in accordance with the HS2 Code of Construction Practice and the Class Approval issued by the Secretary of State (March 2017).

3.7.3 The construction works for the PVE Wall Berm and Upstand Support Structure and upstand support structure and Scissor Cut Portal will be located between Granby Terrace Bridge and the Parkway Tunnels (Gloucester Gate Bridge). The Euston Approaches Worksite will run the full extent of Park Village East which forms the western boundary. The eastern boundary is governed by the Network Rail train line located within the rail corridor. The Euston Approaches Worksite will have site storage areas and a haul road.

3.7.4 The access to the PVE Wall Berm and Upstand Support Structure and Scissor Cut Portal will be predominantly via the corner of Park Village East and Granby Terrace Bridge including a ramp down from Granby Terrace. This will vary as the works progress, with access based on the construction methodology, outlined below. The Euston Approaches Worksite will benefit from 4 no. access / egress points located at the northern end of Park Village East, on Granby Terrace at the junction of Stanhope Street / Park Village East, and 2 no. on Hampstead Road. These access points are set out in **Figure 12**. This access will be utilised by the MWCC as far as reasonably practicable to access/egress the site.

Figure 12 Euston Approaches Worksite access / egress

PVE Berm Wall and Upstand Support Structure – Construction Method

3.7.5 The following site set up methodology (which may be subject to change) is anticipated for the construction of the PVE Wall Berm and Upstand Support Structure (from Granby Terrace Bridge to Mornington St Bridge):

- Site access and compound handover including ramp down from Granby Terrace adjacent to Granby Terrace Bridge; and
- Install hoarding for site boundary.

3.7.6 A more detailed construction methodology (which may be subject to change) for the construction of the PVE Wall Berm and Upstand Support Structure (from Mornington St Bridge to Parkway Tunnels) is set out as follows:

- **Temporary ground anchors** (assumed to be required for the entire length of the wall from Mornington St Bridge to Parkway):
  - Install ground anchor rig working platform;
  - Core drill through PVE wall for ground anchors; and
  - Drill and install ground anchors including waler beam to the existing PVE wall.
  - Post construction, the ground anchors will be de-stressed and the waler beam will be removed from the wall and the affected brick work will be treated and restored.

- **Berm sections**
  - Construct concrete foundation slab;
  - Install pre-cast wall units on base slab;

- Backfill between the existing PVE wall and the installed wall units, using a compactible fill material or concrete in areas with restricted head height (under Mornington St Bridge); and
- During backfill install drainage within the backfill.

- **Piled slab berm section** (around Euston Cavern Shaft Headhouse)
  - Install working platform piling mat;
  - Construct guide walls;
  - Drill and install piles;
  - Excavate around piles and break down piles; and
  - Construct pile caps and concrete base slab.

Euston Scissor Cut Portal – Construction Method

3.7.7 The following construction methodology (which may be subject to change) is anticipated for the construction of the Euston Scissor Cut Portal:

- Install hoarding for site boundary;
- Install working platform and piling mat for the portal piles;
- Construct guide walls and contiguous piles for portal retaining walls;
- Construct tension piles and plunge columns for portal;
- Excavate, break down piles and construct pile capping beams. All material to be removed offsite by road;
- Excavate portal and install props and base slab (temporary spoil stockpile shall be located between the Scissor Cut and the existing PVE Wall);
- At location of attenuation tank, the dig will continue to underside of tank with retaining measures. Attenuation tank and slab to then be constructed.
- Demolish temporary plunge columns; and
- Construct lining walls.

3.8 Historic Environment

3.8.1 The HS2 Heritage Memorandum (part of the HS2 Environmental Minimum Requirements) explains that a route-wide generic written scheme of investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS) has been prepared in consultation with Historic England (HE) and all local planning authorities along the route. It sets out the research framework and general principles for design, evaluation, investigation, recording, analysis, reporting and archive deposition to be adopted for the design development and construction.

3.8.2 The arrangements for the management of archaeology during construction are not a matter for approval under Schedule 17. However, the preservation of a site of archaeological or historic interest is a key ground for refusal for the determination of plans and specification for the purposes of paragraph 3 of Schedule 17. Under the Schedule 17 Statutory Guidance (February 2017) grounds for refusal also include the preservation of the setting of designated heritage assets.

3.8.3 Archaeological potential within the footprint of the now demolished cargo shed area and Euston Throat was examined through a desk-based assessment and an assessment of evidence noted during the recording and demolition of the structures. This concluded that any further archaeological investigation and monitoring was not required. It was determined that the expansion and excavation of the railway cutting and subsequently railway engineering works would have removed any previous Georgian structures and associated garden soils which may have contained any in situ archaeological features. The demolished cargo shed itself has been subject of a historic building record (non-designated heritage asset). [6] This has included detailed recording of Park Village East parapet wall and planter. Consultation with GLAAS and Historic England on these aspects was undertaken on 19 Jan 2017 and Feb 2017.

3.8.4 The HS2 Heritage Memorandum also sets out how the historic environment (including heritage assets and their setting) will be addressed during design. The HS2 Environmental Memorandum sets out the approach to landscape and visual mitigation which takes account of the historic environment.

[6] Project Plan for Historic Building Recording of DB Schenker Shed, Euston Document No. 1D037-EDV-EV-REP-020-000002 and Historic Building Record of DB Cargo Shed:Interim Report. Document No. 1EW02-CSJ-EV-REP-S001-000011

3.8.5 The works are to run adjacent to the existing non-designated Park Village East retaining wall and will have a direct physical impact on this asset and the parapet wall above. The works will not be visible from the Grade II* listed villas along Park Village East, however there may be some temporary impacts from vibration during construction which will be assessed and managed under the Environmental Minimum Requirements and Code of Construction Practice (as set out in Section 3.9 below). The Enabling Works Contractor (EWC) has undertaken monitoring of the existing retaining wall to record any movement which will continue during construction.

3.8.6 Monitoring of the existing retaining wall, the road behind and the listed buildings within 1mm settlement contour will be monitored during the construction phase. The monitoring instruments on the wall will include conventional optical survey targets to measure vertical and horizontal displacements and electronic tiltmeters that transmit data automatically. A heritage review will also be undertaken with any site teams to confirm any requirements for working with and around heritage assets.

3.8.7 The Environmental Statement (as amended) does not identify any impacts of the works on the setting for any of the assets detailed in section 2. The works will not have a physical impact on the Grade II Parkway Tunnel and Cutting. The information set out in Figure 2 (sourced from the Camden Local List) identifies that the extent of the listing located north of the PVE Berm and Upstand Support Structure. The extent of this listing was confirmed with Historic England during a pre-application meeting on 9th March 2020 and formal recording of the listed asset will be undertaken by the EWC.

3.8.8 The design of the berm is simple and functional in design and abuts against the existing retaining wall. Its mass and form do not compete with the scale of the existing wall and is subservient in its scale and design. A pigmented concrete finish has been proposed to ensure that the PVE Berm and Upstand Support Structure is tailored to its historic setting and is in keeping with the appearance of the existing retaining wall, whilst not seeking to be read as part of the existing structure. Proposed designs have been presented to Historic England/ LB Camden as set out in Section 5, **Table 3**.

3.8.9 The EWC is undertaking programme of desk-based research and historic building recording that includes the non-designated Railway cutting Euston Station to Parkway and the Project Plans setting out the methodologies for these works have been shared with GLAAS.

3.9 Environmental Management during Construction

3.9.1 The Environmental Memorandum, which forms part of the High-Speed Rail (London -West Midlands) Environmental Minimum Requirements, sets out the arrangements for the management of environmental issues during construction and the Code of Construction Practice (CoCP) sets out specific details and working practices that apply. The CoCP is supported by Local Environmental Management Plans (LEMPs) which include specific measures by topic, relevant to each relevant local authority area. [7]

3.9.2 Environmental management arrangements during construction do not form part of this request for approval of Plans and Specifications under Schedule 17.

[7] The LEMP relevant to the works subject to this Schedule 17 submission is P1S Local Environmental Management Plan - London Borough of Camden and can be found here: https://www.gov.uk/government/publications/local-environmental-management-plans-for-hs2-phase-one

4 Design Criteria and Rationale

4.1 Proposed Design – Park Village East Wall Berm and Upstand Support Structure

4.1.1 The PVE Wall Berm and Upstand Support Structure is a major engineering structure spanning approximately 650m in length from the southern end at Granby Terrace Bridge, to the Parkway Tunnel on the northern end (**Figure 13**). This consists of various ground anchors and slabs on the southern end with an additional berm and parapet on the northern end.

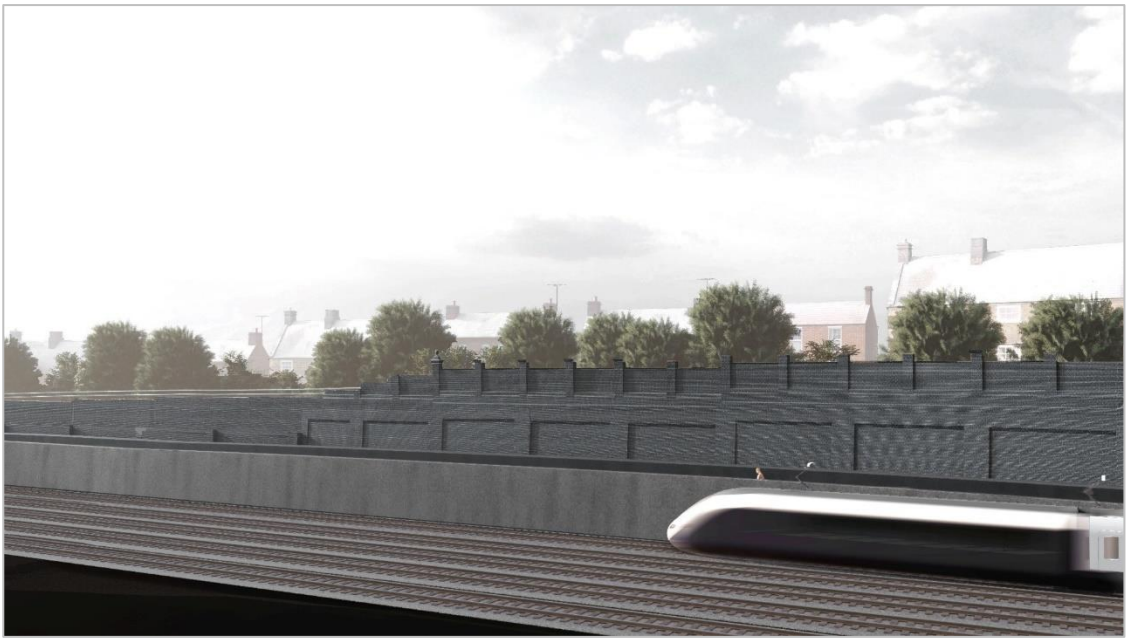

Figure 13 Artist's impression of the proposed PVE Berm, Wall and Upstand Support Structure in situ

4.1.2 A high-quality concrete finish to the outer face of the berm, the berm parapet and upstand support structure has been chosen as a functional and appropriate response to the project requirements and context. The height and width of the berm itself has been chosen to meet the structural and geotechnical requirements of the PVE wall mitigation strategy.

4.1.3 The outer face of the berm and the berm parapet is formed of a precast 'L module' which needs to meet several requirements, the primary one being to structurally reinforce the existing PVE wall.

4.1.4 It also needs to provide a barrier between the top of the berm and the adjacent WCML to act as a vehicle restraint and contain any risk of construction vehicle impact on the operational railway. This requirement has driven the need for the parapet height to be 1.5m.

4.1.5 The aesthetic, contextual and material aspects of the berm are extremely important in the way the berm complements the existing heritage context. The materiality of the berm, parapet and upstand support structure reflects the character and setting of the listed Parkway Tunnel and Cutting in its honest and functional design. The special interest of the two adjacent Conservation Areas (7) has also informed the design approach, with particular attention to key views within and between the two Conservation Areas and listed assets along Parkway and Mornington Terrace.

4.1.6 The existing PVE wall consists of engaged piers and cornices which form a regular rhythm of panels along its length. The design of the berm does not seek to align the spacing of this pattern, due to the fact that the berm and PVE walls do not run parallel for their entire lengths. Also, due to the berm's required width, any alignment of the PVE wall piers and the L-shaped parapet wall and structure joints would not be perceivable due to the parallax effect (**Figure 14**).

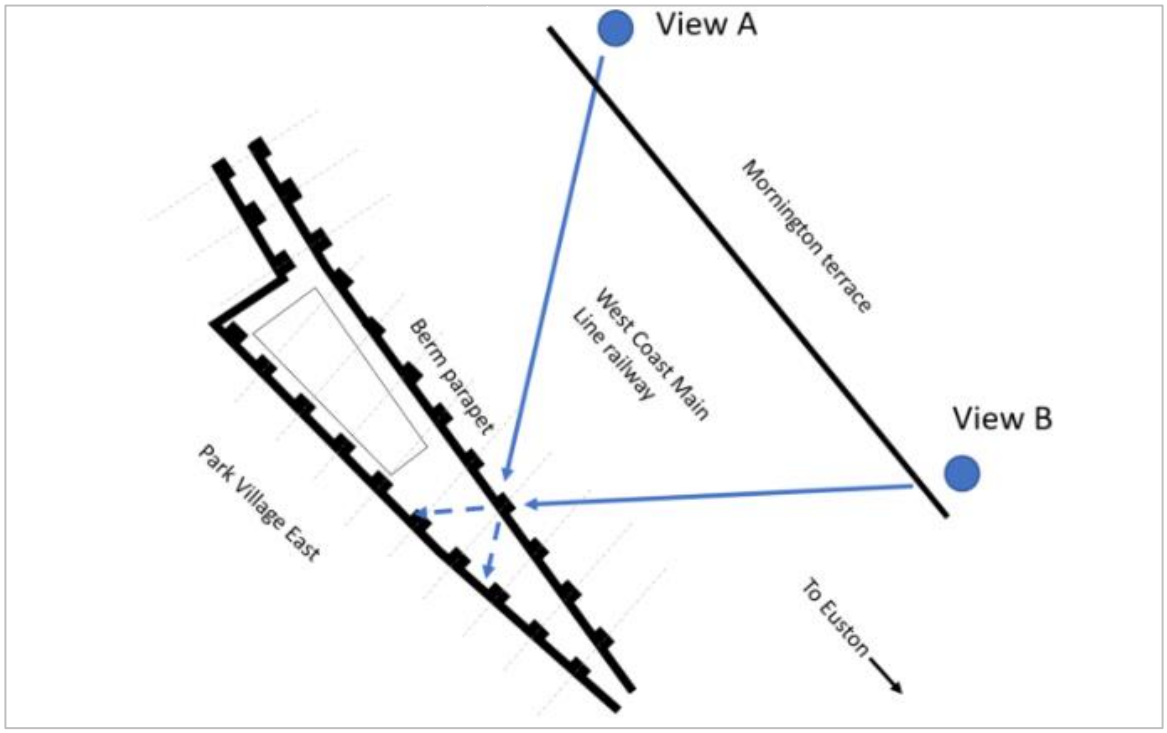

Figure 14 Illustration of the parallax effect from two viewpoints on Mornington Terrace

4.1.7 Through pre-application discussions with London Borough of Camden Planning and Design Officers, it was agreed that a dark exposed aggregate concrete finish utilising 12% pigmentation should be used for the L-shaped unit for the section of the PVE Wall Berm, Parapet and Upstand Support Structure north of Mornington Street Bridge. The dark finish complements the range of dark brick colours present in the existing PVE wall (**Figure 15**). This choice of finish was chosen due to its resistance to weathering, as a lighter coloured concrete would show staining more readily.

Figure 15 Illustration demonstrating proposed dark concrete finish for the proposed PVE Wall Berm, Parapet and Upstand Support Structure

4.1.8 Consideration has also been given to the drainage of the existing PVE retaining wall, which required particular care to provide a solution which minimises staining of the berm support structure. The proposed solution provides a durable and lasting finish which will require little maintenance. The section of the berm south of Mornington Street Bridge will require external drainage pipes to discharge any surface water from the berm and direct it into the existing drainage network for the cutting (**Figure 16**). The colour of these pipes will be as similar a colour to the proposed berm support structure as possible.

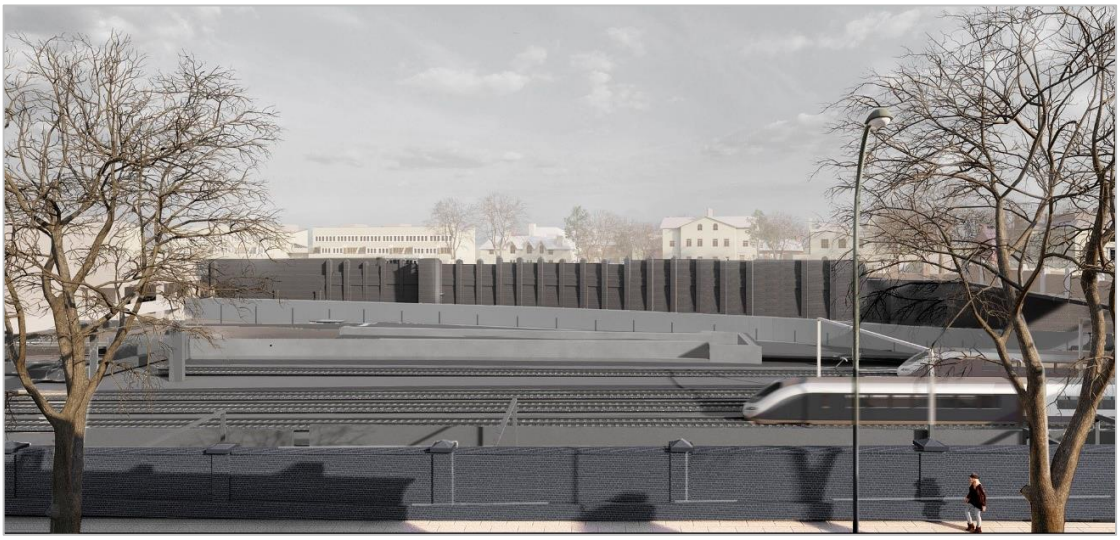

Figure 16 Illustration of the PVE Berm support structure south of Mornington Street Bridge

4.2 Design Constraints - Park Village East Wall Berm and Upstand Support Structure

4.2.1 The dimensions of the existing wall have driven the design of the berm and upstand support structure itself, which needs to provide sufficient reinforcement to stabilise the wall.

4.2.2 The second storey of the dwellings along Mornington Terrace is a viewpoint along the WCML cutting from which the PVE Wall Berm and Upstand Support Structure will be visible during different seasons of the year. Having a railway in close proximity presents technical and spatial constraints, such as minimum distance requirements between the wall and track.

4.2.3 The adjacent conservation areas and listed assets on Park Village East as well as on Mornington Terrace also form constraints to the design, guiding it towards a complementary and sympathetic approach. [8]

4.3 Options Considered - Park Village East Wall Berm and Upstand Support Structure

4.3.1 Initially an option which utilised a brick skin on the exterior face of the pre-cast units was discussed with the London Borough of Camden. This, however, was discarded as this solution could impact on the functionality of the HS2

[8] Regents Park Conservation Area and Camden Town Conservation Area.

railway once operational and did not provide an honest expression of the structural concrete.

4.3.2 A brick skin, or indeed any form of cladding on top of the wall's concrete structure would require additional fixings and detailing, significantly increasing the complexity of construction. Additional fixing systems would also be unlikely to be sufficiently durable to meet lifespan requirements in a demanding railway environment. This would introduce additional maintenance requirements which could periodically impact operations on the HS2 railway throughout its lifespan.

4.3.3 In addition, the design approach adopted for the berm of aiming to provide an honest expression of functional and structural requirements is aligned with the overall design approach of HS2 and the Euston approach.

4.4 Proposed Design – Euston Scissor Cut Portal

4.4.1 The design of the Euston Scissor Cut Portal has been chosen to optimise the operation of the new High Speed 2 Euston Station. The two single bore tunnels and the down-line track will enter and exit the portal where it switches into two HS2 tracks. The location of the portal enables the Euston Scissor Cut to house scissor crossings for the tracks leading to the HS2 platforms at Euston Station.

4.4.2 The design of the open section which is the section subject to this request for approval includes an open-air gap between the Euston Tunnels and the Scissor Cut for the following reasons:

- Ensures that the two tunnels can be considered as separate tunnels; and
- Allows warm air pulled through the upline tunnel by trains approaching Euston to escape into the atmosphere. This avoids recycling of warm air back into the Euston tunnel and helps manage air pressure and air quality.

4.5 Design Constraints – Euston Scissor Cut Portal

4.5.1 The design of the Euston Scissor Cut Portal has taken the following constraints into consideration:

- The need to maintain operation of the existing West Coast Main Line during construction;

- The need to adjust/relocate trackside signals and cables, and Overhead Line Electrical gantries and supports;
- The need to remove the existing carriage shed and its central and eastern foundations;
- Existing below ground obstructions that may impact piling; and
- The interface between the existing masonry PVE retaining wall, new mitigation berm and scissor cut wall.

4.5.2 Design measures to address the above constraints have included ground movement assessments, instrumentation and monitoring specifications that will be produced as part of the design. Also, the temporary possession of WCML tracks has been agreed to enable the construction of the north east side of the portal and piling to take place.

4.6 Options Considered – Euston Scissor Cut Portal

4.6.1 Throughout the design process, the design of the Euston Scissor Cut Portal has been developed to reflect both HS2's overarching design requirements as well as the requirements and aspirations of the Master Development Partner for the Euston area. The proposed location and design of the portal does not prejudice any future over site development within the Euston Scissor Cut.

5 Pre-submission Consultation

5.1.1 Pre-submission consultation with the Local Planning Authority, statutory consultees and other relevant stakeholders is summarised in **Table 5** below.

Table 5: Pre-submission Consultation with LPA and Statutory Consultees

Consultee Name	Consultation Date	Method of Consultation / Attended by	Summary of Consultation Outcome
London Borough of Camden	Pre-application engagement meeting [7th March 2018]	- Meeting	- An overview of Schedule 17 - Functionality and construction - Lorry routes - Visual amenity - Heritage
	Pre-application engagement meeting [13th June 2018]	- Meeting	- Euston Throat Shafts - Design Vision - Green corridor - Technical requirements
	Pre-application engagement meeting [15th August 2018]	- Meeting	SCSJV scope of works in Camden and an overview of the Schedule 17 and submission material.
	Pre-application engagement meeting [14 November 2019]	- Meeting	SCSJV to present design proposals for the concrete finish of the PVE Berm support structure. Confirm design coordination undertaken with the Master Development Partner.
	Pre-application engagement meeting [6th February 2020]	- Meeting	LBC to undertake site visit to assess proposal of the colouring of the concrete finish.
	Pre-application engagement meeting [26th February 2020]	- Meeting	- LBC/SCSJV agreed to provide exposed aggregate concrete solution with dark pigment on berm. - SCSJV to prepare up to date visualisation of the berm south of Mornington Street Bridge. - LBC accept viewpoints for photomontage to support the Schedule 17 application.

Consultee Name	Consultation Date	Method of Consultation / Attended by	Summary of Consultation Outcome
	Email correspondence [3rd June 2020]	- Email correspondence	- LBC confirmed acceptance of the use of engineering concrete for the berm south of Mornington Street Bridge. - LBC agreed that the upstand support structure be constructed using the same materiality as the darker exposed aggregated concrete solution north of Mornington Street Bridge. - LBC advised that the external drainage pipes be painted similar colour to the berm support structure.
Historic England	8th May 2018	- Meeting	The 'Banana Wall' is part of the Grade II Listed Parkway and Tunnel Cutting and will not be demolished.
	9th March 2020	- Meeting	The Park Village East wall berm and upstand support structure permanent design does not directly affect the Grade II Listed Parkway and Tunnel Cutting structure.

6 Construction Programme

6.1.1 A high-level programme for the works subject to this submission and how they fit into the overall programme for other works in the area is contained in **Table 6** below. The programme for works on site may vary from the indicative dates shown.

Table 6: Proposed Programme and Sequence of Works

Anticipated Start on Site Date (quarter/year)	Activity	Estimated Completion of Works (quarter/year)
First quarter 2021	Site mobilisation	First quarter 2021
Second quarter 2021	First stage works for PVE Wall Berm and Upstand Support Structure	Fourth quarter 2021
Third quarter 2021	Second stage works for PVE Wall Berm and Upstand Support Structure	Second quarter 2022
Second quarter 2021	Portal piling platform and guide walls	Third quarter 2021
Third quarter 2021	Portal piling and capping beam	First quarter 2022
Second quarter 2022	Portal excavation, props, base slab and lining walls	Fourth quarter 2022

7 Other Consents

7.1.1 Other main consents likely to be required for the works are summarised in **Table 7** below. Consent requirements may alter during design development and further consents not identified in **Table 7** may be required.

Table 7: Other Consent Requirements

Consent	Works Requiring Consent	To be submitted / approved
HS2 Act, Schedule 4, Part 1	New temporary accesses to the construction worksites	To be submitted
HS2 Act, Schedule 33, Part 5	Permanent, temporary works or operations that are likely to affect the flow, level or quality of groundwater.	To be submitted
Section 61 of the Control of Pollution Act 1974	Construction compound	To be submitted
Any other relevant Schedule 17 Plans and Specifications submissions for adjacent or associated works	Plans and Specifications for above ground structure – Euston Cavern Shaft and Headhouse Plans and Specifications for above ground structures -Euston Portal Shaft and Headhouse Plans and Specifications for above ground structures – Granby Terrace Bridge Plans and Specifications for above ground structures – Hampstead Road Bridge. Plans and Specifications for above ground structures – Parapet walls associated with the Park Village East Berm and Euston Scissor Cut Portal.	To be submitted
	Plans and Specifications for above ground structures – Euston Throat Retained Cut.	Submitted 18th December 2019