CNWL Dollis Hill

Environmental Impact Assessment Screening Report

November 2022

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BARTON WILLMORE now Stantec

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Environmental Impact Assessment Screening Report

Prepared on behalf of Dollis Hill Wembley LLP

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APPENDICES

1 INTRODUCTION

1.1 This report has been prepared by Barton Willmore, now Stantec[1] on behalf of Dollis Hill Wembley LLP ('the Applicant'). This report accompanies a request to the London Borough of Brent (LBB) to adopt a screening opinion to determine whether proposed development on 4 hectares (ha) of land at CNWL Dollis Hill ('the site'), constitutes EIA development. The proposals are for the construction of a residential led development, comprising demolition of existing buildings on the site and construction of up to 1,550 new residential dwellings, up to 5,000sqm of flexible commercial/community floorspace, and extensive public realm and landscaped areas ('the proposed development').

1.2 This report reflects the requirements of the *Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended*[2] (the "EIA Regulations") and in accordance with Regulation 6 of the EIA Regulations, this report contains:

- A plan sufficient to identify the land;
- a description of the development, including in particular:
  (i) a description of the physical characteristics of the development and, where relevant, of demolition works;
  (ii) a description of the location of the development, with particular regard to the environmental sensitivity of geographical areas likely to be affected;
- a description of the aspects of the environment likely to be significantly affected by the development;
- to the extent the information is available, a description of any likely significant effects of the proposed development on the environment resulting from:
  (i) the expected residues and emissions and the production of waste, where relevant; and
  (ii) the use of natural resources, in particular soil, land, water and biodiversity; and
- such other information or representations as the person making the request may wish to provide or make, including any features of the proposed development or any measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment.

[1] Institute of Environmental Management and Assessment (IEMA) qualified assessors and Environmental Impact Assessment (EIA) Quality Mark registrants
[2] SI 2017/571, as amended by SI 2018/695 and SI 2020/505

Requirement for EIA

1.3 In order to determine whether the development is 'EIA development', regard must be had for the EIA Regulations and supporting Planning Practice Guidance (PPG)[3].

1.4 EIA development is defined by the EIA Regulations as development:

> *"likely to have significant effects on the environment by virtue of factors such as its nature, size or location".*

1.5 EIA development falls into two Schedules of the EIA Regulations. EIA is mandatory for developments listed within Schedule 1. Schedule 2 developments require EIA if they would lead to likely significant effects on the environment.

1.6 In deciding whether a Schedule 2 development is EIA development, Regulation 5(4) states:

> *"Where a relevant planning authority … has to decide under these Regulations whether Schedule 2 development is EIA development, the relevant planning authority … must take into account in making that decision-*
> *(a) Any information provided by the applicant;*
> *(b) The results of any relevant EU environmental assessment which are reasonably available to relevant planning authority…; and*
> *(c) such of the selection criteria set out in Schedule 3 as are relevant to the development."*

1.7 In order to allow LBB to determine the need for EIA, this report provides a description of the site and the development, a review of the EIA Screening Criteria based on the EIA Regulations and the PPG, a completed EIA Screening Checklist, and a site location plan at Appendix A.

[3] https://www.gov.uk/guidance/environmental-impact-assessment

2 SITE AND DEVELOPMENT

Site Context

2.1 The site (see Location Plan at Appendix A) is located within the ward of Roundwood, in the administrative boundary of LBB. The site is bound to the north by a railway line, to the east by the A4088 Dudden Hill Lane, to the south by Denzil Road, and to the west by Selbie Avenue.

2.2 Land use in the immediate vicinity of the site is predominantly residential and of a suburban character and scale. There are residential properties located to the east, south and west of the site, beyond Dudden Hill Lane, Denzil Road and Selbie Avenue. There is also commercial land use located to the south of the residential properties lining Denzil Road and light industrial use to the north of the site, beyond the railway line. Additionally, there are small areas of public open space adjacent to the south-eastern and western boundary of the site. Gladstone Park is located approximately 500m north of the site and includes sports courts, playgrounds and cafes.

2.3 The railway line on the northern boundary of the site is used by the Jubilee and Metropolitan London Underground lines. The nearest stations are Dollis Hill located approximately 270m east and Neasden located approximately 320m west of the site. The nearest bus stop to the site is Chapter Road Dollis Hill (located approximately 160m south-east of the site) which is served by bus numbers 226, 302 and N98. There are no cycle routes that connect to the site but the Transport for London Q3 (Quiet) cycleway begins 500m north of the site and connects Gladstone Park to Brondesbury[4].

Planning Context

2.4 The site is allocated for development by the Brent Local Plan 2022 as it lies within the BEGA1A Neasden Stations Growth Area (NSGA)[5]. The NSGA Masterplan Supplementary Planning Document (SPD) was adopted by LBB in April 2022[6]. The CNWL Dollis Hill site is the largest site in the Growth Area and has been identified as being underused. A number of different scenarios have been tested for the site in the NGSA SPD with predominantly residential along with some commercial/retail/community uses preferred. Additionally, the BSGA1 Church End Growth Area is located approximately 60m south of the site.

[4] https://tfl.gov.uk/maps/cycle?intcmp=40402&intcmp=58492&intcmp=60683
[5] https://legacy.brent.gov.uk/media/16419048/article-4_site-allocations_redacted.pdf
[6] Neasden Stations Growth Area masterplan supplementary planning document (brent.gov.uk)

Site Description

2.5 The site covers an area of 4ha which is currently used as a campus for the College of North West London. The majority of the site is hard standing, comprising a series of buildings approximately one to five storeys in height and car parking. There are scattered trees and shrubbery located on site, particularly within the north and south of the site and around the car park in the west of the site, as well as amenity grassland and hedgerow. There is also an area of bare ground within the east of the site. There are no trees with existing Tree Protection Orders (TPOs) on site or within 500m of the site[7].

2.6 Primary vehicular and pedestrian access to the site is from the south via Denzil Road. There are also secondary access points at the east of the site via the A4088 Dudden Hill Lane and at the west of the site via Selbie Avenue.

Environmental Baseline Conditions

Landscape and Visual

2.7 The site is not located within an Area of Outstanding Natural Beauty (AONB), National Park or Area of High Landscape Value (AHLV). The townscape within the immediate vicinity is relatively low-rise. However, north of the railway line there is a new development comprising a series of buildings of up to nine storeys.

Biodiversity

2.8 There are no statutory ecological designations on or adjacent to the site. The nearest statutory designation is the Brent Reservoir/Welsh Harp Local Nature Reserve (LNR) and Site of Special Scientific Interest (SSSI) located approximately 1.5km north of the site. Land to the north of the site (along the railway line) is a site of importance for nature conservation (SINC) (non-statutory designation) and London Plan Wildlife Corridor.

2.9 A Preliminary Ecological Appraisal (PEA) and Bat Scoping Survey have been undertaken for the site (refer to Appendix B). The PEA identifies that the site is of low ecological value, comprising buildings and hardstanding, scattered trees, amenity grassland, bare ground, scrub, and hedgerow.

[7] https://legacy.brent.gov.uk/gis-maps/tree-protection-order-map/?_ga=2.30671551.1687631479.1665045845-1865639313.1664288486

2.10 An extended Phase 1 Habitat Survey has been undertaken for the site which identifies that habitats on-site have potential to support badger, roosting and foraging bats, nesting birds and reptiles. However, the site is not considered suitable for Dormouse, Riparian Mammals or Great Crested Newts.

Heritage and Archaeology

2.11 The site is not located in or within close proximity to a World Heritage site, Registered Battlefield or Registered Parks and Gardens. The nearest Registered Park and Garden is the Willesden Jewish Cemetery, located approximately 400m south of the site. The nearest Scheduled Monuments are an Iron Age settlement and a Medieval moated site, located approximately 5km west of the site.

2.12 There are no Listed Buildings within the site but there are 12 Grade II Listed Buildings within 1km of the site and two Grade II* listed buildings. The closest are the Church of St Mary, a Grade II* listed building located approximately 275m south-west of the site, and the Willesden Jewish Cemetery which is Grade II listed and located approximately 400m south of the site. The Locally Listed former Willesden College of Technology Annexe is located approximately 50m east of the site.

2.13 The site is not located within a conservation area, as defined by LBB. The nearest conservation areas are Willesden Green (approximately 900m south-west of the site), Neasden Village (approximately 1.5km north-west of the site) and Homestead Park (approximately 900m north of the site).

2.14 The site is not located within an Archaeological Priority Area. However, Willesden Village Site of Archaeological Importance is located approximately 200m south of the site.

Air Quality

2.15 The site is located within the Brent Air Quality Management Area (AQMA), declared in December 2006 for exceedances of Nitrogen dioxide (NO2) (Annual Mean) and Particulate Matter PM10 (24-Hour Mean)[8]. The AQMA covers the southern two-thirds of the borough. The site is within the Low Emissions Zone (LEZ) and Ultra Low Emission Zone (ULEZ).

[8] https://uk-air.defra.gov.uk/aqma/details?aqma_ref=120

Noise and Vibration

2.16 Given that the A4088 Dudden Hill Lane and railway lines are located adjacent to the north and east of the site, road traffic and rail movement are the dominant noise sources affecting the site. Noise levels along the southern site boundary are dictated by road traffic noise from Denzil Road.

Water Resources and Flood Risk

2.17 According to the Gov.UK website the site is located in Flood Zone 1 (at a low risk of flooding)[9]. The site is not located within a groundwater Source Protection Zone (SPZ).

Land Contamination

2.18 The site is currently used as a campus for the College of North West London and no highly contaminative uses are located on the site. A Phase 1 Geoenvironmental Assessment has been prepared and identifies that the site is unlikely to be significantly contaminated.

The Proposed Development

2.19 The planning application proposed is a hybrid (part detailed, part outline) for a residential-led development comprising demolition of the existing buildings on the site and construction of up to 1,550 new residential dwellings, up to 5,000sqm of flexible commercial/community floorspace, and extensive public realm and landscaped areas.

2.20 The proposed development would be divided into two phases including a detailed phase one which would provide circa. 1,000 homes and an outline phase two which will provide circa. 550 homes.

2.21 The proposed development will include buildings up to a maximum of 28 storeys (101m Above Ordnance Datum (AOD)).

2.22 Access to the proposed development will be from Dudden Hill Lane to the east (likely vehicular entrance only), Denzil Road to the south (likely vehicular exit only), and Selbie Avenue to the west (likely vehicular exit only). Residential parking provision will be circa 3% which will equate to around 50 parking spaces.

[9] GOV.uk (2021) Flood Map for planning – https://flood-map-for-planning.service.gov.uk/confirm-location?easting=532253&northing=189033&placeOrPostcode=n15

2.23 There is potential for the proposed development to provide nursery and community facilities but this will come forward at the reserved matters stage.

Mitigation

2.27 In accordance with Regulation 6, (2), e) of the EIA Regulations, a number of mitigation measures have been committed to at screening stage as part of the proposed development. This includes adherence to best practice measures during the construction phase, such as through a Construction Environmental Management Plan (CEMP), which will be secured by a planning condition. This will include:

- A table showing the objectives, activities (mitigation/optimisation measures), and responsibilities for the implementation of those activities;
- The broad plan of the work programme including working hours and delivery times;
- Details of prohibited or restricted operations (location, hours etc.);
- Institutional arrangements for its implementation and for environmental monitoring: responsibilities, role of the environmental authorities, participation of stakeholders;
- Contact during normal working hours and emergency details outside working hours;
- Provision for reporting, public liaison, and prior notification of particular construction related activities;
- The mechanism for the public to register complaints and the procedures for responding to such complaints; and
- The details of proposed routes for Heavy Good Vehicles (HGVs) travelling to and from the site.

2.28 A Construction Traffic Management Plan (CTMP) will be implemented during the construction works. All management of construction traffic and access will be carried out in accordance with the CTMP, as set out below:

- Planning and managing both vehicle and pedestrian routes;
- The elimination of reversing, where possible;
- Safe driving and working practices;
- Protection to the public;
- Adequate visibility splays and sight lines;
- Provision of signs and barriers; and
- Adequate parking for off-loading storage areas.

2.29 A Framework Travel Plan (TP) will be prepared with the aim of encouraging more sustainable modes of travel to the proposed development, with a Detailed Travel Plan anticipated to be secured by condition pre-occupation.

2.30 Trees to be retained in proximity to areas of development activity, including areas for new surfacing, services, work site compounds and storage will be protected to ensure they are not damaged. This will be achieved with the use of temporary tree protection fencing in accordance with BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction'[10], to prevent access within the Root Protection Zone (RPZ) or canopy spread of trees. Where access is unavoidable, alternative protection arrangements such as ground protection (sufficient to protect the structure of the soil from compaction), and /or access facilitation pruning (to ensure a reasonable clearance for operations is provided) will be required. The majority of the existing trees within the north of the site will also be retained as part of the proposed development.

2.31 A Preliminary Ecological Appraisal (PEA) and External Bat Scoping Survey has been undertaken for the site by Geosphere Environmental (Ref: 5936, EC, PEA, Bat Scope, RH, RF, KL,03.11.21,V1) (refer to Appendix B). As detailed in the report, avoidance measures would be implemented in regards to foraging bats, birds, reptiles and hedgehogs as follows:

- Foraging bats: Retention of vegetation on the northern boundary of the site and a sensitive lighting scheme would be implemented during and post construction.
- Birds: Timing of vegetation clearance to avoid the bird breeding season (March-August inclusive).
- Reptiles: Production of an Ecological Method Statement to protect reptiles prior to clearance/disruption of dense scrub and rubble piles.
- Hedgehog: Production of an Ecological Method Statement to protect hedgehogs during vegetation and rubble pile removal. Hedgehog friendly fencing should be incorporated into the final design.

2.32 Opportunities to mitigate ecological effects and enhance biodiversity also include planting native species beneficial to wildlife, incorporation of bird and bat boxes and log piles/hibernacula to enhance the site post-development. There will also be biodiverse green roofing, and sensitive lighting adjacent to the SINC.

2.33 Noise limits for plant noise emissions have been calculated in the Noise Impact Report (Ref: RP01-22229-R0) (refer to Appendix C)) which has been prepared, using BS4142 methodology

[10] BS 5837: 'Trees in Relation to Design, Demolition and Construction' April 2012.

and will be implemented as part of the proposed development. Additionally, mitigation measures to control noise from commercial units within the mixed residential and commercial development include:

- Designing high acoustic performance separating walls and floors between commercial units and residential units;
- Ensuring that the external facades of the commercial units are designed to minimise noise breakout from activities within the commercial units;
- Imposing noise limits on commercial tenants and preventing noisy commercial uses from occupying the units; and
- Imposing operational restrictions on commercial units, e.g. noise limits, limiting operating hours and delivery timings.

2.34 All personnel working on the site would be briefed on the basic identification of UXO and what to do in the event of encountering a suspect item. Further mitigation measures may include a site-specific plan for the management of UXO risk as well as the presence of a UXO specialist on site to support shallow intrusive works and an intrusive magnetometer survey of all borehole and pile locations.

2.35 The Geoenvironmental Assessment identifies that remediation, if required, can easily be incorporated into the proposed development and would be secured through a planning condition and undertaken before or during demolition and construction, subject to agreement with LBB and undertaken in accordance with all relevant legislation and guidance.

3 SCREENING ASSESSMENT

Determining the Screening Approach

3.1 In determining whether a development constitutes EIA development, consideration should be had to the following:

- Is the development listed in Schedule 1;
- If not, is it listed in Schedule 2;
- Is it located within a sensitive area;
- Does the development meet any of the relevant thresholds and criteria set out in Schedule 2; and/or
- Would it lead to likely significant effects on the environment?

3.2 These points are explored further in this section with reference to the EIA Regulations and supporting PPG.

Schedule 1 Projects

3.3 EIA is mandatory for projects listed in Schedule 1 of the EIA Regulations. Schedule 1 developments are large scale projects for which significant effects would be expected and comprise developments such as new airports and power stations. The development is not of a type listed in Schedule 1.

Schedule 2 Projects

3.4 EIA is discretionary for projects listed in Schedule 2. If the development is of a type listed in Schedule 2 then it may be classified as EIA development depending on the location of the development (i.e. if it is within a sensitive area) and/or whether it meets any of the relevant thresholds or criteria in Column 2.

3.5 Sensitive Areas are defined in the EIA Regulations as:

- Sites of Special Scientific Interest and European Sites;
- National Parks, the Broads, and Areas of Outstanding Natural Beauty; and
- World Heritage Sites and Scheduled Monuments.

3.6 In certain cases, local designations which are not included in the definition of sensitive areas,

but which are nonetheless environmentally sensitive, may also be relevant in determining whether an assessment is required. Furthermore, in considering the sensitivity of a particular location, regard should also be had to whether any national or internationally agreed environmental standards (e.g. air quality) are already being approached or exceeded.

3.7 As stated within the baseline conditions section of this EIA Screening, the development does not fall within a sensitive area as stated above. As such, the EIA Screening Thresholds should be considered to determine whether the development falls within the Schedule 2 criteria.

3.8 The development falls within category 10 of Schedule 2, 'Infrastructure Projects', sub-section (b) 'Urban Development Projects'. The thresholds for this type of development as set out in Schedule 2 relate to developments that "*include more than 1 hectare of urban development which is not dwellinghouse development, include more than 150 dwellings, or the overall area of the development exceeds 5 hectares*". The proposed development includes up to 1,550 new residential dwellings which exceeds the dwelling threshold of 150 dwellings, however the site area is 4ha which falls below the overall area threshold of 5ha. Accordingly, this screening assessment has been prepared to determine whether the development would be likely to result in significant environmental effects. To achieve this, Schedule 3 of the EIA Regulations and PPG need to be considered. Information on these is set out below.

3.9 The PPG[6] confirms that:

> *"Only a very small proportion of Schedule 2 development will require an Environmental Impact Assessment".*

Schedule 3

3.10 Schedule 3 of the EIA Regulations sets out selection criteria which relate to specific matters including: the characteristics of the development; the location of the development; and the characteristics of the potential impact. These factors should be taken into account as part of the screening process and are set out below:

Characteristics:

- the size and design of the whole development;
- cumulation with other existing development and/or approved development;
- the use of natural resources, in particular land, soil, water and biodiversity;
- the production of waste;
- pollution and nuisances;

- the risk of major accidents and/or disasters relevant to the development concerned, including those caused by climate change, in accordance with scientific knowledge;
- the risks to human health (for example, due to water contamination or air pollution).

Location:

- the existing and approved land use;
- the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground; and
- the absorption capacity of the natural environment.

Potential Impact:

- the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);
- the nature of the impact;
- the transboundary nature of the impact;
- the intensity and complexity of the impact;
- the probability of the impact;
- the expected onset, duration, frequency and reversibility of the impact;
- the cumulation of the impact with the impact of other existing and/or approved development; and
- the possibility of effectively reducing the impact.

Consideration of Cumulative Effects

3.11 Schedule 4 of the EIA Regulations requires consideration of a proposed development cumulatively with other existing and/or approved development. Guidance on the consideration of cumulative effects in the EIA screening process is set out in the PPG, which echoes the requirements of the EIA Regulations:

> *"each application (or request for a screening opinion) should be considered on its own merits. There are occasions where other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a Proposed Development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development."*

3.12 A number of permitted schemes in close proximity to the site, have been identified and are set out in Table 3.1.

Table 3.1: Cumulative Schemes

Scheme Name and Application Number	Description	Planning Status	Direction and distance from the site
Warranty House and 82 & 82A Dudden Hill Lane, NW10 1DD Ref. 16/4010	Proposed demolition of all existing buildings and construction of part five / part six / part seven / part eight / part nine storey buildings comprising 136 residential units (Use Class C3, comprising of 42 x 1 bed, 56 x 2 bed and 38 x 3 bed flats) and community/retail floorspace (Use Classes D1/A1/A3); related lower ground car park comprising 44 car parking spaces; cycle parking, vehicular access; footways; landscaping; plant and associated works and subject to a Deed of Agreement dated 21 July 2017 under Section 106 of the Town and Country Planning Act 1990, as amended.	Under Construction	100m north
39A-B, 41, 43-47 Dudden Hill Lane & car park Villiers Road, NW10 Ref. 19/1095	Demolition of existing buildings and erection of a part 4 storey, part 5 storey building with Learie Constantine community centre (Use Class D1) on ground floor and 26 self-contained flats above (12 x 1 Bed, 7 x 2 Bed and 7 x 3 bed), provision for balcony amenity, and associated landscaping.	Under Construction	230m south-east
19 Dudden Hill Lane, NW10 2ET Ref. 19/2688	Demolition of the existing two-storey building and structures associated with the adjacent recreational sites and construction of a part 4-storey and part 5-storey building comprising D1 use on the ground floor and 29 residential units from part-ground to 4th floors. Works to include creation of communal roof terraces at 4th floor level, mechanical plant room, 48 cycle parking spaces, waste storage and associated landscaping.	Under Construction	275m south-east
205-211 ODDS Inc, 235 & Land in Church Road Car Park rear of 205-235 Church Road, London, NW10 13/2213	Full planning permission sought for demolition of buildings within 205 and 235 Church Road, and redevelopment of section of Church End car park site to the rear of 207-233(odds inc.) Church Road to erect a part 2,3,4,5 and 6-storey building containing 65 residential units, 298m2 (GEA) retail floorspace, together with 7 car parking spaces and associated works as revised by plans and details and subject to a Deed of Agreement dated 5 May 2017 under Section 106 of the Town and Country Planning Act 1990, as amended.	Under Construction	460m south-west
Church Road Car Park rear of 189-203, Church Road, London 13/1098	Demolition of 205 Church Road and proposal of new market square to replace Eric Road. Demolition of 3 storey building to the rear of 203 Church Road and proposal of 34 residential dwellings and ground floor non-residential space (class A1/A3/B1/D1). Stopping up of Eric Road as revised by plans.	Under Construction	565m south-west

Scheme Name and Application Number	Description	Planning Status	Direction and distance from the site
Willesdon Green Garage. St Paul's Avenue, NW2 5TG 20/2257	Variation of condition 2 (approved plans) to allow for - Internal alterations to facilitate the creation of 6 additional residential units - External alterations to include additional windows, winter gardens and roof terrace - Reduction in size of basement and repositioned ramp and Variation of Condition 17 (Mix) of full planning application 17/5291, allowed on appeal dated 17 December 2019 (amended under non material amendment application 20/1873) for Demolition of MOT garage and erection of a part seven-storey and part four storey building with basement level to provide residential units with ground, third and fourth floor amenity spaces and ground floor play area, provision of basement car parking, cycle and refuse storage, alterations to vehicular accesses and associated landscaping.	Under Construction	1.1km east
All Units at 4-9 INC. and Garages rear of 4-9 Gladstone Parade, Edgware Road, Cricklewood 18/4777	Demolition of the existing mixed used building and garages and construction of a part three to six storey building providing 225 sqm of flexible retail floorspace for shops/financial professional services (Use Class A1/A2) and hot food takeaway (Use class A5) and 155 sqm for public house (Use Class A4) at ground floor level, and 54 residential units (Use Class C3) comprising 22 x 1 bed, 18 x 2 bed and 14 x 3 bed units with associated car and cycle parking spaces, bin stores and landscaping.	Under Construction	1.9km north-east

National Planning Practice Guidance

3.13 Paragraphs 057[7] and 058[8] of the PPG provide guidance to help determine whether significant effects are likely. In general, the more environmentally sensitive the location, the lower the threshold will be at which significant effects are likely. Table 3.2 below sets out the indicative criteria, thresholds and key issues to be considered in determining whether a development is likely to be EIA developed identified in the PPG.

Table 3.2: Planning Practice Guidance Indicative Screening Criteria[9]

Development type	Indicative criteria and threshold	Key issues to consider
10 (b) Urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure	Environmental Impact Assessment is unlikely to be required for the redevelopment of land unless the new development is on a significantly greater scale than the previous use, or the types of impact are of a markedly different nature or there is a high level of contamination.	Physical scale of such developments, potential increase in traffic emissions and noise.

Development type	Indicative criteria and threshold	Key issues to consider
centres and multiplex cinemas.	Sites which have not previously been intensively developed: (i) area of the scheme is more than 5 hectares; or (ii) it would provide a total of more than 10,000 m2 of new commercial floorspace; or (iii) the development would have significant urbanising effects in a previously non-urbanised area (e.g. a new development of more than 1,000 dwellings).	

Screening Assessment

3.14 This section assesses the development against the EIA screening criteria outlined above and presents the assessment of the environmental effects likely to occur as a result of the development. Table 3.3 sets out a review of all of the above criteria and requirements and specifically addresses the proposed development at the site.

Table 3.3: Planning Practice Guidance EIA Screening Matrix

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
1. Natural Resources				
1.1 Will construction, operation or decommissioning of the project involve actions which will cause physical changes in the topography of the area?	N	There would be changes to the site during the demolition and construction phase as soil would be excavated for foundations, drainage, and access however, there will be no change to water bodies on the Site and no material changes to topography, other than localised regrading to achieve development platforms. The proposed development is intended to be permanent, so decommissioning is not anticipated for the foreseeable future.	N/A	
1.2 Will construction or operation of the project use natural resources above or below ground such as land, soil, water, materials / minerals or energy which are non-renewable or in short supply?	Y	The demolition, construction and operational phases of the proposed development will use resources in terms of land, water and energy as would be expected for a residential led mixed use development.	N	Any potential effects during the construction phase would be mitigated using best practice measures set out within a CEMP and implemented prior to commencement of works on the site. The CEMP will include measures to minimise the consumption of natural resources, particularly those non-renewable, where possible. The proposed development will be designed to reduce any likely significant effects on natural resource consumption and include sustainable building methods where feasible to minimise the buildings' energy consumption. An Energy Strategy, Whole Lifecycle Carbon Assessment and Circular Economy Statement will be submitted in support of the planning application.
1.3 Are there any areas on/around the location which contain important, high quality or scarce resources which could be affected by the project, e.g. forestry, agriculture, water/coastal, fisheries, minerals?	N	The site is brownfield in a urban area and is bound by a railway line to the north, the A4088 Dudden Hill Lane to the east, Denzil Road to the south and Selbie Avenue to the west. Land use immediately surrounding the site is largely residential in nature, while there is also commercial use in the wider site area. There are no locations on site such as forestry or	N	The demolition and construction phase would lead to an increase in traffic, emissions and noise but such effects would be minimised by best practice mitigation measures, implemented through a CEMP. Effects on surrounding land uses and people will be in the context of existing development around the site and are not anticipated to be significant. Once operational, the proposed development would be in keeping with existing and future

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
		coastal landscapes which could be adversely affected by the proposed development. There are no fisheries, tourism or minerals resources that could be affected by the proposed development.		development in the surrounding area and therefore effects on neighbouring users are not anticipated to be significant.
2. Waste				
2.1 Will the project produce solid wastes during construction or operation or decommissioning?	Y	As with nearly all demolition and construction works, the proposed development will result in waste materials from the preparation and undertaking of works. There would be waste generated by the operational phase of the proposed development.	N	Construction waste will be reused and recycled on or off-site where possible. Any construction waste would be managed in accordance with the CEMP and all applicable legislation and disposed of in line with best practice. Operational waste will be disposed of in line with LBB's requirements and managed in accordance with all applicable legislation. LBB's recycling scheme provides recycling bins in which to recycle waste, including household food waste, cans, paper, plastic and glass. Significant quantities of construction or operational waste are not anticipated as a result of the proposed development. A Refuse Disposal and Recycling Strategy will be submitted in support of the planning application.
3. Pollution and Nuisances				
3.1 Will the project release pollutants or any hazardous, toxic or noxious substances to air?	Y	During the demolition and construction phase of the proposed development, dust would be generated. There would be emissions associated with plant and vehicles during the construction phase. The proposed development will provide circa 50 car parking spaces, which allows for parking for 3% of residents. There would also be emissions associated with vehicles for deliveries, servicing and refuse. The project's transport consultants have estimated there will be approximately 250 vehicle trips (combination of lorries, vans, cars and motorbikes) per day	N	Dust generated during construction will be managed in accordance with standard best practice measures, enforced through a CEMP and therefore dust is not anticipated to generate significant adverse effects. The construction phase is expected to be phased, with the arrival and departure of Heavy Goods Vehicles (HGVs) dispersed across the working day to avoid a concentration of released pollutants associated with the plant and vehicles required for the construction phase. Construction vehicle emissions will be managed through the implementation of the CTMP and CEMP, secured via planning condition.

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
		associated with the proposed development. The proposed development is for residential use, along with flexible commercial/community use, which is not associated with hazardous substances or toxic emissions to air. There is not anticipated to be a requirement to store large volumes of hazardous materials. Any such materials would be stored and handled in accordance with relevant legislation.		There will be some emissions associated with operational traffic, however these would not be significant given there will be parking provision for only 3% of residents (circa 50 car parking spaces). A Transport Assessment (TA) will be submitted as part of the proposed development as well as Framework Travel Plan, which will outline the initiatives to be implemented to encourage the future residents and users of the site to travel by sustainable travel modes. In addition, an Air Quality Neutral Assessment will be submitted in support of the planning application, to demonstrate that the proposed development is air quality neutral, in line with London Plan and local policy requirements.
3.2 Will the project cause noise and vibration or release of light, heat, energy or electromagnetic radiation?	Y	The potential exists for intermittent and temporary noise and vibration effects to result from the demolition and construction processes and operational activities associated with the proposed development. The existing noise climate is influenced by traffic on nearby roads and rail including the A4088 Dudden Hill Lane to the east of the site and a railway line to the north of the site. During construction, the potential exists for light pollution (at night) associated with construction activities. No heat, energy or electromagnetic radiation will be caused or released.	N	As above, construction effects will be managed in accordance with best practice measures, implemented through the CEMP and CTMP. The CEMP will enforce hours of work and will prevent construction activities occurring outside the working hours of the week, additionally, work will be restricted on the weekends and bank holidays during the construction phase. Machinery will be turned off and noisy activities would be undertaken as far away as possible from the existing receptors to further reduce the noise impact. A Noise Impact Report has been prepared and will be submitted as part of the planning application. The report identifies the detailed design specifications required to ensure an appropriate acoustic environment for future users of the site. This includes high acoustic performance separating walls and floors between residential and commercial units and ensuring external facades minimise noise breakout from commercial activities. Such design measures are standard and well understood. These would be

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
				secured via a suitably worded planning condition and significant effects are not anticipated. Lighting during construction and operation will also be designed carefully in accordance with relevant British Standards and Institute of Lighting Professionals (ILP)[10] guidance. This will be outlined in the Lighting Strategy and Assessment to be submitted in support of the planning application.
3.3 Will the project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal waters or the sea?	N	The site is entirely located within a Flood Zone 1[6] meaning there is a low probability of flooding. As part of the planning application, a Flood Risk Assessment (including Surface Water Drainage Strategy) and Sustainable Drainage Strategy will be prepared which will incorporate Sustainable Drainage Systems (SuDS). The proposed development will not result in any significant adverse effects to water relating to contamination.	N/A	
3.4 Are there any areas on or around the location which are already subject to pollution or environmental damage, e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	Y	As previously identified, the site is located in the LBB AQMA which covers the southern two-thirds of the borough. The main pollutants of concern in the area are NO_2 and PM_{10}.	N	During demolition and construction, effects will be managed through the CEMP, which will include standard, best practice measures, such as ensuring bulk cement and other fine powder materials are delivered to the site in enclosed tankers. Dust generation would be managed in accordance with standard best practice measures, enforced through the CEMP and is not anticipated to generate significant adverse effects. An Air Quality Neutral Assessment will be submitted in support of the planning application, to demonstrate that the proposed development is air quality neutral, in line with London Plan and local policy requirements. A Detailed Travel Plan will also be implemented during operation of the proposed development which will support sustainable and active

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
				travel, as such, reducing private vehicle usage on the site which may increase pollutants. The above measures will ensure that there are no significant effects from sources of air emissions.
4. Population and Human Health				
4.1 Will there be any risk of major accidents (including those caused by climate change, in accordance with scientific knowledge) during construction, operation or decommissioning?	Y	During the demolition and construction activities, the contractor(s) will implement measures in accordance with Health and Safety legislation/requirements, and best practice to minimise the risks of accidents that could have adverse effects on people or the environment. All such measures will form part of the CEMP. There are no anticipated significant risks of accidents during operation as the proposed development will not involve users dealing with hazardous substances. In addition, the Sustainable Drainage Strategy for the proposed development will be designed to ensure there is no increase to flood risk on site or elsewhere and will also accommodate an allowance for climate change. The proposed buildings will be designed using best practice energy efficiency measures to reduce overheating in hot temperatures, whilst retaining heat in cold temperatures. An Energy Strategy will be submitted in support of the planning application, alongside an FRA and Sustainable Drainage Strategy. An Unexploded Ordnance Assessment has been undertaken which has found that there is a medium risk from German unexploded ordnance at the site but a negligible risk from Allied unexploded ordnance.	N	All personnel working on-site would be briefed on the basic identification of UXO. There would also be a UXO specialist on-site to support shallow intrusive works as well as an intrusive magnetometer survey of borehole and pile locations. With the above mitigation measures, significant effects are not considered likely.

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
4.2 Will the project present a risk to the population (having regard to population density) and their human health during construction, operation or decommissioning? (for example due to water contamination or air pollution)	Y	Dust would be generated during the construction phase of the proposed development.	N	Dust generation would be managed in accordance with best practice measures, enforced through the CEMP. An Air Quality Neutral Assessment will also be submitted in support of the planning application, to demonstrate that the proposed development is air quality neutral, in line with London Plan and local policy requirements. A Detailed Travel Plan will also be implemented during operation of the proposed development which will support sustainable and active travel. Surface water run-off and foul water drainage will be managed on-site during the construction and operational phases, which will be detailed further in the FRA, Sustainable Drainage Strategy and Foul Sewage and Utilities Assessment submitted in support of the planning application.
5. Water Resources				
5.1 Are there any water resources including surface waters, e.g. rivers, lakes/ponds, coastal or underground waters on or around the location which could be affected by the project, particularly in terms of their volume and flood risk?	Y	As previously stated, the site is predominantly in Flood Zone 1. The site is not located in a SPZ and there are no watercourses on or near the site. As such there are no water resources which could be affected by the project. An FRA and Sustainable Drainage Statement and Foul Sewage and Utilities Assessment will be submitted with the planning application.	N/A	
6. Biodiversity (Species and Habitats)				
6.1 Are there any protected areas which are designated or classified for their terrestrial, avian and marine ecological value, or any non-designated / non-classified areas which are important or sensitive for reasons of their terrestrial, avian and marine ecological value, located on or around the location and which could be affected by the project? (e.g. wetlands, watercourses or other water-bodies, the	N	There are no Special Areas of Conservation (SAC), Special Protection Areas (SPA), RAMSAR Sites or Sites of Special Scientific Interest (SSSI) on or adjacent to the site. As previously noted, the nearest designation to the site is Brent Reservoir/Welsh Harp LNR and SSSI located approximately 1.5km north of the site. Additionally, land immediately north of the site along the railway line is a	N	The siting of buildings and associated landscape/lighting strategy will create a physical buffer and be designed sympathetically in relation to the SINC. There will be new open space and opportunity for biodiversity net gain, urban greening and net increase in trees. A PEA has been undertaken for the site. The report identifies key mitigation and best practice measures to be enforced through

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coastal zone, mountains, forests or woodlands, undesignated nature reserves or parks. (Where designated indicate level of designation (international, national, regional or local))).		SINC and London Plan Wildlife Corridor. The PEA (refer to Appendix B) which has been undertaken identifies that the site is of low ecological value given that it comprises mostly buildings and hardstanding with some scattered trees, amenity grassland, bare ground, scrub and hedgerow. There are no trees with existing TPOs on site or within 500m of the site.		a CEMP. Mitigation measures include retaining vegetation on the northern boundary of the site and minimising lighting impact for foraging bats, clearing vegetation outside of bird breeding season, the production of an Ecological Method Statement to protect reptiles and hedgehog prior to clearance of dense scrub, vegetation and rubble piles. Further to standard mitigation measures, the PEA (Appendix B) identifies biodiversity enhancement opportunities such as planting native species beneficial to wildlife, incorporating bird and bat boxes and log piles/hibernacula. Therefore the proposed development is not considered to generate any significant adverse ecological effects. Furthermore, the proposed development will aim to achieve a minimum of 10% Biodiversity Net Gain on site. This will be outlined in the Biodiversity Assessment which will include the Net Gain Strategy, to be submitted in support of the planning application. There will also be a Landscape Strategy including Urban Greening Factor score submitted in support of the planning application.
6.2 Could any protected, important or sensitive species of flora or fauna which use areas on or around the site, e.g. for breeding, nesting, foraging, resting, over-wintering, or migration, be affected by the project?	Y	As above, the majority of the site is of low ecological value, given it comprises of the existing College of North West London, and surrounding hardstanding (car parking). The PEA which has been undertaken (Appendix B), identifies that habitats on-site have potential to support roosting bats, foraging bats, nesting birds, badgers and reptiles. The site is not considered suitable for dormouse, riparian mammals or great crested newts.	N	As outlined in Section 2 of this report, a number of recommended avoidance measures will be implemented to reduce the impact in terms of ecology. This will include the implementation of sensitive lighting strategies and a construction buffer for the bats and vegetation removal outside of bird nesting season. As such, significant effects are not considered likely. As stated above, the proposed development will aim to achieve a minimum of 10% Biodiversity Net Gain and will therefore enhance the natural environment for the benefit of biodiversity.
7. Landscape and Visual				
7.1 Are there any areas or features on or around the	Y	The site is not located within or in close proximity to an	N	A Heritage, Townscape and Visual Impact Assessment (HTVIA) will

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
location which are protected for their landscape and scenic value, and/or any non-designated / non-classified areas or features of high landscape or scenic value on or around the location which could be affected by the project? Where designated indicate level of designation (international, national, regional or local).		AONB, National Park, or an Area of High Landscape Value. The site is not located in a Conservation Area. The nearest conservation area to the site is Willesden Green Conservation Area, located approximately 900m south-west of the site. The site is located in an area which contains a number of heritage assets and visual receptors. There are 12 Grade II and two Grade II* listed buildings within 1km of the site. The closest are the Church of St Mary (grade II*) located approximately 275m south-west of the site and the Willesden Jewish Cemetery (Grade II) located approximately 400m south of the site. The townscape in the immediate vicinity of the site is relatively low rise. However, north of the railway line there is a new residential development comprising a series of buildings which are up to nine storeys in height.		be submitted as part of the planning application setting out the impacts of the proposed development on heritage assets, townscape character and visual amenity and will detail mitigation measures to reduce impacts where possible. The massing strategy for the proposed development responds to local vernacular at the site and rises to high points to the north of the site where the site borders the railway line, therefore reducing the likelihood of adverse townscape and visual effects, with lower massing forms along Selbie Avenue and Denzil Road so as not to be overbearing on neighbours and existing street scene. The approach aligns with the massing principals of the NSGA.
7.2 Is the project in a location where it is likely to be highly visible to many people? (If so, from where, what direction, and what distance?)	Y	At up to 26 storeys in height, the proposed development will be visible to people living and working around the site. The potential for local views of the site exists from adjacent and nearby roads, including the A4088 Dudden Hill Lane, Denzil Road and Selbie Avenue, as well as from the existing residential dwellings to the east, south and west of the site, commercial buildings south of residential properties on Denzil Road, the small open spaces adjacent to the site and the two primary schools within 700m of the site Additionally, the site will be visible from passing trains to the north,	N	As noted above, a HTVIA will be submitted with the planning application which will address local and, where appropriate, long distance views. Moreover, the proposed development has been sensitively designed to minimise the potential impact on surrounding receptors. For example, the massing strategy for the scheme responds to local vernacular at the site and rises to high points to the north of the site where the site borders the railway line. Although buildings around the site are predominantly low rise, more recent development in the surrounding area is of increased height, including buildings to the north of the railway line which are up to nine storeys in height. This aligns with the heights strategy of

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
				the NSGA Masterplan SPD.
8. Cultural Heritage/Archaeology				
8.1 Are there any areas or features which are protected for their cultural heritage or archaeological value, or any non-designated / classified areas and/or features of cultural heritage or archaeological importance on or around the location which could be affected by the project (including potential impacts on setting, and views to, from and within)? Where designated indicate level of designation (international, national, regional or local).	Y	The site is not located within a Conservation Area, nor does it comprise any listed buildings or scheduled monuments. The closest listed buildings to the site are the Church of St Mary, a Grade II* listed building located approximately 275m south-west of the site, and Willesden Jewish Cemetery which is Grade II listed and located approximately 400m south of the site. The Willesden Jewish Cemetery is also the nearest Registered Park and Garden to the site. There are 12 Grade II listed buildings within 1km of the site, as outlined in Section 2 of the report. Additionally the Locally Listed former Willesden College is located approximately 50m east of the site. The nearest scheduled monuments are located approximately 5km west of the site. The site is not located in an Archaeological Priority Area.	N	As above, the massing strategy responds to local vernacular at the site and rises to high points to the north of the site where the site borders the railway line. This will help to reduce effects on nearby heritage assets. A HTVIA will also be submitted in support of the planning application. The HTVIA will set out potential impacts from the proposed development and measures to reduce these impacts where possible.
9. Transport and Access				
9.1 Are there any routes on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	Y	The site is bound by the A4088 Dudden Hill Lane to the east, a railway line to the north, Denzil Road to the south and Selbie Avenue to the west. There are small areas of public open space adjacent to the south-eastern and western boundary of the site. Gladstone Park is located approximately 500m north of the site.	N	During the demolition and construction phases, standard, best practice measures will be adopted to prevent any significant effects, such as phased delivery of goods onto the site to prevent congestion and impacts on the services surrounding the site. These measures will be enforced through a CEMP and CTMP, which will be secured by planning condition. Working hours are to be agreed with LBB to reduce to potential effects and ensure work is carried out with minimal impact on the surrounding area. The proposed development will be car free (except for blue badge holders) so will have a negligible

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				impact in terms of increased car traffic on the site and on the surrounding transport network. A TA will be submitted as part of the proposed development as well as Framework Travel Plan, which will outline the initiatives to be implemented to encourage the future residents and users of the site to travel by sustainable travel modes. An Outline Delivery and Servicing Plan will be provided as part of the application, with a detailed DSP anticipated to be secured through condition prior to occupation.
9.2 Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?	Y	As stated above, the site is bound by A4088 Dudden Hill Lane to the east, Denzil Road to the south and Selbie Avenue to the west.	N	As previously detailed, measures will be included within the CEMP and CTMP to ensure the construction phase will not generate significant adverse effects. There will be vehicular trips (combination of lorries, vans, cars and motorbikes) through the site associated with deliveries, servicing and refuse, however the proposed development will include parking provision for only 3% of residents (circa 50 car parking spaces). There will be an increase in people using the surrounding public transport network (including the nearby Dollis Hill London Underground Station), however this is not expected to be significant. A TA, Framework Travel Plan, and Outline Delivery and Servicing Plan will also be submitted in support of the planning application and will ensure that the proposed development will not generate significant effects on the local highway network because of the anticipated mode shift to sustainable transport modes. Therefore, effects are not considered to be significant.
10. Land Use				
10.1 Are there existing land uses or community facilities on or around the location which could be affected by	Y	The site is currently used as a campus for the College of North West London, therefore the use would	N	The College of North West London will be combining two campuses into a purpose built facility on a separate site, so although there would be a

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
the project? E.g. housing, densely populated areas, industry / commerce, farm/agricultural holdings, forestry, tourism, mining, quarrying, facilities relating to health, education, places of worship, leisure /sports / recreation.		change from education to mostly residential. • St Mary's CE Primary School and St Andrews and St Francis C of E Primary schools are both located within approximately 700m of the site; • Residential use in the immediate vicinity of the site, to the east, south and west; • Commercial use including south of residential properties on Denzil Road.		loss of education on this site, there would be no loss for the wider area and as such, significant effects are not considered likely. In addition, there is potential for a nursery to be delivered on site. The construction phase of the proposed development will result in construction traffic movements and potentially noise and dust however these effects will be managed by best practice measures, including the CEMP, and effective design and will not be significant, as above. As above, a TA and Framework Travel Plan will be submitted in support of the planning application. A Noise Impact Assessment, Air Quality Neutral Assessment, HTVIA, Wind Microclimate Assessment, Daylight and Sunlight Assessment, FRA and Sustainable Drainage Strategy will also be submitted with the planning application.
10.2 Are there any plans for future land uses on or around the location which could be affected by the project?	Y	A list of nearby developments with planning permission (within 2km of the site) can be found in table 3.1. The closest development is Warranty House and 82 & 82A Dudden Hill Lane (Ref: 16/4010) located approximately 100m north of the site. The approved development is currently under construction and will deliver 136 residential units and community/retail floorspace through the construction of buildings between five to nine storeys. As outlined in section 2 of this report, the site is located within the Neasden Stations Growth Area and is north of the Church End Growth Area.	N	As previous mentioned, any potential impacts from demolition and construction works on the site will be managed in accordance with standard best practice measures, enforced through a CEMP. The adjacent proposals also comprise similar land uses so would not be adversely impacted by the proposed development during operation.
11. Land Stability and Climate				
11.1 Is the location susceptible to earthquakes, subsidence, landslides, erosion, or extreme /adverse climatic conditions, e.g. temperature inversions, fogs, severe winds, which could	N	No.	N/A	

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
cause the project to present environmental problems?				
12. Cumulative Effects				
12.1 Could this project together with existing and/or approved development result in cumulation of impacts during the construction/operation phase?	Y	The potential exists for cumulative effects in terms of road traffic and noise emissions from the cumulative developments in Table 3.1.	N	Table 3.2 lists the criteria and key issues set out in PPG for when significant effects on the environment are anticipated for 'Urban development projects'. The key issues to consider for Urban development projects are the physical scale of such developments and the potential increase in traffic, emissions and noise. Each scheme will implement a Construction Management Plan during the construction phase, which should mitigate any potentially significant effects that could arise. There are four cumulative schemes within 500m of the site, however they are of a relatively small scale (providing a combined total of 256 residential dwellings), as such significant cumulative effects would not be expected. The TA that will be submitted in support of the planning application will also assess the impact the proposed development and the cumulative growth from other schemes within the borough, including those identified in Table 3.1 will have on the local highway network and set out the required mitigation measures if adverse effects are anticipated. Given the urban location of the site and the close proximity of existing public transport links, a Travel Plan for each scheme will be prepared to promote the use of sustainable transport modes, therefore significant effects on the local highway network are not anticipated. The new residential units will vary in size and tenure to meet the local housing demand. The proposed development will be designed to be high quality whereby the residential units will be more energy efficient and access to open space will be improved. The developments set out in Table 3.1 also comprise of similar uses, therefore, similar

Part 1 - Question	Part 2 - Answer to the question and explanation of reasons (Yes/No or Not Known (?) or N/A)		Part 3 - Is a Significant Effect Likely? (Yes/No or Not Known (?) or N/A)	
				socio-economic effects are anticipated. On this basis, cumulative socio-economic benefits are anticipated.
Transboundary Effects				
13.1 Is the project likely to lead to transboundary effects?	N	No.	N/A	

4 CONCLUSION

4.1 The screening assessment has considered whether the development of up to 1,550 residential dwellings, up to 5,000sqm of flexible commercial/community floorspace, and extensive public realm and landscaped areas on 4ha of land at Dollis Hill is likely to give rise to significant effects on the environment.

4.2 The proposed development falls within Schedule 2, 10 (b) of the EIA Regulations, as an urban development project. The site is not located within a sensitive area as defined by the EIA Regulations and is less than 5 ha in size but falls above the indicative criteria and screening threshold of more than 150 dwellings. It should be noted that the PPG states that only a very small minority of Schedule 2 development will require EIA.

4.3 With regard to the indicative criteria and thresholds identified in the PPG (set out in Table 2 above) the proposals would exceed the 1,000 dwelling threshold but falls under the 10,000 sqm of commercial floorspace threshold.

4.4 It is considered that the principal environmental effects from the proposed development would relate to the height of the proposed buildings, construction traffic movements and associated noise and air quality emissions, although as set out in Table 3 above, these effects could be managed in accordance with standard methods, including the implementation of a CEMP.

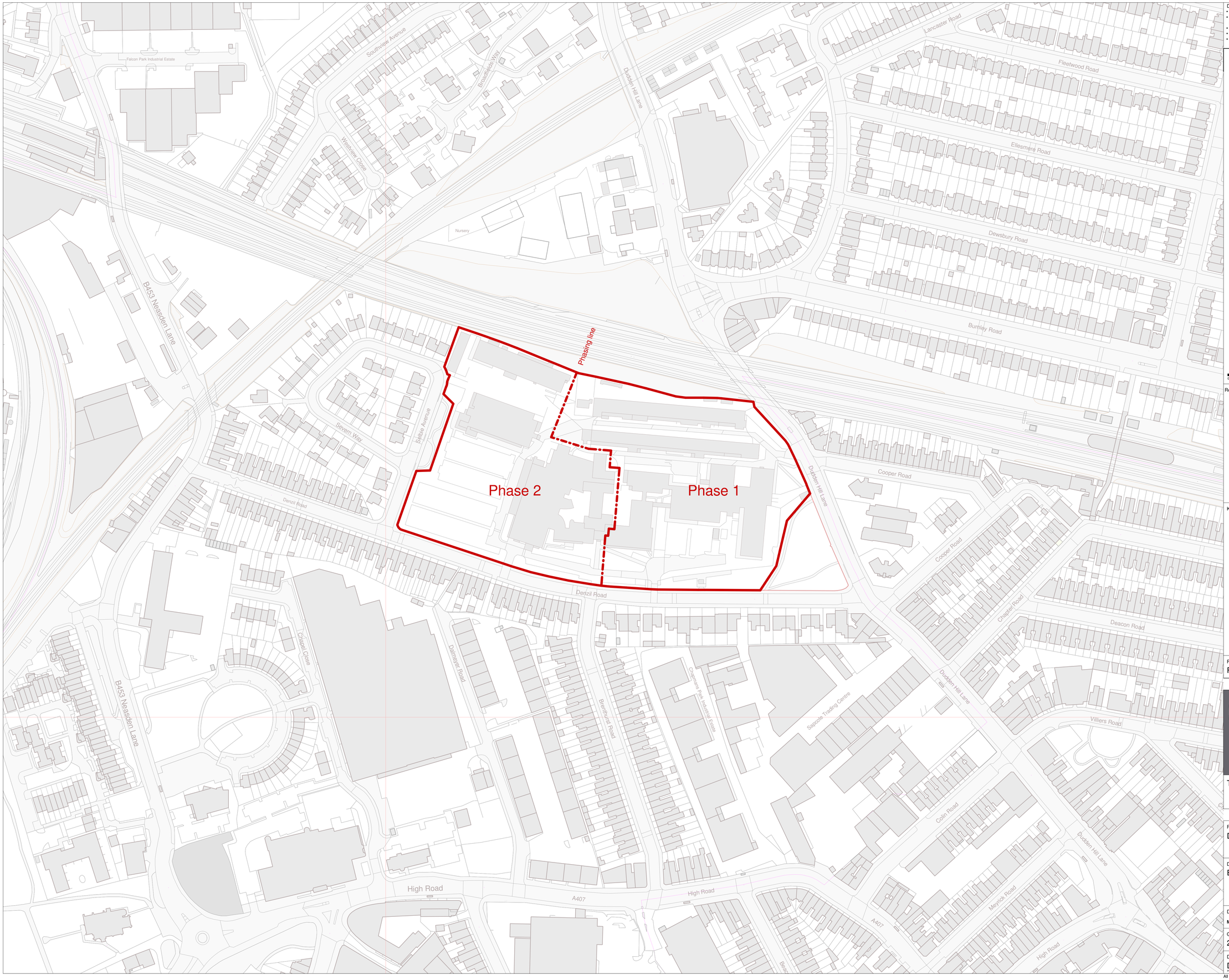
4.5 In summary, the screening assessment has identified that significant effects on the environment are not considered likely. Even though the proposals would be tall when considered cumulatively with other future developments, the scheme will be sensitively designed to reduce the potential for adverse effects on surrounding receptors. The site is also located within an urban area, with recent and future development coming forward which is of increased height. The effects that may arise could be appropriately managed in accordance with standard methods. The proposed development is therefore not considered to be formal EIA development as defined by the EIA Regulations.

4.6 The planning application will be supported by a suite of environmental and other technical reports, including:

- Transport Assessment
- Framework Travel Plan
- Outline Delivery and Servicing Plan
- Sustainability Statement
- Energy Strategy including Overheating assessment

- Whole Lifecycle Carbon Assessment
- Circular Economy Statement
- Wind Microclimate Assessment
- Flood Risk Assessment
- Sustainable Drainage Strategy
- Foul Sewage and Utilities Assessment
- Tree Survey/ Arboricultural Impact Assessment
- Noise Impact Assessment
- Air Quality Neutral Assessment
- Refuse Disposal and Recycling Strategy
- Sunlight and Daylight Assessment
- Biodiversity Assessment including Net Gain Strategy
- Lighting Strategy and Assessment
- Heritage, Townscape and Visual Impact Assessment (HTVIA)
- Retail Impact Assessment
- Landscape Strategy including Urban Greening Factor Score
- Fire Strategy

APPENDIX A
SITE LOCATION PLAN



Disclaimer:
- Do not scale from this drawing.
- Discrepancies must be reported immediately to the Architect before proceeding.
- Only figured dimensions are to be used.
- Check all dimensions on site before fabrication or setting out.
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KEY

CNWL Site, Dollis Hill application

Phasing line

1:1000
0 10 20 50 m

Rev:	Notes:	Date:	Dwn:	Iss:

Key / Location:

N

Purpose of Issue:
FOR INFORMATION

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THE HILL GROUP

Project:
DOLLIS HILL

Drawing Title:
Existing Site Location Plan

Drawn by:	Issued by:	Date of First Issue:
MA	SB	10/24/22

GRID Project No:	Scale @A1:
21013	1:1250

Drawing No: DOL-GRD-ZZ-00-DR-A-PL001 (Project Author Zone Level Type Discipline Drawing No.)
Revision:

APPENDIX B
PRELIMINARY ECOLOGICAL APPRAISAL AND EXTERNAL BAT SCOPING SURVEY

GEOSPHERE ENVIRONMENTAL

REPORT NUMBER: 5936,EC,PEA,BAT SCOPE,RH,RF,KL,03.11.21,V1

SITE: Willesden Campus, Denzil Road, Dudden Hill Lane, London, NW10 1BJ

DATE: 03/11/2021

DOCUMENT CONTROL SHEET

Report Number:	5936,EC,PEA,Bat Scope,RH,RF,KL,03.11.21,V1
Client:	The Hill Group
Project Name:	Willesden Campus, Denzil Road, Dudden Hill Lane, London, NW10 1BJ
Project Number:	5936,EC
Report Type:	Preliminary Ecological Appraisal and Bat Scoping Survey
Status	Final
Date of Issue:	03 November 2021

Issued By:

Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ.
T: 01603 298 076 / 01473 353 519. W: www.geosphere-environmental.co.uk

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Time Limit of Reliance:

Please note that the reported surveys were conducted on the date(s) stated in the report and that it represents site conditions at the time of the visit. The findings and recommended mitigation are based on these conditions. If site conditions change materially after the site survey, the original report cannot be relied upon and will need to be updated. Ecological reports can typically be relied on for 18 to 24 months from the date of survey.

Prepared By:	Reviewed By:	Authorised By:
Rachel Hall Ecologist	Richard Fenna Senior Ecological and Arboricultural Consultant	Katie Linehan Technical Director of Ecology

VERSION RECORD

Version	Date	Document Revision Details	Prepared By:	Admin

Non-Technical Executive Summary

Report Description		This Preliminary Ecological Appraisal report has been prepared by Geosphere Environmental Limited for The Hill Group and relates to the proposed residential development of the site at Willesden Campus, Denzil Road, Dudden Hill Lane, London, NW10 1BJ. This report also details the results of a preliminary bat roost assessment. The purpose of this report is to identify potential ecological constraints to development, particularly in relation to potential legally protected species onsite, confirm the need for further survey work to confirm all baseline ecological conditions, if necessary and highlight opportunities for ecological enhancement.
Summary of Main Findings		The site comprises: Buildings and hardstanding, Scattered trees, Amenity Grassland, Bare ground, Dense scrub, Introduced shrub, Scattered scrub, Earth bank, Ephemeral and Intact species-poor hedgerow. The findings of the extended Phase 1 Habitat Survey confirm that the habitats onsite have the potential to support Badger, roosting and foraging bats, nesting birds and reptiles. The site is not considered suitable for Dormouse, Riparian Mammals or Great Crested Newt.
Ecological Constraints		The constraints to development will be the removal of habitats considered suitable for protected species, including trees, scrub and hedgerows suitable for foraging bats, Badger, Hedgehog, nesting birds and structures suitable for roosting bats. Constraints may also be applicable regarding the adjacent SINC along the northern boundary.
Avoidance measures & Timings of Works to reduce impact		Bat Foraging: Vegetation along the northern boundary, and adjacent habitat off site should be retained and protected from impacts of increased lighting. Ideally, these areas should remain as unlit as possible during and post development works. If the northern boundary vegetation is to be impacted by the development, then further bat foraging surveys will be required to establish an ecological baseline. Birds: Any clearance of vegetation, or buildings that support suitable nesting features, should be timed to avoid the bird breeding season (March-August inclusive). If this is not possible, these habitats can only be removed following confirmation by a suitably qualified Ecologist that they are not in active use by nesting birds. This should be detailed within an Ecological Method Statement.

		Reptiles: An Ecological Method Statement should be produced prior to clearance/disruption of the dense scrub along the northern boundary of the site, and for the removal of any rubble piles onsite. The Method Statement should include timings and details of the clearance methods and post clearance maintenance methods (including a toolbox talk to all site staff involved) to minimise the risk of harm to reptiles, if present. Hedgehog: An Ecological Method Statement should be prepared and should detail methods to protect hedgehogs during vegetation clearance and rubble pile removal. Hedgehog friendly fencing should be incorporated into the final design.
Further Survey Work Required		The following are recommended at the appropriate time of year to establish an ecological baseline: • Bat Activity survey on buildings with potential roost features namely: Gibbs, Brunel and B3; • B1, B2 and a chimney structure (adjacent to Austin Building) had restricted access at the time of survey due to the presence of dense scrub. A full PRA assessment of these structures is recommended once localised vegetation clearance to facilitate this is undertaken. • If impacts for foraging bats cannot be avoided through appropriate lighting design, further bat foraging surveys will be required. • Tree T1 has Moderate bat roost potential, therefore a tree climbing survey should be undertaken if this tree is to be impacted upon through increased lighting or removal. The surveys below should be undertaken prior to the commencement of works onsite: • Pre-construction Badger check; and • Nesting bird checks will be required if vegetation removal/building demolition is undertaken within the nesting bird season (as detailed above).
Biodiversity Enhancement Opportunities		The following has been recommended for consideration within the final development scheme: • Planting of native plant species beneficial to wildlife; • Incorporation of bat and bird boxes; • Log piles/hibernacula to enhance the site post-development; and • Biodiversity Net Gain (Metric calculations will likely be a requirement of planning, in order to show that net gain can be achieved).
Conclusions		The recommendations within Section 7 of this report should be adhered, to reduce the impact on protected species. Provided the recommendations within Section 7 of this report are undertaken and mitigation measures adhered to, then potential negative impacts on protected species, if present, will be negligible.

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1. INTRODUCTION

This Preliminary Ecological Appraisal report has been prepared by Geosphere Environmental Limited for The Hill Group and relates to the proposed residential development of the site at Willesden Campus, Denzil Road, Dudden Hill Lane, London, NW10 1BJ. This report also includes an external bat scoping survey of the buildings onsite and any trees likely to be influenced by development. Internal inspection was also undertaken of the builds, where access was permitted.

The report relates to the proposed development of the 4 hectare (ha) site as shown on the Landscape Plan – Excerpt from: 21013 Plans Presentation 2021-07-15 high, included within Appendix 3. The site is located at National Grid reference TQ218851.

The development boundary is shown on Figure 1 below:

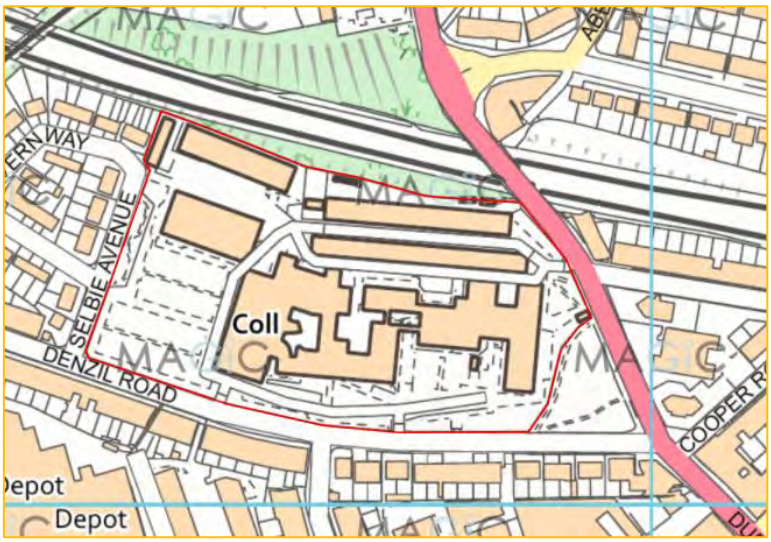


Figure 1 –The proposed development boundary is outlined in red

Any limitations and conditions pertaining to the report are stated within Appendix 1, with a full list of technical references provided within Appendix 2.

1.1 Site Background and Previous Surveys

An Ecology Assessment was undertaken by Campbell Reith Hill Ltd on 25th April 2016 (ref. R.1). The surveys reported that the habitats present onsite included: buildings, hardstanding, demolished building, amenity grassland, bare ground, permanent fencing, temporary fencing, introduced shrub, earth bank, dense scrub, scattered scrub, hedgerows and scattered trees. These habitats were identified as having suitability for the following fauna species: Nesting Birds, Bats, Wild Mammals and Reptiles.

Several Schedule 9 invasive species were identified onsite including Tree Cotoneaster (*Cornus ligno*), Wall Cotoneaster (*Cotoneaster horizontalis*), Himalayan Cotoneaster (*Cotoneaster simonsii*) and Small-leaved

Cotoneaster (*Cotoneaster microphyllus*). Butterfly-bush (*Buddleja davidii*) was also listed, though this is not a schedule 9 species.

1.2 Aims

This report has been produced to provide an updated ecological assessment of the ecological features of the site and identifies any potential constraints with regards to protected species. It also outlines recommendations for further surveys if necessary.

2. LEGISLATIVE AND POLICY CONTEXT

2.1 Current UK Legislation

The main legislation that applies to ecological issues within England and Wales is as follows:

- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 transposes 'The Conservation of Habitat and Species Regulations 2017', regarding the conservation of natural habitats and of wild fauna and flora (formally the EC Habitats Directive). Under the regulations, public bodies have a duty in exercising their functions to provide for the protection of 'Habitats Sites' and 'European Protected Species' (EPS).
- The Wildlife and Countryside Act 1981, (WCA) (as amended) provides detail on a range of protection and offences relating to wild birds, other animals, and plants. The level of protection depends upon which Schedule of the Act the species is listed on. Licences are available for specific purposes to permit actions that would otherwise constitute an offence in relation to species.
- The Natural Environment and Rural Communities, (NERC), Act 2006 imposes an obligation on all public bodies, including local authorities, to consider whether their activities can contribute to the protection of wildlife. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England and states that: "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity."

Species-specific legislation is detailed within Appendix 4.

2.2 Planning Policy

The recommendations of this report are in line with the key principles of the Ministry of Housing, Communities and Local Government (MHCLG) (2021) National Planning Policy Framework (NPPF) (ref. R.2) and Government Circular 05/06: Biodiversity and Geological Conservation – (ref. R.3).

Local planning policies relating to ecology are invariably based upon the conservation of species protected under the above legislation, including species and habitats of principal importance listed under Section 41 of the NERC Act 2006; and the protection of designated sites.

All of these features are considered within the scope of this Preliminary Ecological Appraisal and therefore any recommendations made herein, are likely to be in line with this policy.

3. METHODOLOGY

3.1 Technical Approach

The Preliminary Ecological Appraisal has been undertaken following guidelines provided by CIEEM's Guidelines for Preliminary Ecological Appraisal (ref. R.4) and BS 42020: 2013 Biodiversity standards (ref. R.5) to provide an indication of the ecological value of the site and the potential for the site to be used by protected species.

Scientific names and common names of plant species identified are as they appear in Stace, (ref. R.6).

The conclusions and recommendations for further works are in accordance with current legislation and guidance.

3.2 Ecological Desk Study

A data search was conducted of freely available biological records. The sources of information included:

- The Multi-Agency Geographic Information for the Countryside (MAGIC) online database (ref. R.7) was consulted to obtain geographic information on key statutory designated nature conservation sites of relevance to the site.
- Greenspace Information for Greater London CIC (GiGl) was contacted to provide details of legally protected species and non- statutory designated conservation sites within 1km of the site. Only records of protected species from within the last ten years are considered within this report.
- Ordnance survey maps were used to identify ponds/ditches within 500m of the site to assess the potential for Great Crested Newt (GCN) within the immediate vicinity of the site.

All relevant desk study data obtained is attached in Appendix 5, except for detailed lists of species given the sensitive nature of the information.

The following reports previously produced for the site were reviewed in the PEA process:

- Campbell Reith Ecological Appraisal Report, referenced, AHah-12368-060516-WillesdenCampus-PEA-F1 (ref.R.1)

3.3 Preliminary Ecological Appraisal

The surveys used to inform the Preliminary Ecological Appraisal comprise of a Phase 1 Habitat and Protected Species Scoping Survey, more often referred to as an extended Phase 1 Habitat Survey.

An extended Phase 1 Habitat Survey of the site was undertaken on 5 October 2021 by Rachel Hall (Ecologist) BSc (hons) Natural England Level 1 Bat Class Survey Licence (2020-6136-CLS-CLS) Natural England Great Crested Newt Survey Licence level 1 (WML-CL08- licence number 2018-36580-CLS-CLS).

The weather conditions at the time of the survey were 90% cloud cover, gentle breeze (Beaufort Scale 3) and an approximate temperature of 12°C.

The Phase 1 Habitat Survey involved a walkover of the site in which the habitats are classified according to JNCC Phase 1 Habitat Survey guidelines, (ref. R.8). The frequency and cover of each species identified as they are distributed in each habitat is estimated using the DAFOR scale, (ref. R.9), as follows:

- Dominant - >75% cover;
- Abundant – 51-75% cover;
- Frequent – 26-50% cover;
- Occasional – 11-25% cover;
- Rare – 1-10% cover;
- Locally dominant (LD), abundant (LA) and frequent (LF) is also used where the distribution is patchy.

The site was assessed for its suitability to support protected species and other species of conservation importance, which could pose a planning constraint. All signs and areas of habitat considered suitable for protected species or those of conservation interest, were recorded and photographed. These include burrows, droppings, footprints / paths, hairs, refuges and particular habitat types, such as ponds, known to be used by certain class of fauna. Any mammal paths found were noted down and followed where possible. Sites are taken in the context of their surroundings and so include the immediate environs outside of site boundaries, where appropriate.

All ponds within 500m of the site were also assessed for their suitability for Great Crested Newt (*Triturus cristatus*) if the ponds were publicly accessible or if access had been granted prior to the survey. This includes a habitat suitability index (HSI) assessment (ref. R.10) which assesses the pond based upon a number of factors including the size, water quality, permanence, shading, presence of fish, the number of nearby ponds and macrophyte cover. A score between 0 and 1 is given; where 0 represents poor suitability and 1 represents excellent suitability.

3.4 Bat Scoping Survey

The bat scoping survey has been undertaken by Rachel Hall (Ecologist) (Bat Survey Licence number: Bat Class Survey Licence 2020-6136-CLS-CLS) and was undertaken at the same time as the ecological walkover.

The scoping survey for bat roost potential was undertaken in accordance with Bat Conservation Trust (BCT), JNCC and Natural England guidelines (refs. R.11, R.12 and R.13 respectively).

If bats or any other European protected species are found to be present onsite and the proposed activities will cause disturbance or destruction of a roost site then this report will only summarise the potential requirements. For works to continue a detailed mitigation plan with appropriate compensation measures would be required and a development licence would need to be sought from Natural England.

3.4.1 External Inspection of Buildings

A visual inspection of the buildings was undertaken to identify the suitability of the building to provide potential roost space for bats. In particular, potential access points and evidence of bats were searched for. This was carried out in full day light with the aid of binoculars, endoscope, torch and ladders to identify the following features:

- Age and structure of the building;
- Condition of the roof noting any missing, dislodged or lifted tiles that would provide entry;
- Condition of the walls, doors and windows that may also provide entry;
- Windowsills, walls and sheltered areas are searched for bat droppings;
- Grease marks, scratch marks and urine staining around possible entry points.

3.4.2 Internal Inspection of Buildings

This section of the survey focuses on identifying features or areas which provide the correct environmental conditions for roosting bats and the evidence of bat activity. These include:

- Identifying dark, warm undisturbed areas normally in the roof space such as, joins in traditional roof joists and beams, behind the ridge beam or roofing felt and any cracks or crevices in the bricks or stone work that could be utilised as a roost site;
- The walls, floor and any flat areas such as on top of beams were examined for bat droppings, feeding remains and bat corpses.

3.4.3 Inspection of Trees

All established trees that could be accessed onsite were inspected and assessed in terms of their suitability (negligible, low, moderate or high) to support roosting bats, in line with the Bat Conservation Trust (BCT) survey guidelines (ref. R.11).

3.5 Ecological Impact Assessment

The ecological evaluation and impact assessment detailed below is based upon CIEEM Guidelines for Ecological Impact Assessment in the United Kingdom, (ref. R.14).

CIEEM Guidelines state that the value or potential value of an ecological resource or feature should be determined within a defined geographical context from an international to site scale as follows:

- On an International scale, e.g. Ramsar, SAC or SPA site;
- On a UK scale, for example a SSSI or a National Nature Reserve, (NNR);
- On a National scale, e.g. a reserve of importance to England/Northern Ireland/Scotland/Wales;
- On a Regional scale, e.g. a local site with important regional habitats or UKBAP species;

- On a County scale, e.g. a local site with a habitat that is characteristic of the County or rare on a County scale, or with LBAP species;
- On a District scale, e.g. a site with wildlife corridors likely to improve the biodiversity of the area;
- Local or Parish, e.g. areas of green space in a predominantly urban environment;
- On a Site scale, e.g. habitats with value within the zone of influence only.

The potential for protected species to use the habitats onsite contributes significantly towards the potential value of the habitats onsite.

4. DESK STUDY RESULTS

4.1 Nature Conservation Sites

There are no designated sites within the site boundary.

4.1.1 Non-Statutory Sites

Biological records have confirmed the presence of 10 non-statutory designations within the 1km search radius. The closest of which is Metropolitan line between Kilburn and Neasden located adjacent to the northern boundary of the site. The site is 4.14 hectare (ha) comprising Bare ground, Ruderal, Scattered trees, Scrub, Semi-improved neutral grassland and Tall herbs. Access is not possible and the site can only be viewed from adjacent paths or the road.

4.1.2 Statutory Sites

One statutory designated nature conservation site, designated a Site of Special Scientific Interest (SSSI) is located within 5km of the site. Brent Reservoir SSSI is a 69.37ha site comprising wetland and waterside habitats and is located 1.7km north of the site. The primary interest of the SSSI is breeding habitat for wetland birds and in particular for significant numbers of nesting Great Crested Grebe (*Podiceps cristatus*), notable plants include Common Spotted Orchid (*Dactylorhiza fuchsia)* and Greater Spearwort (*Ranunculus lingua)*. This SSSI is separated from site by, residential housing and roads.

4.1.3 Habitats Sites

No SAC, SPA or Ramsar where identified within a 5km search.

4.2 Protected Species Records

There are multiple records of protected and notable species listed within 1km of the site returned from GiGL. Absence of records should not be taken as confirmation that a species is absent from the search area.

Table 1 provides a summary below:

Table 1 – Selected Protected Species Records

Common Name	Scientific Name	Biological Records Within 1km	Date of Most Recent Record	Protective Status *
Amphibian				
Great Crested Newt.	*Triturus cristatus*	Yes	2012	HabsDir, WCA Sch 5 + 6, Priority species.
Reptile				
Common Lizard.	*Zootoca vivipara*	No	-	WCA Sch 5, Priority species.

Table 1 – Selected Protected Species Records				
Common Name	Scientific Name	Biological Records Within 1km	Date of Most Recent Record	Protective Status *
Slow Worm.	*Anguis fragilis*	Yes	2002	WCA Sch 5, Priority species.
Adder.	*Vipera berus*	Confidential record	-	WCA Sch 5, Priority species.
Grass Snake.	*Natrix Helvetica*	No	-	WCA Sch 5, Priority species.
Mammal				
Badger.	*Meles meles*	Confidential record	-	PBA.
Otter.	*Lutra lutra*	No	-	HabsDir, WCA Sch 5 + 6, Priority species.
Water Vole.	*Arvicola amphibius*	No	-	HabsDir, WCA Sch 5 + 6, Priority species.
Hedgehog.	*Erinaceus europaeus*	Yes	2020	WCA Sch 6, Priority species.
Barbastelle Bat.	*Barbastella barbastellus*	No	-	HabsDir, WCA Sch 5 + 6, Priority species.
Brandt's Bat.	*Myotis brandtii*	No	-	HabsDir, WCA Sch 5 + 6.
Whiskered Bat.	*Myotis mystacinus*	No	-	HabsDir, WCA Sch 5 + 6.
Natterer's Bat.	*Myotis nattereri*	No	-	HabsDir, WCA Sch 5 + 6.
Serotine Bat.	*Eptesicus serotinus*	No	-	HabsDir, WCA Sch 5 + 6.
Noctule Bat.	*Nyctalus noctula*	Yes	2018	HabsDir, WCA Sch 5 +6, Priority species.
Leisler's bat.	*Nyctalus leisleri*	No	-	HabsDir, WCA Sch 5 + 6
Soprano Pipistrelle.	*Pipistrellus pygmaeus*	Yes	2019	HabsDir, WCA Sch 5 + 6, Priority species
Common Pipistrelle.	*Pipistrellus pipistrellus*	Yes	2020	HabsDir, WCA Sch 5 + 6.
Nathusius's pipistrelle.	*Pipistrellus nathusii*	Yes	2018	HabsDir, WCA Sch 5 + 6.
Brown Long-eared Bat.	*Plecotus auritus*	Yes	2020	HabsDir, WCA Sch 5 + 6, Priority species
Daubenton's bat	*Myotis daubentoniid*	Yes	2020	HabsDir, WCA Sch 5 + 6.
Hazel Dormouse.	*Muscardinus avellanarius*	No	-	HabsDir, WCA Sch 5 + 6, Priority species.
Plants				
Dwarf Juniper (*Juniperus communis subsp.* NERC *A*ct Section 41) *Nana*), Galingale (*Cyperus longus*), Dittander (*Lepidium latifolium*), Rock Whitebeam (*Sorbus rupicola*) which are Nationally Scarce, however, these records where all over 10 years old.				
Invertebrates				
Several NERC Act Section 41 species were returned within the Biological records, including Garden Tiger (*Arctia caja*), Spinach (*Eulithis mellinata*), Brinled Beauty (*Lycia hirtaria)*, Cinnabar (*Tyria jacobaeae*) White Ermine (*Spilosoma lubricipeda*) and Buff Ermine (*Spilosoma lutea*) however, these records where all over 10 years old. Stag beetle (*Lucanus cervus)* which is a Hab&Spp Dir Anx 2 NERC Act Section 41 was recorded in 2019.				
Birds				
3 WCA Schedule 1 species were returned within the Biological records including Redwing (*Turdus ilacus*), Bluethroat (*Luscinia svecica*) and Fieldfare (*Turdus pilaris*). As well as this, 4 UKBAP species were also returned, including Song				

Table 1 – Selected Protected Species Records				
Common Name	Scientific Name	Biological Records Within 1km	Date of Most Recent Record	Protective Status *
Thrush (*Turdus philomelos*), Mistle Thrush (*Turdus viscivorus*) and Western Yellow Wagtail (*Motacilla flava*). Raptors have been excluded from the desk study as the data is deemed sensitive and confidential.				
Notes: *WCA Sch 1 - Wildlife and Countryside Act (1981) Schedule 1. WCA Sch 5 - Wildlife and Countryside Act (1981) Schedule 5 (Killing, injuring and sale of certain species), WCA Sch 6 - Wildlife and Countryside Act (1981) Schedule 6 (Animals which may not be killed or taken by certain methods), WCA Sch 8 - Wildlife and Countryside Act (1981) Schedule 8 (Plants which are protected), Priority species- species listed within UK Biodiversity Action Plan Species, and Natural Environment and Rural Communities Act (2006) Section 41. Species and Habitats of Principal Importance. PBA - Protection of Badgers Act (1992). HabsDir- Conservation of Habitats and Species Directive (2010) Annex II, Annex IV. BoCC Red / Amber - Birds of Conservation Concern - Red or Amber listed.				

4.3 Habitat Suitability Index Assessments

There are no ponds within 500m of the site. A drain (Drain 1) was highlighted within 500m of the site Drawing ref. 5936,EC/001/Rev0 within Appendix 3. Drain 1, is deemed separated from the site so Habitat Suitability Index (HSI) was not undertaken.

5. FIELD SURVEY RESULTS

The results of the Phase 1 habitat survey and protected species scoping survey are detailed below and annotated on Drawing ref. 5936,EC/002/Rev0, attached in Appendix 3. Descriptions of the target notes (TN) are included in Appendix 6 and bat scoping photographs in Appendix 7.

5.1 Site-Specific Limitations

Due to the time of year the survey was undertaken (October), some plant species are not identifiable. However, this does not affect classification of habitats present.

The northern boundary of the site is overgrown with dense scrub so the lone surveyor did not enter these areas. Where access was not practicable, observations of habitats as far as possible were used to inform the Phase 1 plan and recommendations herein.

5.2 Phase 1 Habitat Survey

The following habitat types were recorded within the survey area:

- Buildings and hardstanding;
- Scattered trees;
- Amenity Grassland;
- Bare ground;
- Dense scrub;
- Introduced shrub;
- Scattered scrub;
- Earth bank;
- Ephemeral; and
- Intact species-poor hedgerow.

These habitats outlined above and are discussed in more detail below.

5.2.1 Habitat Within the Development Zone

The majority of the site comprises buildings, hardstanding, amenity grassland and scattered trees. Scattered tree species include: Grey Poplar (*Populus x canescens*), Ornamental Cherry (*Prunus sp.*), Copper Beech (*Fagus sylvatica f. purpurea)* and Sycamore *(Acer pseudoplatanus)* (TN1).

Some areas of amenity grassland and bare ground area previously highlighted by Campbell Reith (ref. R.1) have now succeeded to scattered scrub comprising locally dominant Bramble (*Rubus sp.*) and Butterfly-bush (*Buddleia davidii*) with unmanaged amenity grass with dominant grass species and rare occurrences of Cleavers (*Galium aparine),* Dandelion (*Taraxacum officinale*), Ribwort Plantain (*Plantago lanceolate*) and Common Mallow (*Malva sylvestris*) (TN2). A chimney and debris was noted within the scrub, however

access was not available within this area due to dense scrub and Heras fencing in order to confirm whether a building structure was also present.

The area along the northern boundary was inaccessible due to very dense scrub. Dense scrub on site is dominated by Bramble and Butterfly-bush (TN3) with frequent Common Nettle (*Urtica dioica),* Dog Rose *(Rosa canina),* Hawthorn *(Crategus monogyna)* and Elder (*Sambucus nigra*). The earth banks described within the former Campbell Reith report (ref. R.1) were obscured by the dense scrub.

Introduced shrubs were identified along the western boundary (TN4) comprising several ornamental shrub species such as occasional Viburnum (*Viburnum* sp.*)*, Oregon-grape (*Mahonia* sp.), Wall Cotoneaster (*Cotoneaster horizontalis*), Himalayan Cotoneaster (*Cotoneaster simonsii*) and Small-leaved Cotoneaster (*Cotoneaster microphyllus*).

Scattered trees including; Pedunculate Oak (*Quercus robur),* Sycamore and Hawthorn were identified along the eastern boundary (TN5) along with debris and a service building.

A small area of Ephemeral with species such as White Clover (*Trifolium repens*), Common Nettle (*Urtica dioica*) and Butterfly-bush, were identified near the southern boundary of the site by the Gibbs building.

A species poor hedgerow borders Building 3 (B3) comprising Sycamore and Hawthorn.

6. SPECIES APPRAISAL

6.1 Plants

No records of rare plants were returned within biological records and no evidence of any rare plants was noted during the site survey.

All of the plant species recorded at the site are common and widespread native or naturalised species or else ornamental, non-native species, including a minority of invasive species within the areas of introduced shrub. Small-leaved Cotoneaster, Himalayan Cotoneaster, and Wall Cotoneaster which are listed in Schedule 9 of the Wildlife and Countryside Act 1981 and is subject to Section 14 of this Act. It is an offence to plant or cause this species to grow in the wild.

It should be noted that additional plant species may be present at the site at other times of the year. That said, given the nature of the identified habitats (i.e. themselves common and widespread) within and immediately adjacent to the proposed works areas, no notable plant species are expected within the affected areas. The site's proposed re-development is therefore expected to be unconstrained by notable flora.

6.2 Invertebrates

The majority of areas that will be impacted are of low species diversity, including species-poor scrub and amenity grassland vegetation and are unlikely to support an assemblage of rare invertebrates.

6.3 Bats

6.3.1 Buildings

Selected photographs of the scoping survey are included in Appendix 7 and details of the potential roost features identified and their suitability are provided in Table 2 below:

Table 2 – Bat Roost Suitability of Buildings

Ref. No.	Building Description	Potential Roost Feature	Bat Roost Suitability
Telford Building	Multi-story new build with flat roof design, multi material structure.	No obvious potential roost features observed.	Negligible.
Austin Building	Corrugated metal walls and flat metal roof.	Some gaps observed between corrugated metal observed, however, these were deemed unsuitable for bats.	Negligible.
Chimney	A brick chimney (TN2) was observed east of the Austin Building, access was restricted due to dense scrub and heras fencing and therefore full features could not be assessed.		Further PRA required for chimney structure.

Table 2 – Bat Roost Suitability of Buildings			
Ref. No.	Building Description	Potential Roost Feature	Bat Roost Suitability
Gibbs Building	A three-story building, with a pitched slate and corrugated metal roof. The Single-story extension also had a corrugated metal roof.	Areas of lifted roofing sheeting, gaps were observed under lead flashing and slate tiles.	Low
Fawcett Building	A multi-story Concrete and metal walls, pitched slate roof with skylights.	No obvious potential roost features observed.	Negligible
Brunell Building	A single-story building with red brick walls, pitched corrugated metal roof.	Gaps observed in brickwork on chimney, gaps under wooden soffits and hole within brickwork in wall. Note- access to the north facing aspect of the building was not available due to dense scrub.	Low
Curie Building	A single-story building with red brick walls, pitched corrugated metal roof.	No obvious potential roost features observed.	Negligible
B1	Due to dense scrub the building was not accessed. Previous reports (R.1) describe building as two one story modular cabins in a state of disrepair**.	Previous survey described as: lifting walls and gaps between the wall structure and roof**.	Features observed suggest bat roost potential**
B2	Due to dense scrub the building was not accessed. Previous surveys by describe building as a one-story modular cabin consisting of concrete**.	Building was described as to be in a state of disrepair**.	Features observed suggest bat roost potential **
B3	Two story building with brick walls and flat roof.	Gaps were observed within brickwork. Due to dense scrub some aspects had reduced visibility/access.	Low
B4	A new build with brick walls, flat roof with clear corrugated material.	No obvious potential roost features observed.	Negligible
B5	A single-story brick building with a pitched slate roof.	No obvious potential roost features observed.	Negligible
B6A	A single-story service building.	No obvious potential roost features observed.	Negligible
B6B	A single-story service building brick walls and flat concrete roof.	Large hole within brick walls but was deemed too large allowing exposure to weather.	Negligible
B7	Four shipping containers.	No obvious potential roost features observed.	Negligible
*based on external assessment unless stated otherwise **based on CampbellReith 2016 descriptions (ref. R.1)			

6.3.2 Trees

The preliminary roost assessment of the established trees onsite identified two trees of low or higher suitability to support roosting bats. The location of these trees is shown on Drawing ref. 5936,EC/002/Rev0, attached in Appendix 3.

Selected photographs of the scoping survey are included in Appendix 7 and details of the potential roost features identified in these trees and their suitability are provided in Table 3 overleaf:

Table 3 – Bat Roost Suitability of Trees (Ground Level Assessment)			
Ref. No.	Species	Potential Roost Feature/ direction and height on tree	Bat Roost Suitability
T1	Grey popular (*Populus canescens*)	Semi mature tree, with a hole within an old pruning wound, broken limb and potential cavity.	Moderate
T2	Ash leaved maple (*Acer negundo*)	A mature, alive tree with a slim crack along main stem, from ground level inspection it is unknown how deep crack goes into tree stem.	Low

6.3.3 Foraging

The majority of the site comprises hardstanding and buildings which provides little foraging opportunities for bats. The dense scrub and scattered trees along the northern boundary provides some suitable foraging routes which connect to the wider area via the boundary vegetation along the railway line north off site. The connectivity of the site with surrounding suitable habitats is not optimal as the majority of the site is surrounded by residential and industrial units all bar the northern boundary.

6.4 Amphibians

There are no ponds within 500m of the site. A drain (Drain 1) was highlighted within 500m of the site Drawing ref. 5936,EC/001/Rev0 within Appendix 3. Drain 1 is separated from the site so Habitat Suitability Index (HSI) was not undertaken.

The scrub on site provides potential terrestrial habitat for GCN, however, with no ponds onsite or with connectivity to the site, GCN are considered likely absent from the site.

6.5 Reptiles

The majority of the site is unsuitable for reptiles due to the large areas of hardstanding. A small section along the northern boundary was assessed as suitable for reptiles with connectivity to the wider area of suitable habitat along the railway. However, the habitat on site such as the scrub within the site boundary was particularly dense and therefore provided few basking opportunities. This area was deemed only likely to support transitional reptiles and unlikely to be able to support a population.

6.6 Birds

Birds that were noted during the survey included Magpie (*Pica pica*), Feral Pigeon (*Columba livia domestica*) and Greater Spotted Woodpecker (*Dendrocopos major*).

The buildings, trees, hedgerow and scrub provide suitable nesting habitat for common and widespread species. These habitats and the amenity grassland also provide suitable foraging habitat for birds.

6.7 Badger

The majority of the site comprises buildings and hardstanding which is unsuitable for Badgers, however, the dense scrub at the northern boundary provides some foraging and sett creating opportunities, and whilst no evidence of badger was found onsite, it is possible that setts could be present amongst the dense scrub or in other inaccessible areas onsite.

Evidence of fox *(Vulpes vulpes)* scat was noted along the northern boundary.

6.8 Dormouse

No records of Hazel Dormouse were returned in the desk study. Dormouse require a large area of connected habitat for a population to survive. The dense scrub and scattered trees within the site boundary and north of the boundary are potentially suitable for Hazel Dormouse, however are not of a sufficient quality to support a population of Hazel Dormouse in isolation. As such it is unlikely that the site supports a population of Hazel Dormouse.

6.9 Riparian Mammal

No watercourses were present near the site, as such the site was not suitable for Water Vole or Otter.

6.10 Hedgehog

The site provides suitable nesting and hibernating habitat for hedgehog in the scrub, introduced shrubs and hedgerow; as well as suitable foraging habitat in the amenity grassland. A palisade fence surrounds the majority of the site which could limit access for hedgehog, however, they may travel into site through larger gaps in the fencing or from the northern boundary/railway lines.

7. EVALUATION, CONSTRAINTS AND RECOMMENDATIONS

7.1 Proposed Development

The proposed development includes the construction of 1376 residential units over 19 floors, with landscaping and associated access. It is considered that all buildings on site will be demolished, and all habitats removed from the site to facilitate construction works.

7.2 Nature Conservation Sites

The desk study identified one nature conservation sites with statutory designation within 5km radius of the site, and ten non- statutory designated nature conservation sites within 1km radius of the site. No internationally protected sites, were noted within 5km. The development site falls within the Zone of Influence for the Brent Reservoir (SSSI); however, the proposed development does not meet the criteria for the LPA to consult Natural England. No potential impacts to Statutory or Habitats sites have been identified.

The northern boundary of development site lies adjacent to the non-statutory site Kilburn and Neasden Site of Importance for Nature Conservation (SINC) and includes scrub and scattered trees as the main habitat type which connects the SINC to the site providing a potential habitat connectivity between the SINC and the development site. Care should be taken to mark an accurate boundary of the developments scrub habitat and that of the SINC so that no habitat is lost from the designated site. A sensitive lighting scheme, and root protection plan for trees should also be considered with particular attention to the northern boundary. This should be included within an Ecological Method Statement (EMS) for the vegetation clearance works.

7.3 Habitat Constraints

The proposed development should aim to deliver a Biodiversity Net Gain, by including more habitat area, and better-quality habitat within the proposals, than are currently present onsite. Metric calculations will likely be a requirement of planning in order to show how that net gain can be achieved.

The ecological constraints regarding general habitats onsite are detailed within Table 4 overleaf, along with associated recommendations for avoidance and/or mitigation to reduce likely impact:

Table 4 – Habitat Constraints and Recommended Actions			
Habitat	Value/Importance	Impact without Appropriate Mitigation	Recommended Actions (Avoidance Measures or Recommendations to Reduce Impact)
Dense scrub and scattered trees along northern boundary	Although only a small section of habitat is present along the northern boundary it is adjacent to a SINC. The scrub and scattered tree habitat has ecological value, in particular as dispersal routes for wildlife as well as foraging potential for bats and nesting opportunities for birds.	If the site and SINC boundary is not accurately marked up then vegetation removal could occur within the SINC Unmitigated impacts would have an impact of site to district significance.	Mature trees should be retained where possible. Any trees or hedgerow that are removed during development should be replaced within the landscaping of the final development using similar species. Protection measures should be implemented according to BS 5837: 2012 'trees in relation to design, demolition and construction' (ref. R.15). The SINC should be protected during vegetation clearance. Methods to protect the SINC should be detailed within an Ecological Method Statement (EMS).
Introduced shrubs	Little to no value however it is recommended the Schedule 9 invasive species are removed.	N/A	Removal of the Schedule 9 invasive plant species within introduced shrubs habitat. Clearance during September to February only unless supervised by an Ecologist to avoid impact on nesting birds.

7.4 Legally Protected and Notable Species

The ecological evaluation and impact assessment for protected species is detailed Table 5 below:

Table 5 – Protected Species - Ecological Constraints and Recommended Actions

Ecological Constraint / Receptor	Biological Records Within 1km	Value of Supporting Feature	Impact without Appropriate Mitigation in Place	Recommended Actions (Avoidance / mitigation / compensation Measures and Recommendations for Further Works)	Timing Restrictions
Bats: Roosting- Buildings: • Gibbs; • Brunell; and • B3. Trees T1 and T2	Yes	The Gibbs, Brunell, and B3 were identified to have 'Low' bat roost potential. Potential tree roost features on T1 (moderate) and T2 (Low).	Site to district significance.	Vegetation clearance should be undertaken along the northern boundary of the site to facilitate access and allow for a full PRA assessment of buildings B1, B2, chimney structure (adjacent to Austin Building) and any trees which were unable to be accessed at the time of survey due to dense scrub. An Ecological Method Statement (EMS) should be produced prior to the vegetation clearance to avoid impact on protected species/ sites. One bat emergence and/or return surveys should be undertaken on buildings Gibbs, Brunell and B3 to confirm roosting. Should bats be confirmed roosting following the initial roost survey, additional surveys will be required to facilitate a mitigation licence. Survey results should be submitted alongside a planning application as required. A tree climbing survey under the supervision of a bat licenced ecologist is recommended to determine whether bats are roosting in the 'Moderate' tree T1 if this tree is to be impacted upon by the development through increased lighting or removal. No further surveys will be required for T2 (Low' BRP tree) to determine the planning application, though this, along with any trees with roost potential, should be assessed immediately prior to removal. Any additional trees identified during vegetation clearance which were unable to be accessed due to dense scrub during the initial PRA will also require a follow up PRA, with the potential for further surveys if any trees with moderate or higher bat roost potential are identified to be impacted.	No timing restriction for undertaking a PRA. Activity/roost surveys are restricted to May to September inclusive.
Bats: Foraging- Hedgerows and scrub, scattered trees around the northern boundary of the site	Yes	The foraging habitat on site is considered to be of low value as the majority of the site comprises hardstanding and buildings. Northern boundary vegetation when combined with the adjacent habitat off site offers suitable foraging commuting routes for bats.	Site to local significance.	Avoidance measures should be designed into the scheme to avoid negative impact. This should include: • Protection and retention of the foraging habitat on and adjacent to the northern boundary • A sensitive lighting scheme should be designed in coordination between a qualified lighting engineer and a suitably qualified Ecologist, according to current best practice guidelines (ref. R.16). This should ensure that foraging or commuting habitat (either retained or created within the development) remains as unlit as possible to allow continued and future use by bats. If the above avoidance measures cannot be implemented at the planning application stage then bat foraging surveys will be required to establish an ecological baseline prior to the planning determination. This should comprise one foraging survey per season (Spring, Summer and Autumn).	N/A providing avoidance measures are followed. One survey visit per season (Spring –April/May, Summer-June/July/August, Autumn-September/October).
Badger – Dense scrub, scattered scrub.	Yes	No Badger setts or foraging signs were identified within the site during the habitat survey; however, this species could use the site in the interim. Habitats are considered important on a site scale for this species.	N/A – at present	An EMS should be produced prior to clearance/disruption of the dense scrub along the northern boundary of the site. The method statement should include details of vegetation clearance to avoid impact to any badger setts that may be present. Further surveys will be required if Badger are discovered on site. General good working practices: Should construction works commence in excess of 6 months of the localised vegetation clearance, the site should be checked by an ecologist to ensure that badgers have not inhabited the site since the former site visit. All open excavations should be covered overnight to prevent entrapment of badgers or other mammals during development.	N/A Non - Pre-construction check can be undertaken anytime
Breeding Birds – scattered trees, hedgerow, buildings, dense and scattered scrub and introduced shrub.	Yes	Habitats offer value to breeding birds for common passerine birds and are considered important on a site scale.	Site scale	To ensure that no offences occur under the WCA, it is recommended that any vegetation and building demolition clearance work is undertaken outside of the bird nesting season. If it is not possible to undertake clearance works outside of the breeding bird season, a suitably qualified ecologist should be employed to determine if nesting birds are using the site prior to works commencing, to avoid negative impact on protected species. Any active nests that are found would need to be provided with a minimum of a 10m buffer which would have to be left until the young had fledged, (typically up to four weeks from eggs being laid for the garden and woodland species likely to be present). Clearance works within the area can recommence only once the nest is no longer in use. Detailed methods and timings for the works should be included within a development specific EMS.	Clearance during September to February only unless supervised by an Ecologist.

Table 5 – Protected Species - Ecological Constraints and Recommended Actions

Ecological Constraint/ Receptor	Biological Records Within 1km	Value of Supporting Feature	Impact without Appropriate Mitigation in Place	Recommended Actions (Avoidance/mitigation/compensation Measures and Recommendations for Further Works)	Timing Restrictions
Reptiles – Small section of scrub habitat along northern boundary	Yes	If present, the habitats would be considered to be of site to district importance for reptiles.	Site to local significance.	An EMS should be produced prior to clearance/disruption of the dense scrub along the northern boundary of the site, and for the removal of any rubble piles onsite. The Method Statement should include timings and details of the clearance methods and post clearance maintenance methods (including a toolbox talk to all site staff involved) to minimise the risk of harm to reptiles, if present.	Scrub clearance to just above ground level using hand tools can be undertaken over winter, however full clearance of root systems and debris piles restricted to active season (Apr-early Oct) to reduce impact on hibernating reptiles.
Hedgehog - hedgerows, dense and scattered scrub, debris and introduced scrub	Yes	Habitats onsite offer commuting, foraging and hibernation habitats suitable for Hedgehog.	Site	Reduction of impact: An EMS should detail methods to protect hedgehogs during vegetation clearance and rubble pile removal. If hibernation habitat (Rubble/debris piles) is cleared over winter (November to February) an Ecological clerk of works should be present to supervise works, to ensure Hedgehogs are not harmed during the works. General good working practices: Dense areas of scrub should be undertaken with an Ecologist supervision with a two-stage cutting procedure. Excavations during development or ground investigation works should be covered overnight to prevent entrapment of Hedgehogs. Mitigation: Hedgehog friendly fencing should be incorporated into the final design to allow Hedgehogs to continue to commute and forage in the local area. A 15cm diameter hole should be placed at the base of each fence, allowing all gardens and greenspace to be accessible to Hedgehog.	Hibernation habitat (scrub and debris) cleared outside the hibernation period (from April-October).
Invertebrates – scattered trees, hedgerow, buildings, dense and scattered scrub and introduced shrub	Yes	The habitats on site are considered important on a site scale for common species.	Site	Inclusion of landscape planting should ensure that common species of invertebrate still use the site post development.	N/A

8. GENERAL ENHANCEMENTS AND OPPORTUNITIES

The following general enhancements have been recommended to be included within the final development Scheme:

- Planting of native plant species beneficial to wildlife should be incorporated into the final design. This will provide additional habitat for invertebrates, which will in turn provide a food source for reptiles, birds, bats, and Hedgehog.
- The final development plan should incorporate bat and bird boxes into the scheme. This will provide additional roosting and nesting habitats for bats and birds post-development.
- Log piles/hibernacula should be placed in connectivity to the northern boundary vegetation onsite, enhancing the habitats onsite for both reptiles and invertebrates post-development.
- To help achieve Biodiversity Net Gain on the site, areas of natural habitat would need to be included within the scheme. Metric calculations will likely be a requirement of planning, in order to show that net gain can be achieved.

Examples of potential enhancement features are included as Appendix 8. Example plant lists are included as Appendix 9.

9. CONCLUSIONS

The proposed development will not adversely affect statutory designated nature conservation sites. The non- statutory designated nature conservation site Kilburn and Neasden adjacent to the northern boundary will require a careful boundary marking, sensitive lighting scheme and a root protection plan to ensure no impact.

None of the habitats that occur within the survey area were considered to have high ecological importance on an international, national, regional or county scale. The habitats onsite are of local significance only.

The findings of the extended Phase 1 Habitat Survey confirm that the habitats onsite have the potential to support reptiles (albeit limited), roosting and foraging bats, nesting birds, Hedgehog and Badger. The recommendations within Section 7 of this report should be adhered, to reduce the impact on protected species.

Lighting and vegetation/tree removal along the northern boundary may impact on foraging habitat for bats and will require additional investigation unless existing and proposed lux plans show acceptable levels of proposed baseline light levels across this habitat.

If roosting bats are to be impacted, a detailed mitigation strategy will be required to be provided to the Local Planning Authority prior to the determination of a planning application. Recommendations for mitigation should be in-line with CIEEM guidance (ref. R.14) for ecological impact assessment.

Vegetation clearance and earth moving works should be undertaken following an Ecological Method Statement with regards to Badgers, reptiles and nesting birds which should be detailed within a Construction Ecological Management Plan (CEMP).

To help achieve Biodiversity Net Gain on the site, areas of natural habitat would need to be included within the scheme. Metric calculations will likely be a requirement of planning, in order to show that net gain can be achieved.

Opportunities exist for the provision of ecological enhancements in the form of integrated bat/bird boxes on buildings and retained mature trees, log piles/hibernacula and the incorporation of locally-sourced native plant species, or those of known wildlife benefit, into the landscape strategy.

APPENDICES

Appendix 1 – Report Limitations and Conditions

General Limitations and Exceptions

This report was prepared solely for our Client for the stated purposes only and is not intended to be relied on by any other party or for any other use. No extended duty of care to any third party is implied or offered.

Geosphere Environmental Ltd does not purport to provide specialist legal advice.

The Executive Summary, Conclusions and Recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon until considered in the context of the whole report.

Interpretations and recommendations contained within the report, represent our professional opinions, which were arrived at in accordance with currently accepted industry practices at the time of reporting and based upon current legislation in force at that time.

Ecology Limitations and Exceptions

Any limitations associated with the report will be stated. The consequences of any limitations, findings and/or recommendations in the report are made clear in line with CIEEM (2013) 'Guidelines for Preliminary Ecological Appraisal' (GPEA) and BSI (2013) BS 42020:2013 Biodiversity – 'Code of practice for planning and development'.

This report is prepared and written in the context of the proposals stated in the introduction to this report and should not be used in a differing context.

The wildlife and habitats present on any site are subject to change over time. Surveys of this kind can have limited validity, with the possibility of behaviour patterns and territory boundaries varying over time, due to the dynamics of adjacent populations.

New information, improved practices and legislation may necessitate an alteration to the report in whole or in part after its submission. Therefore, with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to us for re-assessment and, if necessary, re-appraisal.

It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation of the natural environment.

The scoping survey does not assess the presence or absence of a species, but is used to assess the potential for habitat to support them. Additional surveys may be recommended if, on the basis of the preliminary assessment or during subsequent surveys, it is considered reasonably likely that protected species may be present.

This survey does not constitute an invasive species survey and should not be treated as such.

Owing to seasonal variances and prevailing weather, conditions may sometimes be sub-optimal for surveying and this may delay or disrupt planned survey programmes. If applicable, full details are given in the report.

Geosphere Environmental Ltd may not be aware of information that could be held by other organisations or individuals, and it is always possible for features of nature conservation interest to be unrecorded during surveys.

Scientific survey data will be shared with local biological records centre in accordance with the CIEEM professional code of conduct.

Appendix 2 – References

R.1. Campbell Reith Hill Ltd (2016) Collage of North West London, Willesden Campus, Preliminary Ecological Appraisal CAHah-12368-060516-WillesdenCampus-PEA-F1

R.2. Ministry of Housing, Communities and Local Government (MHCLG) (2021) National Planning Policy Framework (NPPF).

R.3. ODPM (2005) Government Circular: Biodiversity and Geological Conservation – statutory obligations and their impact within the planning system.

R.4. CIEEM (2013) Guidelines for Preliminary Ecological Appraisal (GPEA).

R.5. BSI (2013) BS 42020:2013 Biodiversity – Code of practice for planning and development. BSI Standards Limited 2013.

R.6. Stace, C. A. (2010). New Flora of the British Isles (third edition), Cambridge University Press.

R.7. Magic (2021).Site Check Report. (accessed online 01-11-2021) website: www.magic.gov.uk.

R.8. JNCC, (2010). 'Handbook for Phase I Habitat Survey: A technique for environmental audit' (reprint). Joint Nature Conservation Committee, Peterborough.

R.9. Goldsmith, B. (1991). Monitoring for Conservation and Ecology, Chapman & Hall.

R.10. Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal 10 (4), 143-155.

R.11. BCT (2016). 'Bat Surveys – Good Practice Guidelines' Bat Conservation Trust, London, 3rd edition.

R.12. JNCC (2004). 'Bat Workers Manual' 3rd edition. Joint Nature Conservation Committee, Peterborough.

R.13. English Nature (2004) Bat mitigation guidelines.

R.14. CIEEM, (2018). Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland

R.15. BS 5837 (2012), 'Trees in Relation to Design, Demolition and Construction'.

R.16. Institution of Lighting Professionals (2018) Bats and artificial lighting in the UK, Bats and the Built Environment series – Guidance Note 08/18

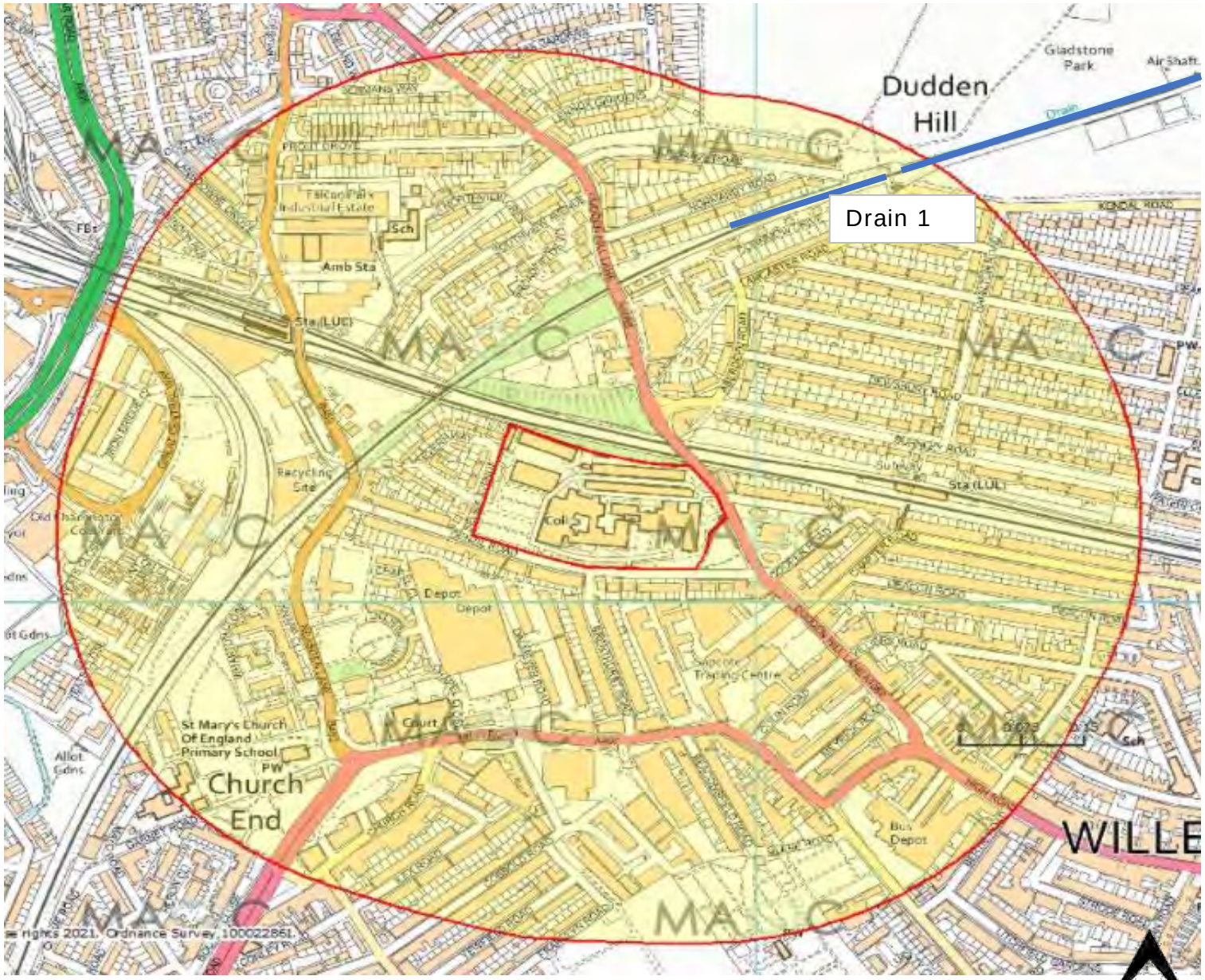
Appendix 3 – Drawings

Landscape Plan – Excerpt from: 21013 Plans Presentation 2021-07-15 high

Phase 1 Habitat Survey Plan – Drawing ref. 5936,EC/002/Rev0

Pond Location Plan – Drawing ref. 5936,EC/001/Rev0

Landscape Plan



GEOSPHERE ENVIRONMENTAL

LEGEND

- Site boundary
- 500m buffer
- Drain location

SOURCE

© OpenStreetMap contributors

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

TITLE

Pond Locations Within 500m

DRAWING NUMBER

5936,EC/001/Rev0

SCALE	DATE
As marked	03/11/2021
DRAWN BY	CHECKED BY
RH	KL

Legend Cont.

TN Target Note

T1 Trees with confirmed PRF

Phase 1 Habitat Map adapted from Campbell Reith (ref **R.1**)
Target Notes from 5936,EC, /PEA,BAT SCOPE

N

GEOSPHERE ENVIRONMENTAL

LEGEND

- Site Boundary
- Building
- Hardstanding
- A Amenity Grassland
- Hedgerow
- Scattered Trees
- Bareground
- Fencing
- Temporary Fencing / Hoarding
- Introduced Shrub
- Earthbank
- Dense Scrub
- Ephemeral
- Scattered Scrub
- Demolished Building, Restricted Site
- Restricted Access to Habitat

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

TITLE

Phase 1 Habiat Survey

DRAWING NUMBER

5936,EC/002/Rev0

SCALE	DATE
NTS	18/10/2021
DRAWN BY	CHECKED BY
RH	RF

Appendix 4 – Species-Specific Legislation

Badger

The Protection of Badgers Act 1992 exists for welfare reasons, to protect badgers from cruelty. Under the act it is a criminal offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so, or to intentionally or recklessly interfere with a sett.

Bats

All bat species are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. It is illegal to kill or injure bats, cause disturbance at their resting places or to block access to, damage or destroy their roost sites.

Great Crested Newts

Great Crested Newts are protected under the Wildlife and Countryside Act 1981 (as amended) Section 5 and the Conservation of Habitats and Species Regulations 2010. It is illegal to intentionally or deliberately kill, injure or capture Great Crested Newts or intentionally, deliberately or recklessly damage or destroy their breeding and resting places or obstruct access to their place of shelter or protection.

Hazel Dormouse

Hazel Dormice are protected under the Wildlife and Countryside Act 1981 (as amended) Schedule 5 and the Conservation of Habitats and Species Regulations 2010. It is illegal to intentionally or deliberately kill, injure or capture a Dormouse or intentionally, deliberately or recklessly disturb a Dormouse, or damage its breeding or resting place or obstruct its place of shelter or protection.

Otters and Water Voles

Otters are protected under the Wildlife and Countryside Act 1981 (as amended) Schedule 5 and the Conservation of Habitats and Species Regulations 2010. It is illegal to take, injure, kill or sell an otter, it is also an offence to damage, destroy or obstruct access to a resting place or disturb or harm an Otter at any time.

Water Voles are protected under the Wildlife and Countryside Act 1981 (as amended) Schedule 5. It is illegal to deliberately kill, injure, capture or disturb them or to destroy, damage or obstruct access to any places used for shelter or protection

White-clawed Crayfish

White-clawed Crayfish (*Austropotamobius pallipes*) are protected under the Wildlife and Countryside Act 1981 (as amended) Schedule 5, Sections 9(1) & 9 (5). It is an offence to intentionally take White-clawed Crayfish from the wild or to sell them. It is also a qualifying Annex II species for some Special Areas of Conservation under the Habitats Directive.

Birds

Wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). It is illegal to take or harm them, their nests (whilst in use or being built) or their eggs.

Additionally, for some species listed under Schedule 1 of the Act, it is an offence to intentionally or recklessly disturb the adults while they are in and around their nest or intentionally or recklessly disturb their dependent young.

Reptiles

Common reptiles include Slow-worm, Adder, Grass Snake and Common Lizard. These are protected under the Wildlife and Countryside Act 1981 (as amended) Schedule 5, Sections 9 (1) & 9 (5) only. It is illegal to kill or injure them.

It is not illegal to capture, disturb or to damage their habitats. However, the reptiles themselves are protected so any works to damage their habitat could risk causing harm to reptiles and hence could be illegal.

Rare reptiles which include Sand Lizard and Smooth Snake are restricted to a few locations in Britain and are fully protected under the Wildlife and Countryside Act 1981 (as amended) Schedule 5, Section 9 and the Conservation of Habitats and Species Regulations 2010. It is illegal to kill, injure or intentionally disturb them whilst occupying a 'place used for shelter or protection' and destruction of these places.

Appendix 5 – Desk Study Data

Site Check Report Report generated on Mon Oct 18 2021
You selected the location: Centroid Grid Ref: TQ21828511
The following features have been found in your search area:

Sites of Special Scientific Interest (England)

Name	Brent Reservoir SSSI
Reference	1000119
Natural England Contact	Conservation Delivery Team
Natural England Phone Number	0845 600 3078
Hectares	69.37
Citation	1003322
Hyperlink	http://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1003322

Ramsar Sites (England)
No Features found

Proposed Ramsar Sites (England)
No Features found

Special Areas of Conservation (England) - points
No Features found

Special Areas of Conservation (England)
No Features found

Possible Special Areas of Conservation (England)
No Features found

Special Protection Areas (England)
No Features found

Potential Special Protection Areas (England)
No Features found

Statutory sites within 5km radius

Legend

- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)

Projection = OSGB36
xmin = 499300
ymin = 173700
xmax = 543300
ymax = 196000

0 1 2
km

Map produced by MAGIC on 18 October, 2021.

Appendix 6 – Target Notes

Target Note 1

Target Note 2

Target Note 3

Target Note 4

GEOSPHERE ENVIRONMENTAL

NOTE

Target Note 1
View facing north of carpark; comprising hard standing, amenity grass and scattered trees.

Target Note 2
Area of scattered scrub and debris limited access (Previously amenity grass and ephemeral Campbell Reith 2016)

Target Note 3
Dense scrub at north of the site surrounding B3 preventing access to the northern boundary

Target Note 4
Areas of introduced shrub along western boundary

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5936,EC

TITLE

Ecological Target Notes Relating to Extended Phase 1 Habitat Survey

DATE

03/11/2021

Target Note 5

Target Note 6

GEOSPHERE ENVIRONMENTAL

NOTE

Target Note 5
Scattered trees along eastern boundary

Target Note 6
Service building along southern boundary

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5936,EC

TITLE

Ecological Target Notes Relating to Extended Phase 1 Habitat Survey

DATE

03/11/2021

Appendix 7 – Selected Bat Scoping Photographs

Photograph 1

Photograph 2

Photograph 3

Photograph 4

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 1

Telford Building (surveyor facing north)

Photograph 2

Austin Building on right, Telford building on left side of image (surveyor facing east).

Photograph 3

Gibbs Building (surveyor facing north east)

Photograph 4

Gibbs Building (north east facing aspect)

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5935,EC

TITLE

Selected Photographs Relating To PRA

DATE

01/11/2021

Photograph 5

Photograph 6

Photograph 7

Photograph 8

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 5
Gibbs Building with gaps under slate tile (north east facing aspect)

Photograph 6
North eastern aspect of Gibbs Buidling

Photograph 7
Fawcett Building (surveyor facing north)

Photograph 8
Fawcett Building with south/eastern facing aspect

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5935,EC

TITLE

Selected Photographs Relating To PRA

DATE

01/11/2021

Photograph 9

Photograph 10

Photograph 11

Photograph 12

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 9
Brunell building (southern facing aspect)

Photograph 10
Brunell building with missing brick and hole chimney

Photograph 11
Brunell building with missing brick for wiring, with potential access points within hole

Photograph 12
Brunell building with gaps under wooden soffits

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5935,EC

TITLE

Selected Photographs Relating To PRA

DATE

01/11/2021

Photograph 13

Photograph 14

Photograph 15

Photograph 16

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 13
Curie building north facing aspect

Photograph 14
B3 (south facing aspect)

Photograph 15
B3 with missing bricks

Photograph 16
B4 eastern facing aspect

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5935,EC

TITLE

Selected Photographs Relating To PRA

DATE

01/11/2021

Photograph 17

Photograph 18

Photograph 19

Photograph 20

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 17
B5 south western facing aspect

Photograph 18
B6A service building (TN6)

Photograph 19
B6A Security cabin

Photograph 20
B6B

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5935,EC

TITLE

Selected Photographs Relating To PRA

DATE

01/11/2021

Photograph 21

Photograph 22

Photograph 23

Photograph 24

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 21
Large hole within B6B

Photograph 22
B7 four shipping containers

Photograph 23
T1 Grey popular (*Populus canescens*) moderate BRP

Photograph 24
T1 Grey popular moderate BRP, holes/broken limbs and potential cavity

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5935,EC

TITLE

Selected Photographs Relating To PRA

DATE

01/11/2021

Photograph 25

Photograph 26

Photograph 27

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 25
T1 Grey popular (*Populus canescens*) moderate BRP, hole within old pruing wound

Photograph 26
T2 Ash leaved maple (*Acer negundo)* low BRP

Photograph 27
T2 Ash leaved mapel (*Acer negundo*) low BRP crack within main stem

PROJECT

Willesden Campus, Denzil Road, Dudden Hill Lane, London, NX10 2XD

PROJECT NUMBER

5935,EC

TITLE

Selected Photographs Relating To PRA

DATE

01/11/2021

Appendix 8 – Example Enhanced Features

EXAMPLE BAT BRICKS AND BOXES

GEOSPHERE ENVIRONMENTAL

Integrated Bat Box: **Ibstock Enclosed Bat Box 'B'**

Large 215 x 290mm

SOURCE
https://www.nhbs.com/ibstock-enclosed-bat-box-b

The Ibstock Enclosed Bat Box 'B' is designed for integration into the wall of new buildings or conservation projects and is intended to provide summer roosting space for pipistrelles specifically. It provides a discrete home for bats, with several roosting chambers to provide zones of differing temperatures within the box. The bats are contained within the box itself and the entrance at the bottom allows droppings to fall out, meaning that the box is maintenance free.

Integrated Bat Box: Standard bat Box

Bat boxes can be supplied in brick fronted, half bond and quarter bond brickwork or alternatively with a stainless-steel mesh fitted to the front. The mesh is designed for optimum adhesion in render and stonework applications. A basic version can be fitted directly behind weatherboarding or into studwork.

These bat boxes are best positioned in sunlit clusters, at a height of 3-6 metres and ideally facing a variety of aspects as bats will move around a building as the seasons change.

This product makes an ideal bat house for most of the UK's bat species, including Pipistrelles, who will use it for roosting, hibernating and (in maternity roosts) bringing up their young. The entrance hole and internal design can be tailored to suit different species of bat e.g. Bechstein's and Serotine.

The box is self-cleaning. The bat boxes are supplied with a non-removable front as standard.

SOURCE
http://www.birdbrickhouses.co.uk/brick-nesting-boxes/bat-box/

TITLE
Example Bat Bricks and Boxes

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External Bat Box: Schwegler 1FQ bat box

The structure of the 1FQ has been designed with bat behaviour in mind. For example, the outside of the front panel has been roughened to enable the animals to land and hang onto it securely. Access is via a step-like recess which enables even young and inexperienced bats, to safely access the box. The inside of the box has rough pieces of wood incorporated which provide good insulation and are also used by the bats as perches. The internal layout provides three different areas from which bats can hang and which offer different levels of light and temperature. There are also non-slip areas, gaps ranging from 1.5 to 3.5cm in width and various places for individuals to hide.

Installation of the 1FQ is achieved using the four screws and plugs provided. The back panel is initially screwed onto the wall (using four screws) and then the front panel is attached to this. It can easily be attached to most types of external brick, timber or concrete and can also be placed inside a roof space. (If fixing to timber then the gaps between the wall and the box should be sealed with silicone to prevent moisture being trapped here). The box should be positioned a minimum of three metres above the ground and where there is a clear flight path for bats entering and leaving. If desired, the front panel can be painted to match your building using an air-permeable paint.

SOURCE
http://www.nhbs.com/title/160551

External Bat Box: 1FF Schwegler Bat Box with Built-in Wooden Rear Panel

The Schwegler 1FF bat box is spacious enough for bats to use as a summer roost or nursery site and is open at the bottom, allowing droppings to fall out so it does not need cleaning. The 1FF is, therefore, especially suitable for hanging in inaccessible places such as high in trees, or on steep slopes and house walls.

The 1FF is manufactured from long-lasting Woodcrete, which is a blend of wood, concrete and clay which will not rot, leak, crack or warp, and will last for at least 20 - 25 years, making it suitable for long-term mitigation projects.

The inner dimensions of the 1FF have a reducing width making it ideal for bat species which inhabit crevices such as pipistrelle and noctule bats. For conservation projects and studies, the entire front of the box can be easily swung open for inspection purposes.

The 1FF bat box can be sited in trees or on buildings and is best positioned at a height of between 4 to 6 metres.

SOURCE
https://www.nhbs.com/1ff-schwegler-bat-box-with-built-in-wooden-rear-panel

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External Bat Box: 2F Schwegler Bat Box with Double Front Panel

This box has a front panel and a second inner wooden panel fitted to it to create a cavity wall. This provides ideal quarters for bats that inhabit crevices, such as Nathusius' Pipistrelle (*Pipistrellus nathusii*), Daubenton`s Bat (*Myotis daubetonii*) and the Common Pipistrelle (*Pipistrellus pipistrellus*).

It has been designed as a summer roosting space for bats and has a simple entrance hole at the front. The Schwegler 2F double front panel is removable and can be converted in to a bird nest box using a replacement 1B front panel if there is no evidence of bat activity after a couple of years. The 2F Double Front Panel is manufactured from long-lasting Woodcrete, which is a blend of wood, concrete and clay which will not rot, leak, crack or warp, and will last for at least 20 - 25 years, making it suitable for long-term mitigation projects. Woodcrete is breathable and maintains a stable temperature inside the box and the 2F is painted black to absorb warmth. It also provides a good rough surface for bats to cling on to and climb.

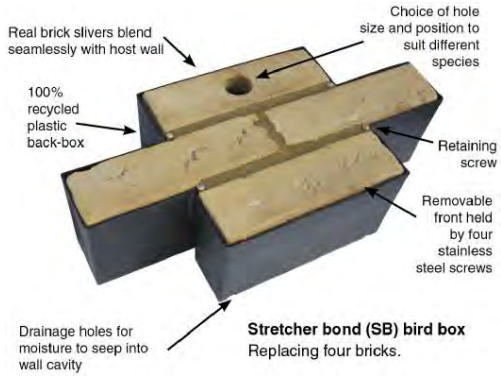
The 2F Double Front Panel bat box can be sited in trees or on buildings and is best positioned at a height of between 3 to 6 metres.

SOURCE
https://www.nhbs.com/2f-schwegler-bat-box-with-double-front-panel

Please note that once bats have inhabited a roost (integrated or external box) they may only be disturbed by licensed bat workers.

EXAMPLE BIRD BRICKS & BOXES

Integrated Bird Brick House: The Standard Box



This standard nesting box is suitable for House Sparrows and members of the Tit family. The single entrance hole allows the entire internal area to be available for nesting and roosting. The aperture size will vary according to the target species. For example, a 48 mm entrance hole can be produced to accommodate Starlings. The ideal internal depth is 140 mm, however if cavity width is limited, boxes can be manufactured with a reduced depth (minimum 100 mm).

SOURCE
http://www.birdbrickhouses.co.uk/brick-nesting-boxes/nesting-boxes/

Integrated Bird Brick House: Sparrow terrace box

This has the same external dimensions as the standard box but has two entrance holes and two separate compartments – ideal for the sociable nature of house sparrows. The terrace box is also suitable for Redstarts, Black Redstarts and Wagtails.

SOURCE
http://www.birdbrickhouses.co.uk/brick-nesting-boxes/nesting-boxes/

Integrated Bird Brick House: Swift box

This box has a crescent shaped hole to one side of the box, allowing swifts access but restricting use by starlings. Inside, a rough floor makes it easier for the birds to move around. The centre of the floor has a raised nest cup to assist the birds' nest building. The ideal internal depth of a swift box is 140 mm, however if cavity width is limited, boxes can be manufactured with a reduced depth (minimum 100 mm).

SOURCE
http://www.birdbrickhouses.co.uk/brick-nesting-boxes/nesting-boxes/

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Example Bird Bricks and Boxes

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External Bird House: 9A Schwegler House Martin Nest

These boxes should be installed under eaves on the external walls of buildings. Install on the sheltered side (north facing) of the building at a minimum height of 2m above the ground.

These nests can be used for years without cleaning. However, if possible it is recommended to inspect them frequently and to clean them when necessary. These Woodcrete nest boxes are famous for their durability - lasting for at least 20-25 years.

SOURCE
https://www.nhbs.com/9a-schwegler-house-martin-nest

External Bird House: 1SP Schwegler Sparrow Terrace

The Sparrow Terrace has been designed to help redress the balance of falling house sparrow numbers. The current UK population of 6 million pairs is half what it was in 1980 and this is thought to be due to habitat destruction and lack of suitable nesting spaces. Sparrows are social birds and like to nest in company. This terrace provides ideal nesting opportunities for three families and will last many decades. It may also occasionally attract tits, redstarts and spotted flycatchers.

The terrace can be fixed on to the surface of a suitable wall or incorporated into the wall. It is suitable for all types of houses in built-up areas, and on industrial and agricultural buildings such as barns, sheds and factories. Due to its weight (15kg), it is not suitable for fences or garden sheds. Ideally place the terrace two metres or more above the ground. Cleaning is advisable but not necessary.

SOURCE
https://www.nhbs.com/1sp-schwegler-sparrow-terrace

External Bird House: WoodStone Swift Nest Box

The FSC certified WoodStone Swift Nest Box is constructed entirely out of WoodStone meaning it is long lasting and won't rot away like a traditional wooden nest box.

Swift numbers are declining, in part because of the loss of nesting sites. Installing a swift box is a great way to help these birds and to ensure their continued presence in our surroundings. There is an opening at the back of the box for easy cleaning with the nest entrance on the underside of the box.

This type of entrance is preferred by swifts but discourages house sparrows and starlings from occupying the box. This box should be installed at least five metres above the ground, ensuring that there is unobstructed access for birds entering and leaving. If possible, boxes should be sited under the shelter of eaves or overhanging roofs.

SOURCE
https://www.nhbs.com/woodstone-swift-nest-box

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External Bird House: 1B Schwegler Bird Nest Box (General)

These Woodcrete nest boxes last for at least 20-25 years. Woodcrete is a breathable blend of wood, concrete and clay which will not rot, leak, crack or warp, whilst preventing condensation and maintaining more constant temperatures inside than wooden boxes.

Schwegler bird boxes are backed by conservation organisations, government agencies and forestry experts and experiments have shown that the highest density if bird populations (i.e. breeding pairs per hectare) is achieved with Schwegler nest boxes.

They are carefully designed to provide a stable environment and to mimic natural nest and roost sites with internal brood chamber dimensions that are similar to natural woodpecker cavities. Schwegler have a patented method of installation on trees that prevents the tree trunk from growing over the hanger from which the box is suspended.

SOURCE
https://www.nhbs.com/1b-schwegler-nest-box

TITLE
Example Bird Bricks and Boxes

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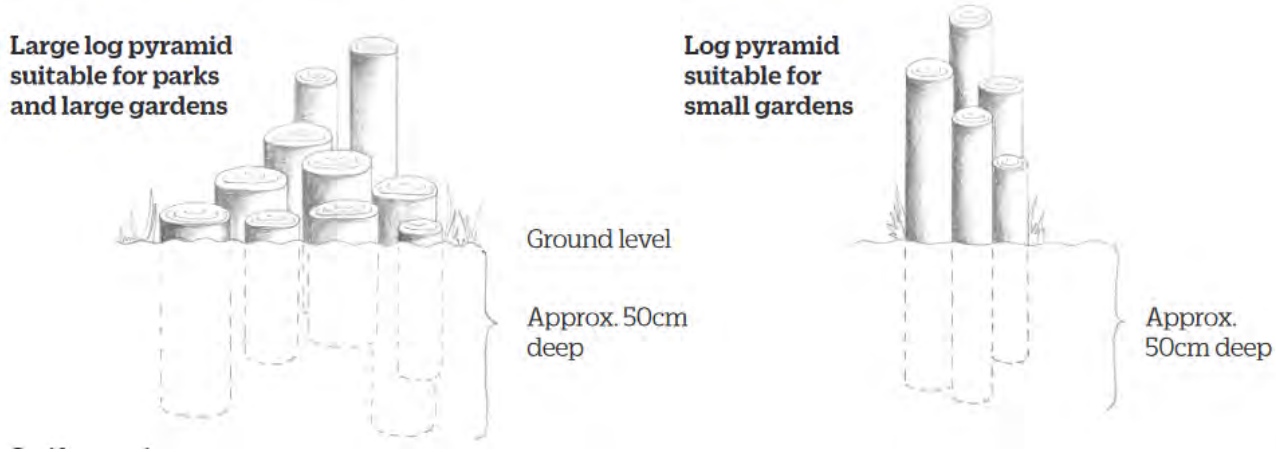
LOG PYRAMID AND LOG PILE GUIDANCE

1. LOG PYRAMID

Establishing the Log Pyramid

Where space is limited and log piles are deemed unsuitable, log pyramids can be created as shown below.

- Drill holes into some of the logs. Drill holes to various depths.
- Dig holes onto the ground ranging from 48cm deep to 60cm deep to give the pyramid shape. The final construction should be as shown below:



SOURCE
Log pyramid drawing copyright of https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf

2. STUMPERY

Taken and adapted from Dengarden: How to Make a DIY Stumpery in Your Garden - Dengarden - Home and Garden)

Stumpery creation involves replicating a forest floor using a mix of different sized wood stumps, logs and even driftwood. They are similar to a rockery, but made with parts of dead trees such as stumps and logs.

Dig a hole in the ground. 'Plant' your logs in it, orientated vertically, so that half the log is in the hole. Pack soil in the gaps of the hole to bury the bases of the logs. This will support species like Stag beetle that like damp submerged dead wood. Interplant with ferns and other shade loving plants and bulbs. Stumperies are strongly recommended if you live in Stag beetle hotspots such as the New Forest, Home Counties and East Suffolk

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Log Pyramid and Log Pile Guidance

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3. LOG PILES

Resourcing Logs

Any logs created during tree works on the site should be collected and added to the piles, or used to create additional piles. If there are not enough logs created during vegetation clearance, additional logs will need to be imported to the site. Logs should be locally sourced, "green" logs (untreated or dried).

Which Wood to Use

Logs at least 100mm diameter, and 1m long, with the bark still attached provide the best wood. Hard wood trees such as ash, oak and beech are particularly good. Birch logs can look particularly attractive.

Be careful of freshly cut willow and poplar logs, as these can easily re-sprout if left lying on the ground.

Establishing the Log Pile

Leaving woody cuttings from trees, shrubs and herbaceous plants in piles within a shrub bed is an ideal way of attracting invertebrate to site. The damp conditions behind peeling bark are very inviting for woodlice, spiders and beetles, while butterflies and ladybirds take up residence in the drier parts over winter. Log piles should be created by piling large logs into approximately 2m x 1m x 1m piles. Logs should be placed in a shallow pit, approximately 150mm deep. The soil/turf removed to create the pit, should be placed on top of the logs to provide a light cover of soil/turf.

It is best to not cut the wood into small pieces. Leave it in direct contact with the ground, in compact piles to maintain humidity. Larger diameter pieces are of most value, but even small twigs and branches should not be discounted.

GEOSPHERE ENVIRONMENTAL

REFERENCE
Log pyramid drawing copyright of https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf

TITLE
Log Pyramid and Log Pile Guidance

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Appendix 9 – Example Plant Lists

GENERAL PLANTS CONSIDERED BENEFICIAL TO WILDLIFE

The lists of plants below are taken from current Natural England guidance (ref. 1), a web-based data based managed on behalf of the RHS and the Wildlife Trusts (ref. 2) and professional judgement. When buying native plants, ensure they are from a reputable source, as many wildflowers are illegally taken from the wild.

Large Trees

Common Name	Latin Name	Common Name	Latin Name
Beech	*Fagus sylvatica*	Pedunculate Oak	*Quercus robur*
Wild Cherry	*Prunus avium*	White Willow	*Salix alba*
Bird Cherry	*Prunus padus*	Small-leaved Lime	*Tilia cordata*
Sessile Oak	*Quercus petraea*		

Medium/Small Trees

Common Name	Latin Name	Common Name	Latin Name
Field Maple	*Acer campestre*	Apples	*Malus* spp.
Alder	*Alnus glutinosa*	Pears	*Pyrus* spp.
Silver Birch	*Betula pendula*	Rowan	*Sorbus aucuparia*
Holly	*Ilex aquifolium*		

Other Shrubs for Nectar, Pollen or Fruits

Common Name	Latin Name	Common Name	Latin Name
Serviceberry	*Amelanchier canadensis*	Himalayan Honeysuckle	*Leycesteria formosa*
June Berry	*Amelanchier lamarckii*	Mahonia	*Mohonia* spp.
Californian lilac	*Ceanothus* spp.	Mock Orange	*Philadelphus* spp.
Japanese quince	*Chaenomeles japonica*	Firethorn	Pyracantha spp
Creeping Cotoneaster	*Cotoneaster frigidus*	Lilac	*Syringa vulgaris*
Daphne	*Daphne mezereum*	Laurustinus	*Viburnum tinus*
Hebes	*Hebe* spp.	Bodant Viburnum	*Viburnum x bodnantense*
Lavenders	*Lavandula* spp.		

Drought-Tolerant Herbaceous Plants

Common Name	Latin Name	Common Name	Latin Name
Onion	*Allium christophii*	Giant dead-nettle	*Lamium orvala*
False dittany	*Ballota acetabulosa*	Lavender	*Lavandula augustifolia*
Calamint	*Calamintha nepeta*	Myrtle	*Myrtus communis*
Giant scabious	*Cephalaria gigantean*	Honey garlic	*Nectaroscordum siculum*
Honeywort	*Cerinthe major* and *C. purpurascens*	Golden drops	*Onosma* spp.
Sun-roses	*Cistus* spp.	Marjoram	*Origanum vulgare*
Large-flowered Tickseed	*Coreopsis grandiflora*	Jerusalem sage	*Phlomis russeliana*
Crocus	*Crocus tommasinianus*	Rosemary	*Rosmarinus officinalis*
Cardoon	*Cynara cardunculus*	Winter savoury	*Satureja montana*

GEOSPHERE ENVIRONMENTAL

REFERENCE

1. Natural England (2007). Plants for Wildlife-friendly Gardens: NE29.
2. RHS and the Wildlife Trusts (2015). Gardening with Wildlife in Mind. http://www.joyofplants.com/wildlife/.

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General Plants Considered Beneficial To Wildlife

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Teasel	*Dipsacus fullonum*	Chile black scabious	*Scabious atropurpurea*
Coneflower	*Echinacea purpurea*	Stonecrops	*Sedum acre, S. anglicum, S. forsterianum* and *S. album*
Giant Echium	*Echium pininana*	Lamb's lung/ears	*Stachys olympica* and *S. lanata*
Sea-hollies	*Eryngium* spp.	Thyme	*Thymus vulgaris*
Escallonia	*Escallonia* spp.	Crimson clover	*Trifolium incarnatum*
Hebe	*Hebe* sp.	Tulip	*Tulipa* sp.
Rock-roses	*Helianthemum* spp.		

Native Wildflowers for Borders

Common Name	Latin Name	Common Name	Latin Name
Yarrow	*Achillea millefolium*	Toadflax	*Linaria vulgaris*
Agrimony	*Agrimonia eupatoria*	Yellow loosestrife	*Lysimachia vulgaris*
Corncockle	*Agrostemma githago*	Common mallow	Malva sylvestris
Chives	*Allium schoenoprasum*	Marjoram	*Origanum vulgare*
Harebell	*Campanula rotundifolia*	Common poppy	*Papaver rhoeas*
Cornflower	*Centaurea cyanus*	Cowslip	*Primula veris*
Greater knapweed	*Centaurea scabiosa*	Primrose	*Primula vulgaris*
Chicory	*Chichorium intybus*	White campion	*Silene alba*
Foxglove	*Digitalis purpurea*	Red campion	*Silene dioica*
Teasel	*Dipsacus fullonum*	Goldenrod	*Solidago virgaurea*
Sea hollies	*Eryngium* spp.	Devil's-bit scabious	*Succisa pratensis*
Lady's bedstraw	*Galium verum*	Tansy	*Tanacetum vulgare*
Meadow crane's-bill	*Geranium pratense*	Dandelion	*Taraxacum officinale*
Herb-robert	*Geranium robertianum*	Wild thyme	*Thymus drucei*
Dame's-violet	*Hesperis matronalis*	Great mullein	*Verbascum thapsus*
Field Scabious	*Knautia arvensis*	Germander speedwell	*Veronica chamaedrys*
Oxeye daisy	*Leucanthemum vulgare*	Spiked speedwell	*Veronica spicata*

Cultivated Plants for Borders

Common Name	Latin Name	Common Name	Latin Name
Alliums	*Allium* spp.	California poppy	*Eschscholzia californica*
Hollyhock	*Althaea rosea*	Snowdrop	*Galanthus nivalis*
Yellow alyssum	*Alyssum saxatile*	Sunflowers	*Helianthus* spp.
Grecian windflower	*Anemone blanda*	Christmas rose	*Helleborus niger*
Angelica	*Angelica archangelica*	Lenten rose	*Helleborus orientalis*
Snapdragon	*Antirrhinum majus*	Candytuft	*Iberis sempervirens*
Alpine rock-cress	*Arabis alpina*	Poached-egg plant	*Limnanthes douglasii*
Michaelmas daisies	*Aster* spp.	Hybrids sweet alyssum	*Lobularia maritime*
Lilacbush	*Aubrieta deltoidea*	Honesty	*Lunaria rediviva* or *annua*
Borage	*Borago officinalis*	Sweet bergamot	*Monarda didyma*
Pot marigold	*Calendula offinialis*	Grape hyacinth	*Muscari botryoides*
Red valerian	*Centranthus ruber*	Forget-me-not	*Myosotis* spp.
Wallflower	*Cheiranthus cheiri*	Tobacco plant	*Nicotiana sylvestris*
Corn marigold	*Chrysanthemum segetum*	Evening primrose	*Oenothera biennis*

GEOSPHERE ENVIRONMENTAL

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Basic General Purpose Meadow Mixture

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Cosmos	*Cosmos bipinnatus*	Phlox	*Phlox paniculata*
Spring crocus	*Crocus chrysanthus*	Black-eyed Susan	*Rudbeckia fulgida*
Sweet William	*Dianthus barbatus*	Scabious	*Scabiosa* spp.
Purple coneflower	*Echinacea purpurea*	Ice plant	*Sedum spectabile*
Globe thistle	*Echinops ritro*	French marigold	*Tagetes* spp.
Winter aconite	*Eranthis hyemalis*	Mulleins	*Verbascum* spp.
Fleabane	*Erigeron* spp.		

Plants for Shady Areas

Common Name	Latin Name	Common Name	Latin Name
Bugle	*Ajuga reptans*	Bluebell	*Hyacinthoides non-scripta*
Lords and Ladies/ Cuckoopint	*Arum maculatum*	Yellow archangel	*Lamiastrum galeobdolon*
Lilly of the Valley	*Convallaria majalis*	Daffodils	*Narcissus pseudonarcissus*
Foxglove	Digitalis purpurea	Primrose	*Primula vulgaris*
Wood avens	*Geum urbanum*	Sweet Violet	*Viola odorata*

Plants for Wildflower Meadows/ Intensive Green Roofs

Common Name	Latin Name	Common Name	Latin Name
Yarrow	*Achillea millefolium*	Poached-egg plant	*Limnanthes douglasii*
Corncockle	*Agrostemma githago*	Toadflaxes	*Linaria* spp.
Chives	*Allium schoenoprasum*	Flax	*Linum usitatissimum*
Yellow alyssum	*Alyssum saxatile*	Hybrids sweet alyssum	*Lobularia maritima*
Grecian windflower	*Anemone blanda*	Bird's-foot Trefoils	*Lotus* spp.
Snapdragon	*Antirrhinum majus*	Honesty	*Lunaria rediviva*
Alpine rock-cress	*Arabis alpina*	Yellow loosestrife	*Lysimachia vulgaris*
Michaelmas daisy	*Aster* spp.	Scentless Mayweed	*Matricaria recutita*
Red Orache	*Atriplex hortensis*	Black Medick	*Medicago lupulina*
Purpletop vervain	*Berbena bonariensis*	Forget-me-not	*Myosotis* spp.
Fingered Sedge	*Carex digitata*	Tobacco plant	*Nicotiana affinis*
Glaucous Sedge	*Carex flacca*	Love-in-a-mist	*Nigella damascena*
Cornflower	*Centaurea cyanus*	Oreganos	*Oreganum* spp.
Common Knapweed	*Centaurea nigra*	Common poppy	*Papaver rhoeas*
Greater knapweed	*Centaurea scabiosa*	Poppies	*Papaver* spp.
Red valerian	*Centranthus ruber*	Tunicflower	*Petrorhagia saxifraga*
Wallflower	*Erysimum cheiri*	Phlox	*Phlox paniculata*
Chicory	*Cichorium intybus*	Meadow-grasses	*Poa* sp.
Rock-roses	*Cistus* spp.	Cowslip	*Primula veris*
Larkspur	*Consolida* spp.	Yellow Rattle	*Rhinanthus minor*
Tickseed	*Coreopsis* spp.	Black-eyed Susan	*Rudbeckia hirta*
Cosmos	*Cosmos bipinnatus*	Common Sorrel	*Rumex acetosa*
Heath-grass	*Danthonia decumbens*	Sheep's Sorrel	*Rumex acetosella*
Teasel	*Dipsacus fullonum*	Ice plant	*Sedum spectabile*
Fleabane	*Erigeron* spp.	Stonecrops	*Sedum* spp.
Stork's-bills	*Erodium* spp.	White campion	*Silene alba*

GEOSPHERE ENVIRONMENTAL

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Wallflowers	*Erysimum* spp.	Red campion	*Silene dioica*
California poppy	*Eschscholzia californica*	Goldenrod	*Solidago virgaurea*
Spiky Fescue	*Festuca gautieri*	Devil's-bit scabious	*Succisa pratensis*
Lady's bedstraw	*Galium verum*	French marigold	*Tagetes* spp.
Dove's-foot Crane's-bill	*Geranium molle*	Tansy	*Tanacetum vulgare*
Meadow crane's-bill	*Geranium pratense*	Dandelion	*Taraxacum officinale*
Herb-robert	*Geranium robertianum*	Wild thyme	*Thymus drucei*
Heliotrope	*Heliotropium arborescens*	Red Clover	*Trifolium pratense*
Horseshoe Vetch	*Hippocrepis comosa*	Great mullein	*Verbascum thapsus*
Candytuft	*Iberis sempervirens*	Germander speedwell	*Veronica chamaedrys*
Field Scabious	*Knautia arvensis*	Spiked speedwell	*Veronica spicata*
Oxeye daisy	*Leucanthemum vulgare*		

Marginal Plants/Marshy Areas

Common Name	Latin Name	Common Name	Latin Name
Water plantain	*Alisma plantago-aquatica*	Water mint	*Menthe aquatica*
Marsh marigold	*Caltha palustris*	Bogbean	*Menyanthes trifoliate*
Cuckooflower	*Cardamine pratensis*	Water forget-me-not	*Myosotis scorpioides*
Lesser pond sedge	*Carex aucuparia*	Amphibious bistort	*Persicaria amphibia*
Water avens	*Geum rivale*	Water Plantain	*Alisma Plantago-aquatica*
Water violet	*Hottonia palustris*	Lesser spearwort	*Ranunculus flammula*
Rushes	*Juncus spp.*	Marsh woundwort	*Stachys palustris*
Ragged robin	*Lychnis flos-cuculi*	Brooklime	*Veronica beccabunga*
Creeping Jenny	*Lysimachia nummularia*		

Submerged Plants

Common Name	Latin Name	Common Name	Latin Name
Water starwort	*Callitriche*	Curled pondweed	*Potamogeton crispus*
Hornwort	*Ceratophyllum demersum*	Other pondweeds	*Potamogeton* spp.
Spiked water milfoil	*Myriophyllum spicatum*	Willow moss	*Fontinalis antipyretica*
Common water-crowfoot	*Ranunculus aquatilis*	Water-violet	*Hottonia palustris*

Floating Plants

Common Name	Latin Name	Common Name	Latin Name
Frogbit	*Hydrocharis morsus-ranae*	Broad-leaved pondweed	*Potamogeton natans*
Fringed water-lily	*Nymphoides peltata*	Water crowfoot	*Ranunculus aquatilis*
Amphibious bistort	*Persicaria amphibian*	Yellow waterlily	*Nuphar lutea*

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Basic General Purpose Meadow Mixture

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GEOSPHERE ENVIRONMENTAL

Ec Ecology.

Fr Flood Risk.

Ge Geotechnical.

En Environmental.

Kw Knotweed.

GEOSPHERE ENVIRONMENTAL LTD

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APPENDIX C
NOISE AND VIBRATION IMPACT ASSESSMENT

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Architectural & Environmental Acousticians

Noise & Vibration Engineers

Noise and Vibration Impact Assessment

Dollis Hill, Willesden

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Noise and Vibration Impact Assessment

Project: DOLLIS HILL, WILLESDEN

Report reference: RP01-22229-R0

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REVISION	ISSUE DATE	REPORT BY	CHECKED BY	NOTES
0	27 May 2022	William Lewis, BSc, Acoustics Consultant	Adam Bamford, BSc MIOA DipIOA, Principal Acoustics Consultant	Work in progress draft issued to project team
1	07 September 2022	Laura Broadley, MSc AMIOA, Acoustics Consultant	Adam Bamford, BSc MIOA DipIOA, Principal Acoustics Consultant	Initial issue

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1. EXECUTIVE SUMMARY

1.1 Cass Allen has been instructed by Hill Partnerships Ltd to assess the noise and vibration impact of a proposed new development at Dollis Hill in Willesden, London.

1.2 The assessment was carried out in accordance with relevant local and national planning guidance.

1.3 A noise and vibration survey were carried out at the site. Noise levels at the site are dictated by road traffic noise emissions from the A4088 and train passes on the adjacent railway line.

1.4 Noise affecting the development has been assessed in accordance with the ProPG guidance. The design of the development is considered to be acceptable subject to the adoption of acoustically upgraded glazing and ventilation. This can be investigated further at the detailed design stage and may be secured by the imposition of a noise related planning condition by the Local Planning Authority.

1.5 Ground-borne vibration levels at the site have been measured and are considered to be acceptable for the development.

1.6 Appropriate limits for noise from mechanical plant have been calculated based on measured noise levels at the site and guidance given in BS4142. This will be investigated further at the detailed design stage and may be secured by the imposition of a noise related planning condition if deemed necessary by the Local Planning Authority.

1.7 In summary of the above it is our view that the site is suitable for the development in terms of noise and vibration levels and that planning permission should be granted subject to the imposition of suitable planning conditions.

2. INTRODUCTION

2.1 Cass Allen has been instructed by Hill Partnerships Ltd to assess the noise and vibration impact of a proposed new development at Dollis Hill, Willesden.

2.2 The assessment has been carried out in accordance with relevant local and national planning guidance.

2.3 The aims of the assessment were:

- To establish the suitability of existing noise and vibration levels at the site for the proposed development;
- Where required, identify appropriate measures to optimise the acoustic design of the development and achieve acceptable noise and vibration levels in habitable areas;
- To assess the required level of sound insulation between commercial and residential parts of the development;
- To assess the potential impact of noise emissions from mechanical plant and operational activities associated with the development at the positions of existing sensitive receptors in the area.

2.4 This report contains technical terminology; a glossary of terms can be found at www.cassallen.co.uk/glossary.

3. PROJECT DESCRIPTION

3.1 The site currently contains a campus of the College of North West London and is located in a mixed-use area. The site is bounded to the east by the A4088, to the south by Denzil Road, and to the west by Selbie Avenue. To the north of the site is a railway line (London Underground - Jubilee and Metropolitan Lines). The site is surrounded on the east, south, and west by residential areas, however there are commercial units in close proximity to the site and existing residential areas.

3.2 The site location is shown in Figure 1 below.

Figure 1 Site Location and Surrounding Area

3.3 The proposal is to develop the site into mixed ground floor use (retail, gym, restaurant, café, residential etc.) and residential dwellings to the upper floors. A current drawing of the proposed development layout is shown in Appendix 1.

3.4 The development forms part of the wider Neasden Stations Growth Area (Brent Council Local Plan – Policy BEGA1 – February 2022).

4. PLANNING POLICY

National Policy

4.1 Outline guidance for the assessment of noise affecting new developments is given in the National Planning Policy Framework (NPPF). Relevant sections in this case are highlighted below:

> *174. Planning policies and decisions should contribute to and enhance the natural and local environment by … preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of …noise pollution.*
>
> *185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

Local Policy

4.2 The development is subject to criteria laid out in The London Plan (March 2021), which details the approach to noise impact mitigation that must be undertaken for new noise sensitive development.

> *Policy D14 Noise*
>
> *A In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:*
>
> *1) avoiding significant adverse noise impacts on health and quality of life*
>
> *2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change*
>
> *3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses*
>
> *4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)*
>
> *5) separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation*

6) *where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles*

7) *promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.*

B *Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations.*

4.3 Brent Borough Council's Supplementary Planning Document (SPD) – *Design Guide* (November 2018) also provides outline guidance to be followed in the assessment of noise affecting new development in the borough.

Principle 5.5: Buildings and spaces should be designed to minimise potential noise and light pollution.

…Developments should minimise and mitigate the existing and potential adverse impacts of noise. BS4142 2014 emphasises the "characteristics" of sound as well the sound levels, for example the annoyance and repetition. These are particularly useful when assessing developments next to dual carriageways, railways, commercial (early morning deliveries at supermarkets and late night noise at nightclubs and bars) and industrial developments.

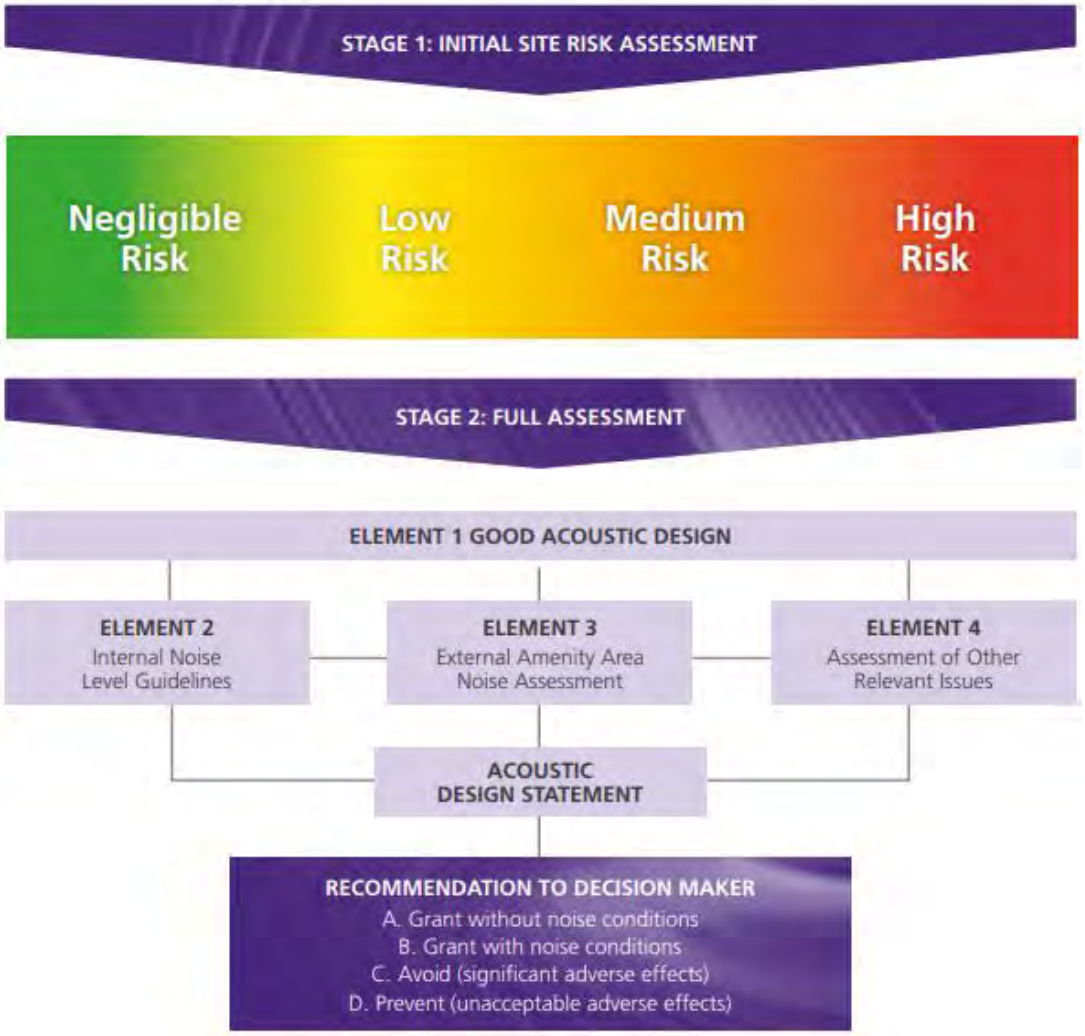
5. NOISE AFFECTING THE DEVELOPMENT

5.1 Specific guidance on the assessment of noise affecting new residential development is given in ProPG: Planning and Noise for New Residential Development, May 2017 (ProPG). The process within the ProPG guidance for the appraisal of noise levels affecting new residential development is considered to be current 'best practice' and has, therefore, been followed for the assessment. The assessment process can be summarised as follows:

- Stage 1 – measure noise levels at the site and carry out an initial noise risk assessment of the proposed development site based on the measured levels.
- Stage 2 – where a higher noise risk is identified, carry out a detailed assessment including the following four considerations:
    - Element 1 – the overall acoustic design and layout of the site
    - Element 2 – internal noise levels in habitable areas
    - Element 3 – noise levels in external amenity areas
    - Element 4 – consideration of other relevant issues
- Based on the results of the Stage assessment, provide a recommendation to the decision maker on whether planning permission can and should be granted.

5.2 The process is shown visually in Figure 2 below

Figure 2 ProPG Assessment Process



5.3 It should be noted that the guidance in ProPG relates primarily to noise from transportation sources, i.e. road traffic, aircraft, rail etc. Any significant noise from other sources (e.g. industrial, commercial or entertainment sources) is outside the scope of the ProPG guidance and, therefore, requires separate consideration.

Stage 1 – Noise survey and initial assessment

5.4 A noise survey was carried out at the site between 20th and 25th April 2022 to assess existing noise levels in the area. The full methodology and results of the noise survey are provided in Appendix 2.

5.5 Average (LAeq) and maximum (LAmax) noise levels across the site were generally dictated by road traffic on A4088 and train passes on the adjacent railway line. Average noise levels at the southern edge of the site were also affected by vehicle movements on Denzil Road.

5.6 Maximum noise levels at the site were dictated by train passes on the adjacent railway line and vehicle passes on surrounding roads.

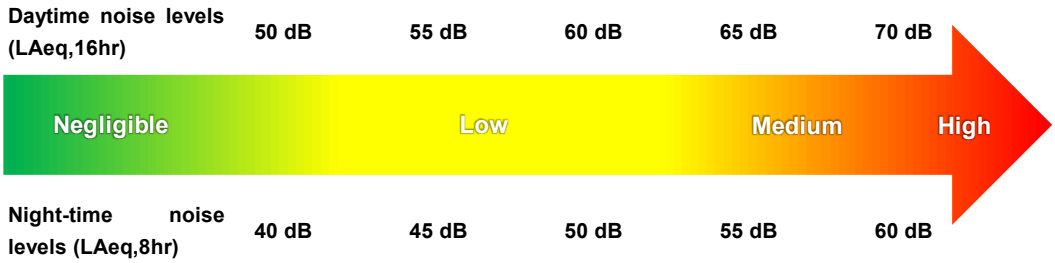
5.7 Background noise levels (LA90) across the site were dictated by constant road traffic noise from surrounding roads and train passes on the adjacent railway line.

5.8 Areas of the development at the northern edge of the site will be subject to the highest noise levels as a result of vehicle moments on the A4088 and train passes on the adjacent railway line. The noise survey results show that noise levels at this position are as follows:

- Average noise levels during the daytime - 68 dB LAeq,0700-2300hrs;
- Average noise levels during the night-time - 63 dB LAeq,2300-0700hrs;
- Typical maximum noise levels during the night-time - 84 dB LAmax.

5.9 The measured noise levels can be compared with Figure 3 below to assess the 'noise risk' of the site. Where the noise risk is high, significant acoustic design measures may be required to achieve acceptable noise levels in the development. Where the noise risk is low, acceptable noise levels may be achievable with no specific acoustic design measures.

Figure 3 Noise Risk Assessment (Adaption of Figure 1 from ProPG)



5.10 It can be seen from a comparison of the measured noise levels in paragraph 5.8 above with Figure 3 that the site is 'Medium-High' risk in relation to daytime noise levels and 'High' risk in relation to night-time noise levels. Therefore, ProPG requires that a more detailed 'Stage 2' assessment is carried out.

Stage 2 – Element 1 – Overall acoustic design of the site

5.11 The overall design of the development has been reviewed in relation to the measured noise levels at the site. In this case, improving the sound insulation of the facades would offer potential improvements to the acoustic design of the development.

5.12 The treatment of the facades with noise mitigation is an acceptable approach. It is in line with current planning guidance, where the efficient use of land and the need for housing is a priority. The detailed design of the facades is discussed further below.

Stage 2 – Element 2 - Internal noise levels

5.13 Appropriate design criteria for acceptable noise levels in acoustically sensitive areas of new developments are given in BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*'.

5.14 Relevant BS8233 design criteria are summarised in Table 1 below.

Table 1 BS8233:2014 Internal Noise Criteria

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB LAeq,16hour	-
Dining	Dining room/area	40 dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16hour	30 dB LAeq,8hour

5.15 It is also considered appropriate in this case to assess the potential impact of noise emissions from individual noise events on the bedrooms of the development during the night-time. This is in line with guidance given in BS8233:2014 and ProPG, which both point out that regular individual noise events during the night have the potential to cause sleep disturbance.

5.16 Appropriate design criteria for acceptable maximum noise levels in habitable rooms of new residential developments are given in the ProPG guidance, which states that "*In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB LAmax,F more than 10 times a night.*"

5.17 Therefore, the following acoustic design criteria have been adopted for the development:

- Average noise levels in living rooms and dining rooms during the day should not exceed 35 dB LAeq,0700-2300hrs and 40 dB LAeq,0700-2300hrs respectively;
- Average noise levels in bedrooms should not exceed 35 dB LAeq,0700-2300hrs during the day and 30 dB LAeq,2300-0700hrs during the night;
- Maximum noise levels should not regularly exceed 45 dB LAmax in bedrooms during the night.

5.18 Full construction details for the development have not been finalised as the project is at an early design stage. It has therefore been assumed that the external walls of the development will be constructed using a standard masonry construction (e.g. 102mm brick, 100mm insulated cavity, 100mm concrete block) or a light-weight construction designed to achieve a similar level of sound insulation (this is technically achievable subject to detailed design). Consequently, internal noise levels would be dictated by external noise ingress via glazing and ventilators.

5.19 The ventilation scheme for the project has not yet been decided and therefore, for the purpose of the assessment, it has been assumed that the ventilation scheme for the project is Mechanical Ventilation with Heat Recovery (MVHR) i.e. System 4 from Building Regulations Part F. Therefore, there will be no background ventilators in the external facades (e.g. trickle ventilators etc).

5.20 The MVHR system will be selected to ensure that noise from air supply and extract ductwork does not exceed acceptable levels within habitable rooms. Appropriate specifications for noise levels from the MVHR system (operating at typical maximum duty) would be as follows:

- Bedrooms and living rooms – 30 dB LAeq,T at 1.5m from any ventilation aperture; and,
- Other habitable areas – 35 dB LAeq,T at 1.5m from any ventilation aperture.

5.21 Calculations were carried out using facade modelling software in accordance with the methodology given in BS8233:2014 to calculate the sound insulation performance required of the glazing and ventilation to achieve the nominated internal noise criteria in the 'worst-case' habitable rooms of the development (i.e. the habitable rooms that will be subject to the highest external noise levels).

5.22 If acceptable internal noise levels can be achieved in 'worst case' habitable rooms then it follows that acceptable internal noise levels can be achieved in all other habitable rooms of the development using similar glazing and ventilator types.

5.23 The calculations were carried out based on the following typical dimensions/details for facade elements:

- Glazing – 1.5m^2 for bedrooms and 2m^2 for living rooms; and
- External walls – 8m^2 for bedrooms and 15m^2 for living rooms.

5.24 The results of the calculations are shown in Appendix 3 and are summarised in Table 2 below.

Table 2 Acoustic Requirements for 'Worst Case' Habitable Rooms

'Worst Case' Rooms	Glazing Performance Requirements (inc. Frames)	Ventilator Performance Requirements (in Open Position)
All habitable rooms	35 dB Rw+Ctr	MVHR

Note The requirements given are approximate only and should be confirmed at the detailed design stage when full design details are available.

5.25 The required sound insulation performance values in Table 2 could typically be achieved by the glazing types shown in Table 3.

Table 3 Typical Glazing Acoustic Performances

Glazing (in Good Quality Sealed Frames)	Typical Weighted Sound Reduction (Rw + Ctr)
6mm/6 to 20/10.8mm acoustically upgraded thermal double glazing	35

Note The acoustic performance of the glazing systems (including frames) should always be confirmed with the manufacturer before selection for installation on site

5.26 It can be seen from the above that acceptable internal noise levels will be achievable in the development subject to the specification of suitable glazing and ventilation systems at the detailed design stage (which could be secured with a suitable planning condition). It is our view therefore that the proposed development is, in principle, acceptable with regards to the noise levels that will exist within the habitable rooms.

5.27 It should be noted that it will be possible to use lower acoustic performance façade elements for façades that are further from or acoustically screened from the surrounding noise sources. This could be investigated further at the detailed design stage.

5.28 The development will be subject to the recently published Part O of the Building Regulations (Approved Document O), which came into effect on 15 June 2022 and states:

> *In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*
>
> *Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.*
>
> *a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).*
>
> *b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am).*

5.29 The results of the noise survey indicate that areas of the development may exceed the noise limits provided in Approved Document O when the windows are opened. The overheating assessment is, therefore, not likely to be able to rely solely on open windows. This will need to be confirmed as part of the overheating assessment during the detailed design stage.

Stage 2 – Element 3 – Noise levels in external amenity areas

5.30 BS8233 states that it is desirable that noise levels in external amenity areas of residential developments do not exceed 50 dB LAeq and that 55 dB LAeq,T should be regarded as an upper guideline value. However, BS8233 recognises that these guideline values will not always be achievable in city centres or urban areas adjoining main roads or other transport sources. In these cases, BS8233 states that the development should be designed to achieve the lowest practicable noise levels in the amenity spaces.

5.31 Noise levels in some external amenity areas are predicted to exceed the 55 dB LAeq,T limit by up to 20dB, particularly those which may overlook the railway and surrounding roads. Whilst this is not ideal, it is not uncommon for noise levels in external amenity areas in urban areas to be higher than the BS8233 recommended levels and in our view, exceeding the BS8233 recommended levels does not normally mean that the external amenity areas would be unacceptable to future residents. The reasons for this are as follows:

- Most developments in urban areas will be subject to noise levels above the BS8233 recommended levels for balconies[1].
- It is common for noise levels in external amenity areas to exceed the BS8233 recommended noise levels in Willesden and elsewhere. For example, existing dwellings on Severn Way overlook the railway where noise levels would exceed BS8233 'desirable' levels;
- It is reasonable to assume that residents would prefer the option to have a noisier external amenity area as opposed to having no external amenity area at all.

5.32 The current design also shows good acoustic consideration as the proposed buildings shield ground floor external amenity areas from some of the surrounding noise sources.

5.33 Noise levels in external amenity areas can be further investigated as the design progresses.

Stage 2 – Element 4 – Other relevant issues

5.34 In our view the design and acoustic approach outlined above is in line with both local and national noise policy. It is common for residential properties to be situated near to busy roads and railway lines and this is an acceptable scenario provided that the properties are acoustically upgraded where necessary to achieve acceptable noise levels in habitable areas.

Recommendation to decision maker

5.35 It is our view that planning permission should be granted in relation to noise affecting habitable areas of the development subject to the imposition of suitable planning conditions to ensure that acceptable noise levels are achieved in the finished development.

[1] Table 2 from BS8233 notes that daytime noise levels will typically exceed 50-55 dB LAeq,16hr in areas close to busy main roads. It was also found in the UK National Noise Incidence Study 2000/2001 that 90% of UK homes were exposed to daytime noise levels >50dB LAeq,16hr and 54% of UK homes were exposed to noise >55dB LAeq,16hr. It is reasonable to assume that a high percentage of these were in urban areas.

6. GROUND-BORNE VIBRATION AFFECTING THE DEVELOPMENT

6.1 The vibration levels that will exist within the habitable areas of the finished development have been assessed based on the existing ground-borne vibration levels at the site.

Design criteria – Ground-borne vibration

6.2 Appropriate criteria for ground-borne vibration affecting residential dwellings are given in BS 6472-1:2008 *'Guide to evaluation of human exposure to vibration in buildings - Part 1: Vibration sources other than blasting'*. The criteria in BS6472-1 are provided as Vibration Dose Values, as summarised in Table 4.

Table 4 BS6472-1:2008 Vibration Criteria

Place	Low Probability of Adverse Comment (VDV) $m \cdot s^{-1.75}$ 1)	Adverse Comment Possible (VDV) $m \cdot s^{-1.75}$	Adverse Comment Probable (VDV) $m \cdot s^{-1.75}$ 2)
Residential buildings 16 h day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8 h night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

6.3 Measured ground-borne vibration levels at the site have been assessed against the criteria above.

Existing ground-borne vibration and noise levels

6.4 Ground-borne vibration measurements were carried out as part of the site survey. The methodology and results of the measurements are outlined in Appendix 2.

6.5 Tri-axial Vibration Dose Value (VDV) measurements were taken across the low-frequency range (1-80Hz) and logged at 10 second intervals for one hour on 7th April 2022 to ensure an adequate quantity of train movements were captured. During this period 74 train passes were recorded.

6.6 We have extrapolated the survey measurements to cover the full daytime period (0700hrs-2300hrs), which results in a total of 1184 train movements. Train timetables indicate that there are a total of approximately 104 train movements during the whole of the night-time period (2300hrs-0700hrs).

6.7 Using the measured VDV levels during the survey, the total day and night-time VDV levels have been calculated based on the total number of train passes that occur on the railway per day. The extrapolated VDV levels are summarised below in Table 5:

Table 5 Vibration Data Summary (Vibration Dose Values)

Period	X Axis $(m \cdot s^{-1.75})$ Wd	Y Axis $(m \cdot s^{-1.75})$ Wd	Z Axis $(m \cdot s^{-1.75})$ Wb
Daytime (0700-2300)	<0.03	<0.02	0.20
Night-time (2300-0700)	<0.02	<0.01	0.11

It can be seen that vibration levels were highest in the vertical z-axis (compared to the X and Y axes).

6.8 It can be seen from a comparison of Table 4 and Table 5 that vibration levels at the site are just within the *"Low probability of adverse comment"* rating for both day- and night-time periods according to BS6472.

6.9 The results of the BS6472 assessment are in line with subjective opinion formed during the survey that there are insignificant ground-borne vibration levels at the site.

6.10 It is subsequently reasonable to conclude that levels of vibration at the site are acceptable for the proposed development.

7. PLANT NOISE IMPACT ASSESSMENT

Design criteria – Mechanical plant noise

7.1 BS4142:2014+A1:2019 – *Methods for rating and assessing industrial and commercial sound* (BS4142) can be used to assess the impact of noise from external industrial and/or commercial noise sources on nearby sensitive receptors.

7.2 The BS4142 assessment methodology can be summarised as follows:

1. Measure the existing background noise levels (LA90,T dB) at the locations of nearby noise sensitive receptors during the quietest periods when the noise source(s) under investigation will operate;
2. Predict or measure the noise emissions (LAeq,T dB) from the noise source(s) under investigation at the location(s) of the nearby sensitive receptors, and add corrections for any distinguishable acoustic features (e.g. tones, whines, screeches, hisses etc);
3. Subtract the measured background noise levels (item 1 above) with the measured or predicted rating noise levels (item 2 above) at each sensitive receptor. BS4142 states that:

a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

NOTE Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

7.3 The absence of specific criteria from Brent Borough Council, the criteria of “equal to background” has been adopted for the assessment of noise emissions from the development. This criterion is subject to change, based on any Planning Conditions provided by the Local Planning Authority.

7.4 Background noise levels (LA90) at the site were measured as part of the site noise survey outlined in **Error! Reference source not found.**. The measured background noise levels have been used to develop limits for plant noise emissions from the new development at the positions of the surrounding residential properties in accordance with the BS4142 assessment methodology. The limits are shown in Table 6 below.

Table 6 BS4142 Noise Limits - Free-field Levels

Location	Period	
	Day-time/Evening (0700-2300hrs)	Night-time (2300-0700hrs)
Nearest noise sensitive receptor	58 dB LAr,Tr	47 dB LAr,Tr

Note 1 The above limits are 'rated' noise levels. Any mechanical plant noise emissions should have appropriate corrections for the character of the noise applied and still meet these limits.

Proposed mechanical plant design

7.5 Detailed design information is not yet available for external mechanical plant for the development, and therefore noise emissions from external mechanical plant cannot be accurately predicted at the positions of nearby residential properties at this stage.

7.6 The selection and design of external mechanical plant will be reviewed as project information becomes available to ensure that the project BS4142 noise limits given in Table 6 are achieved. Compliance with the limits could be secured through the imposition of a suitable planning condition if deemed necessary by the Local Planning Authority.

8. NOISE BREAKOUT FROM COMMERCIAL AREAS

8.1 Noise emissions from activities associated with the commercial units (e.g. the ground floor gym, community/ health centre/ restaurant/ cafés/ community/nursery) in the development will be assessed as the design progresses to ensure that acceptable noise levels are provided for future occupants of the development (including the residential uses above).

8.2 However, it is generally straightforward to control noise from commercial units within mixed residential and commercial developments using the following noise mitigation measures:

- Designing high acoustic performance separating walls and floors between commercial units and residential units.
- Ensuring that the external facades of the commercial units are designed to minimise noise breakout from activities within the commercial units.
- Imposing noise limits on commercial tenants and preventing noisy commercial uses from occupying the units.
- Imposing operational restrictions on commercial units, e.g. noise limits, limiting operating hours and delivery timings.

8.3 The above measures can be investigated further at the detailed design stage and this could be secured through the imposition of a suitable planning condition if deemed necessary by the Local Planning Authority.

9. CONCLUSIONS

9.1 It is our view that the site is suitable for the development in terms of noise and vibration levels and that planning permission should be granted subject to the imposition of suitable planning conditions.

Appendix 1 Development Layout

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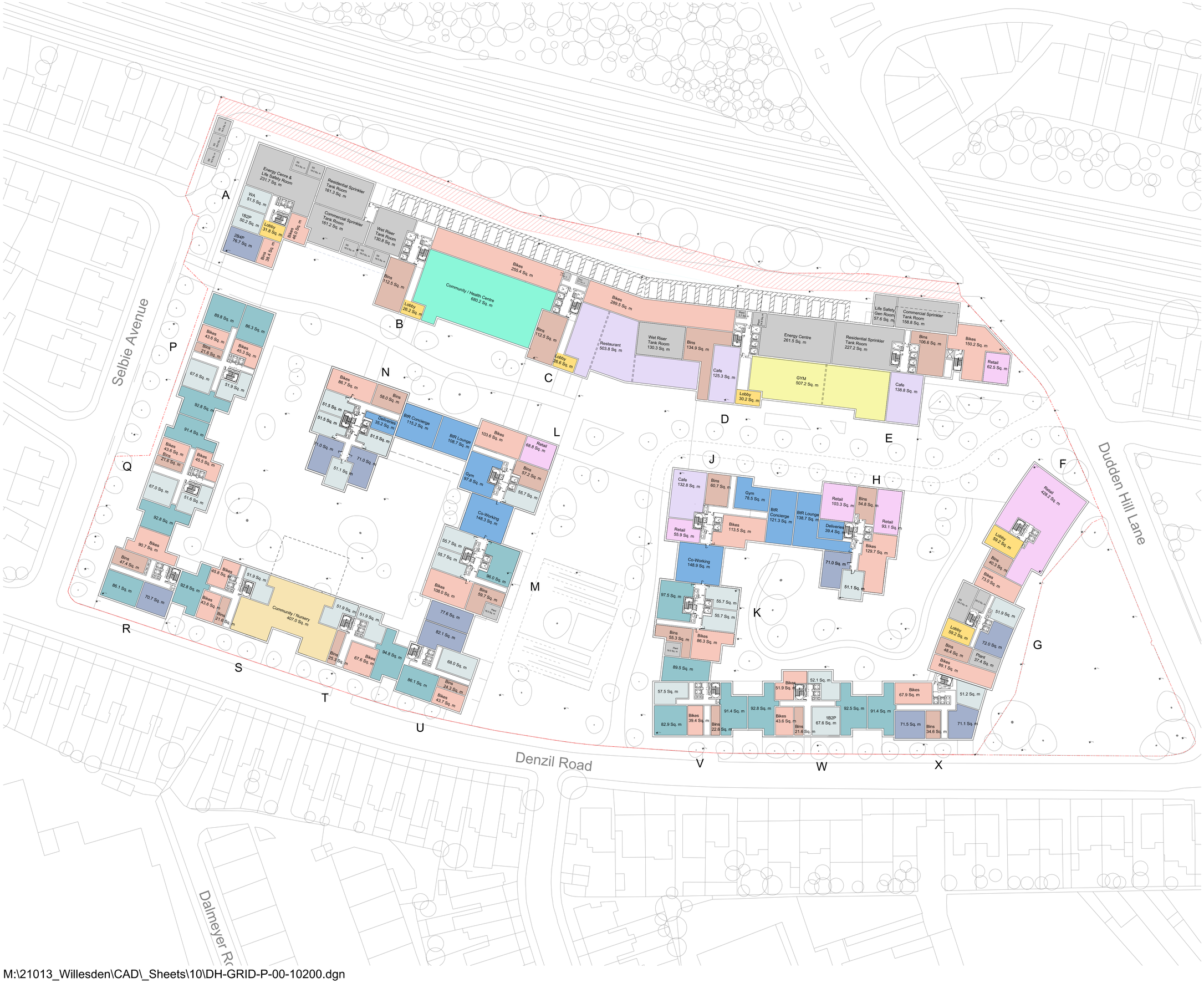

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Rev:	Notes:	Date:	Dwn:	Iss:
-	Issued for information	29.07.22	TE	SB

Purpose of Issue:

STAGE 1

Key / Location:

Legend

- Retail
- Lobby
- BtR Amenity
- Gym
- Restaurant
- Community Health Centre
- Community Nursery
- Bike Storage
- Bin Storage
- Plant

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Client:
THE HILL GROUP

Project:
DOLLIS HILL

Drawing Title:
Ground Floor
General Arrangement Plan

Drawn By:	Issued By:	Date of First Issue:
TE	SB	29.07.2022

Project No:	Scale @ A1:	Scale @ A3:
21013	1:500	1:1000

Drawing No:	Revision:
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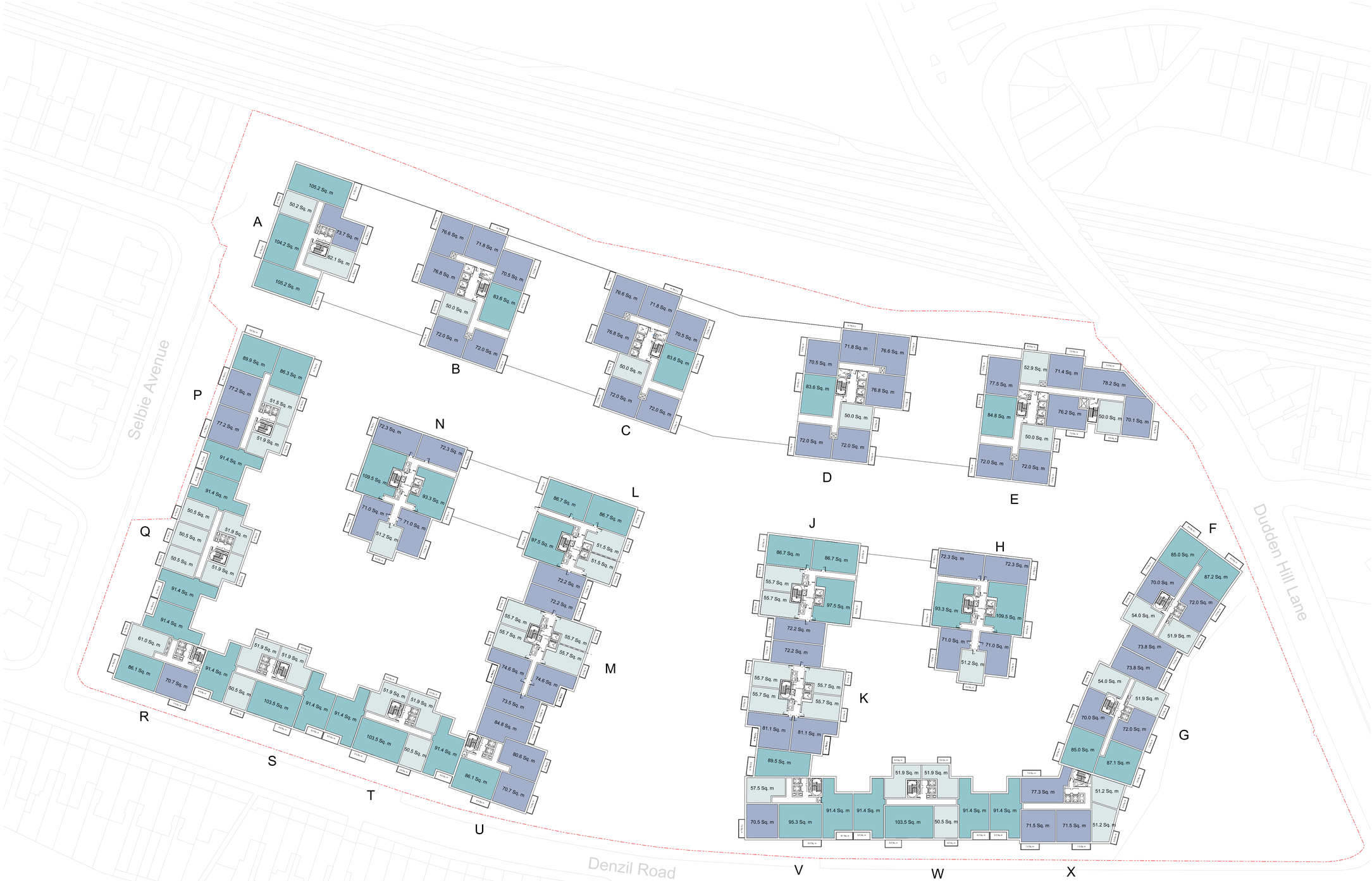

Disclaimer:

Do not scale from this drawing.
Discrepancies must be reported immediately to the Architect before proceeding
Only figured dimensions are to be used.
Check all dimensions on site before fabrication or setting out.

Rev:	Notes:	Date:	Dwn:	Iss:
-	Issued for information	29.07.22	CG	SB

Purpose of Issue:

STAGE 1

Key / Location:

Legend

- 1 Bed
- 2 Bed
- 3 Bed

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Client:
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Project:
DOLLIS HILL

Drawing Title:
First Floor
General Arrangement Plan

Drawn By:	Issued By:	Date of First Issue:
CG	SB	29.07.2022

Project No:	Scale @ A1:	Scale @ A3:
21013	1:500	1:1000

Drawing No: DH-GRID-P-01-10200
Revision:

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Appendix 2 Survey Results

Survey Summary:

The survey comprised short-term operator attended noise and vibration measurements and longer-term unattended noise monitoring at the site. Noise levels at the site were generally dictated by road traffic on surrounding roads and noise from train passes on the adjacent railway.

Survey Period:

20/04/2022 to 25/04/2022

Survey Objectives:

- To identify noise and vibration sources that contribute to ambient noise levels at the site.
- To measure noise and vibration levels around the site over a typical day and night-time period.

Equipment Used:

Type	Manufacturer	Model	Serial Number
Sound level meter[1] (noise logger)	Rion	NL-32	00623765
Sound level meter[1] (noise logger)	Rion	NL-32	01213688
Calibrator	Rion	NC-74	34551703
Sound level meter[1]	Rion	NL-52	00965090
Tri-Axial Vibration Meter	Rion	XV-2P	00380055
Tri-axial accelerometer	Rion	PV-83C	73649

Note 1: All sound level meters were calibrated before and after measurement periods and no significant drift in calibration was found to have occurred. The results of the measurements are therefore considered to be representative.

Weather Conditions:

The observed weather conditions were acceptable for acoustic measurement throughout the attended survey periods (low-medium wind speeds and no rain). Weather records for the area confirmed that weather conditions were also generally acceptable for acoustic measurement during the unattended monitoring.

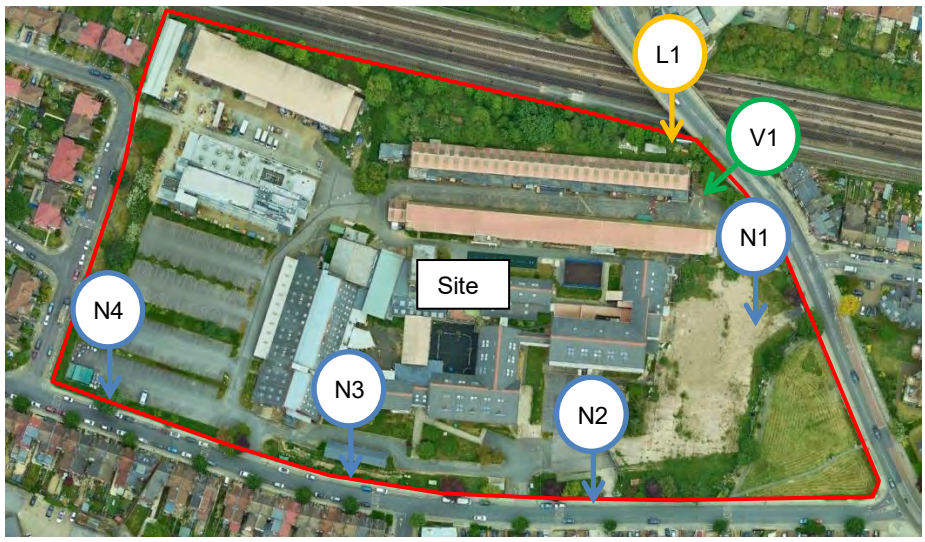
Measurement Positions:

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to A4088
N2	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Denzil Road
N3	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Denzil Road
N4	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Denzil Road

Measurement Positions:

Position (refer plan below)	Description
L1	Unattended noise logging position. 3m above ground level. Free-field. Direct line of sight to A4088 (~ 12m) and railway (~6m).
V1	Attended ground-borne vibration monitoring position. The vibration measurements were taken on top of the existing concrete foundations, 2.5m from the nearest structure.

Site Plan showing Measurement Positions:



Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmax, dB	LA90, dB	Observations
20/04/2022	N1	12:15	5 mins	58	70	52	Noise dictated by traffic noise on the A4088, and rail noise
		12:20		58	69	51	Noise dictated by traffic noise on the A4088, rail noise, and aircraft
	N2	12:45		65	85	49	Noise dictated by road traffic from Denzil Road
		12:50		64	83	50	Noise dictated by road traffic from Denzil Road and aircraft
	N3	13:00		67	92	47	Noise dictated by road traffic from Denzil Road
		13:05		56	71	46	Noise dictated by road traffic from Denzil Road
	N4	13:15		51	64	45	Noise dictated by distant road traffic from the A4088 and B453
		13:20		51	66	44	

Unattended Noise Monitoring Results:

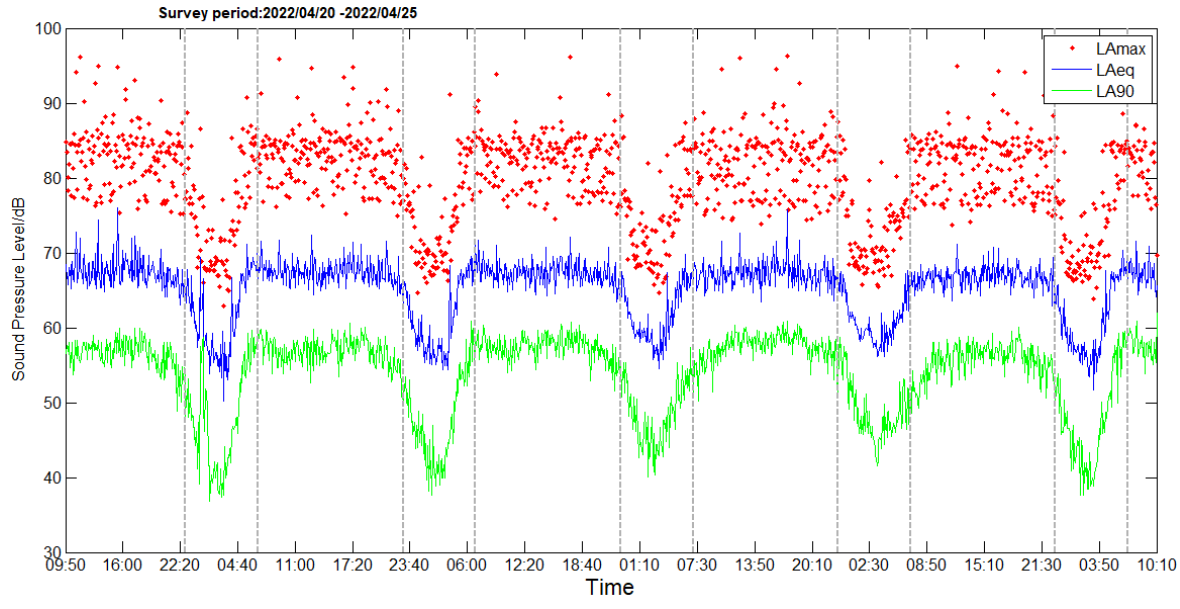
Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB[1]	LAeq,8hr, dB	LA90,5mins, dB[1]	LAmax, dB[2]
20/04/2022 to 25/04/2022	L1	68	58	63	47	83-84

Note 1: Typical lowest measured during the period shown.

Note 2: Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).

Unattended Noise Monitoring Results:

Meas. Period	Position
20/04/2022 to 25/04/2022	L1



Attended Ground-borne Vibration Monitoring Results:

Date	Position	Time	Meas. Length	X VDV $ms^{-1.75}$	Y VDV $ms^{-1.75}$	Z VDV $ms^{-1.75}$	Observations
20/04/2022	V1	11:03:09	10 seconds	0.00082	0.00072	0.01485	8-carriage passenger train traveling west
		11:03:19		0.00143	0.00178	0.02321	4-carriage passenger train traveling west
		11:03:29		0.00106	0.0011	0.01648	8-carriage passenger train traveling east
		11:04:29		0.00183	0.00207	0.02222	8-carriage passenger train traveling west
		11:04:59		0.00076	0.00095	0.01483	8-carriage passenger train traveling west
		11:07:09		0.00047	0.00053	0.0115	7-carriage passenger train traveling west
		11:07:49		0.00097	0.00138	0.02134	8-carriage passenger train traveling east

Attended Ground-borne Vibration Monitoring Results:

Date	Position	Time	Meas. Length	X VDV $ms^{-1.75}$	Y VDV $ms^{-1.75}$	Z VDV $ms^{-1.75}$	Observations
		11:07:59		0.00106	0.00128	0.01905	8-carriage passenger train traveling east
		11:08:09		0.00141	0.00149	0.01858	8-carriage passenger train traveling east
		11:08:49		0.00068	0.00082	0.0131	4-carriage passenger train traveling west
		11:09:49		0.00157	0.00181	0.02262	8-carriage passenger train traveling west
		11:10:49		0.00089	0.00132	0.01911	8-carriage passenger train traveling east
		11:10:59		0.00061	0.00064	0.01449	8-carriage passenger train traveling east
		11:11:39		0.00056	0.0007	0.01283	4-carriage passenger train traveling east
		11:12:49		0.00095	0.0009	0.01732	3-carriage passenger train traveling west
		11:13:09		0.00068	0.00062	0.01149	8-carriage passenger train traveling east
		11:13:19		0.00112	0.0014	0.01558	8-carriage passenger train traveling west
		11:13:49		0.00077	0.00092	0.0161	8-carriage passenger train traveling west
		11:15:29		0.00108	0.00101	0.01978	4-carriage passenger train traveling west
		11:16:19		0.00051	0.00071	0.01107	2-carriage passenger train traveling east
		11:17:09		0.0005	0.00058	0.01119	8-carriage passenger train traveling east
		11:18:39		0.00104	0.00082	0.02008	8-carriage passenger train traveling east
		11:18:49		0.00128	0.00163	0.01801	8-carriage passenger train traveling west
		11:19:39		0.00142	0.00129	0.0196	8-carriage passenger train traveling east
		11:19:49		0.00073	0.00097	0.01481	8-carriage passenger train traveling west
		11:22:09		0.00095	0.001	0.01674	8-carriage passenger train traveling east
		11:22:29		0.00097	0.00109	0.01121	4-carriage passenger train traveling west
		11:22:39		0.0008	0.00076	0.01554	8-carriage passenger train traveling east
		11:23:19		0.00045	0.00056	0.0116	2-carriage passenger train traveling east
		11:24:39		0.00172	0.00232	0.0339	8-carriage passenger train traveling west
		11:24:49		0.00131	0.00172	0.02143	8-carriage passenger train traveling east
		11:26:19		0.00046	0.00056	0.01203	8-carriage passenger train traveling west
		11:26:29		0.00121	0.00144	0.02193	3-carriage passenger train traveling east
		11:26:39		0.0006	0.00066	0.01279	4-carriage passenger train traveling west
		11:27:49		0.00082	0.00099	0.01174	8-carriage passenger train traveling west
		11:27:59		0.00051	0.0006	0.0111	8-carriage passenger train traveling east
		11:28:19		0.00139	0.00105	0.01254	8-carriage passenger train traveling east
		11:28:29		0.00095	0.00064	0.01889	8-carriage passenger train traveling west
		11:30:59		0.00067	0.0007	0.01531	5-carriage passenger train traveling east
		11:31:09		0.00151	0.00176	0.02066	5-carriage passenger train traveling west
		11:31:49		0.00146	0.00154	0.01894	8-carriage passenger train traveling west

Attended Ground-borne Vibration Monitoring Results:

Date	Position	Time	Meas. Length	X VDV $ms^{-1.75}$	Y VDV $ms^{-1.75}$	Z VDV $ms^{-1.75}$	Observations
		11:32:39		0.00078	0.00088	0.0125	7-carriage passenger train traveling east
		11:35:59		0.00122	0.00098	0.01526	8-carriage passenger train traveling east
		11:36:49		0.00055	0.00051	0.0116	8-carriage passenger train traveling west
		11:36:59		0.00142	0.00142	0.0218	7-carriage passenger train traveling west
		11:38:39		0.00075	0.00077	0.01412	7-carriage passenger train traveling east
		11:39:29		0.00063	0.00079	0.01148	7-carriage passenger train traveling west
		11:39:39		0.00087	0.00102	0.01544	8-carriage passenger train traveling west
		11:39:49		0.00108	0.00116	0.01665	3-carriage passenger train traveling east
		11:40:29		0.00123	0.00126	0.02124	8-carriage passenger train traveling east
		11:40:49		0.00082	0.0008	0.01247	7-carriage passenger train traveling east
		11:42:49		0.00059	0.0006	0.01333	4-carriage passenger train traveling west
		11:43:09		0.00053	0.00055	0.01197	7-carriage passenger train traveling east
		11:45:19		0.00063	0.00089	0.01291	8-carriage passenger train traveling west
		11:45:39		0.00187	0.00162	0.02044	8-carriage passenger train traveling west
		11:45:49		0.00091	0.00111	0.01656	4-carriage passenger train traveling east
		11:46:39		0.00204	0.00282	0.03161	8-carriage passenger train traveling west
		11:48:19		0.0008	0.00117	0.01404	7-carriage passenger train traveling east
		11:48:29		0.00071	0.00066	0.01129	8-carriage passenger train traveling east
		11:48:39		0.0005	0.00074	0.01126	7-carriage passenger train traveling west
		11:48:59		0.0012	0.00114	0.02572	2-carriage passenger train traveling west
		11:49:19		0.00093	0.00107	0.01338	8-carriage passenger train traveling west
		11:50:49		0.00082	0.00097	0.01443	8-carriage passenger train traveling west
		11:50:59		0.00118	0.00139	0.01443	8-carriage passenger train traveling west
		11:53:29		0.00148	0.00151	0.02099	7-carriage passenger train traveling east
		11:53:49		0.00081	0.00086	0.01125	6-carriage passenger train traveling west
		11:54:19		0.0018	0.00245	0.02222	8-carriage passenger train traveling west
		11:54:59		0.00092	0.00138	0.01693	3-carriage passenger train traveling east
		11:55:09		0.00172	0.00155	0.02	8-carriage passenger train traveling east
		11:55:39		0.00157	0.00167	0.02153	8-carriage passenger train traveling east
		11:57:59		0.00107	0.00126	0.01664	4-carriage passenger train traveling east
		11:58:29		0.00076	0.00064	0.01493	8-carriage passenger train traveling east
		11:58:39		0.0009	0.00127	0.01641	8-carriage passenger train traveling east
		11:59:49		0.00066	0.00136	0.0158	8-carriage passenger train traveling west

Note 1: Vibration measurements were taken across the low-frequency range (0.5-80Hz)

Attended Ground-borne Vibration Monitoring Assessment:

Typical event VDV calculation method

Residential

Axis	Worst-case event VDV (m/s^1.75)	Number of Events		VDV ($ms^{1.75}$)		Criteria					
		Daytime	Night-Time	Daytime (16 hours)	Night-Time (8 hours)	Daytime (16 hours)			Night-Time (8 hours)		
						Low prob adverse comments	Possible adverse comments	Probable adverse comments	Low prob adverse comments	Possible adverse comments	Probable adverse comments
X	0.00569	1184	114	0.03	0.02	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8
Y	0.00282	1184	114	0.02	0.01						
Z	0.03390	1184	114	0.20	0.11						

The assessment indicates that the vibration does value at the measurement position falls within the lower design range of the low probability of adverse comment during both the daytime and night-time periods.

Appendix 3 Facade Calculations

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FACSIM V2.7.7 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT:	Dollis Hill
ROOM:	Bedroom
VARIANT:	Daytime Noise Levels (LAeq,16hr)
NOTES:	22229

Room Dimensions [m]: W 4.0 X L 3.0 X H 2.4

Room Volume = 28.8 m3
Partition Area = 9.5 m2
Ventilation ref area = 10.0 m2
SELECT Free Field or Façade SPL for model input >>>
Free Field SPL K = 3 dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	74.0								
		55.8	59.9	63.4	66.8	70.0	67.2	62.0	**Reference spectrum**

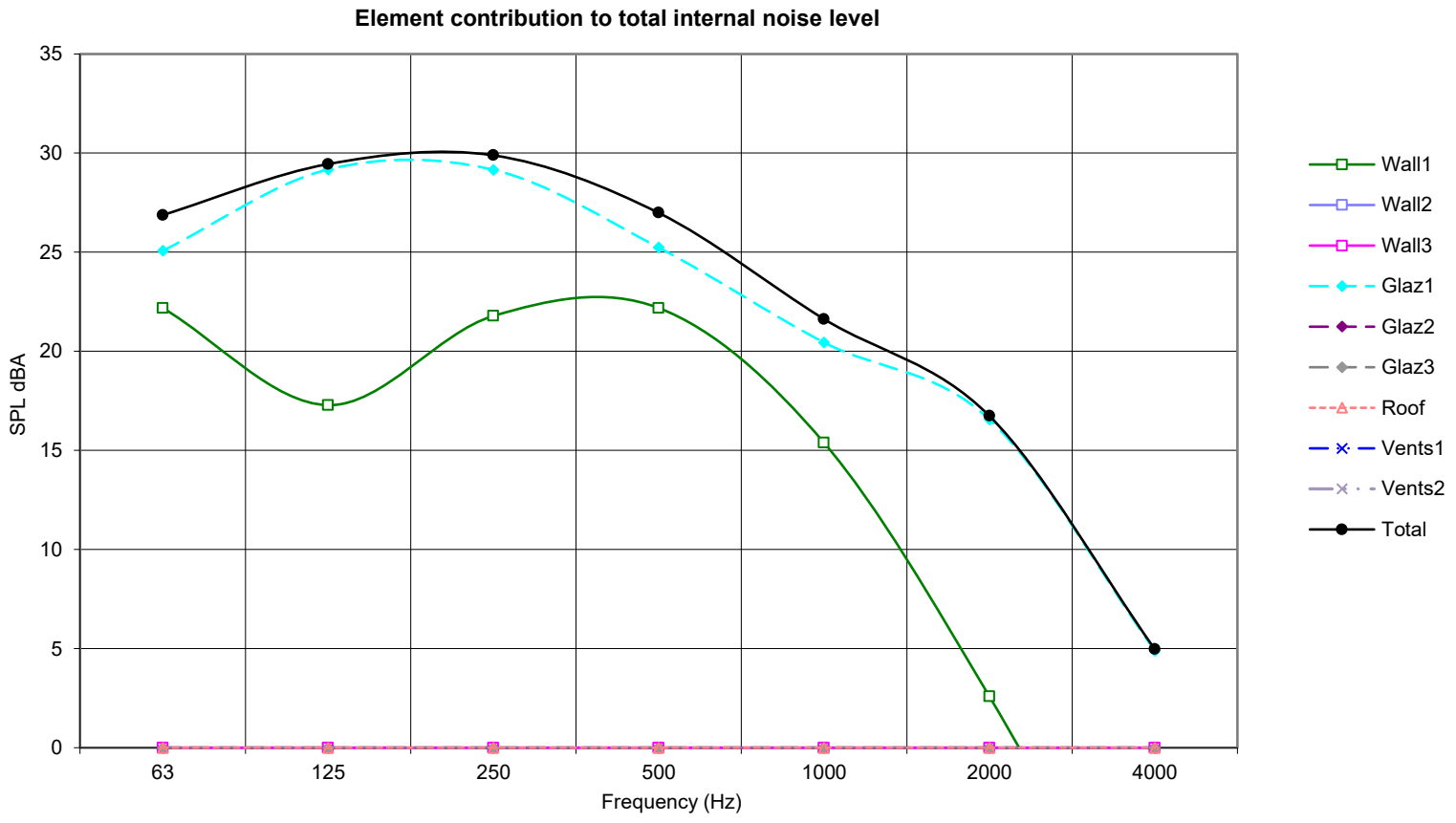
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	19%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	35 dB Rw + Ctr - High Acoustic Performance Double Glazing	1.5	26	26	29	37	45	46	52	81%	35 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		32	34	37	43	52	54	60				
	Resultant SPL inside room excluding ventilators dB	34.8	27	29	30	27	22	17	5	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	MVHR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**34.8**	27	29	30	27	22	17	5



FACSIM V2.7.7 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT:	Dollis Hill
ROOM:	Bedroom
VARIANT:	Night-time Average Noise Levels (LAeq,8hr)
NOTES:	22229

Room Dimensions [m] W 4.0 X L 3.0 X H 2.4

Room Volume = 28.8 m3
Partition Area = 9.5 m2
Ventilation ref area = 10.0 m2
SELECT Free Field or Façade SPL for model input >>>
Free Field SPL K = 3 dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	69.0								
		50.8	54.9	58.4	61.8	65.0	62.2	57.0	**Reference spectrum**

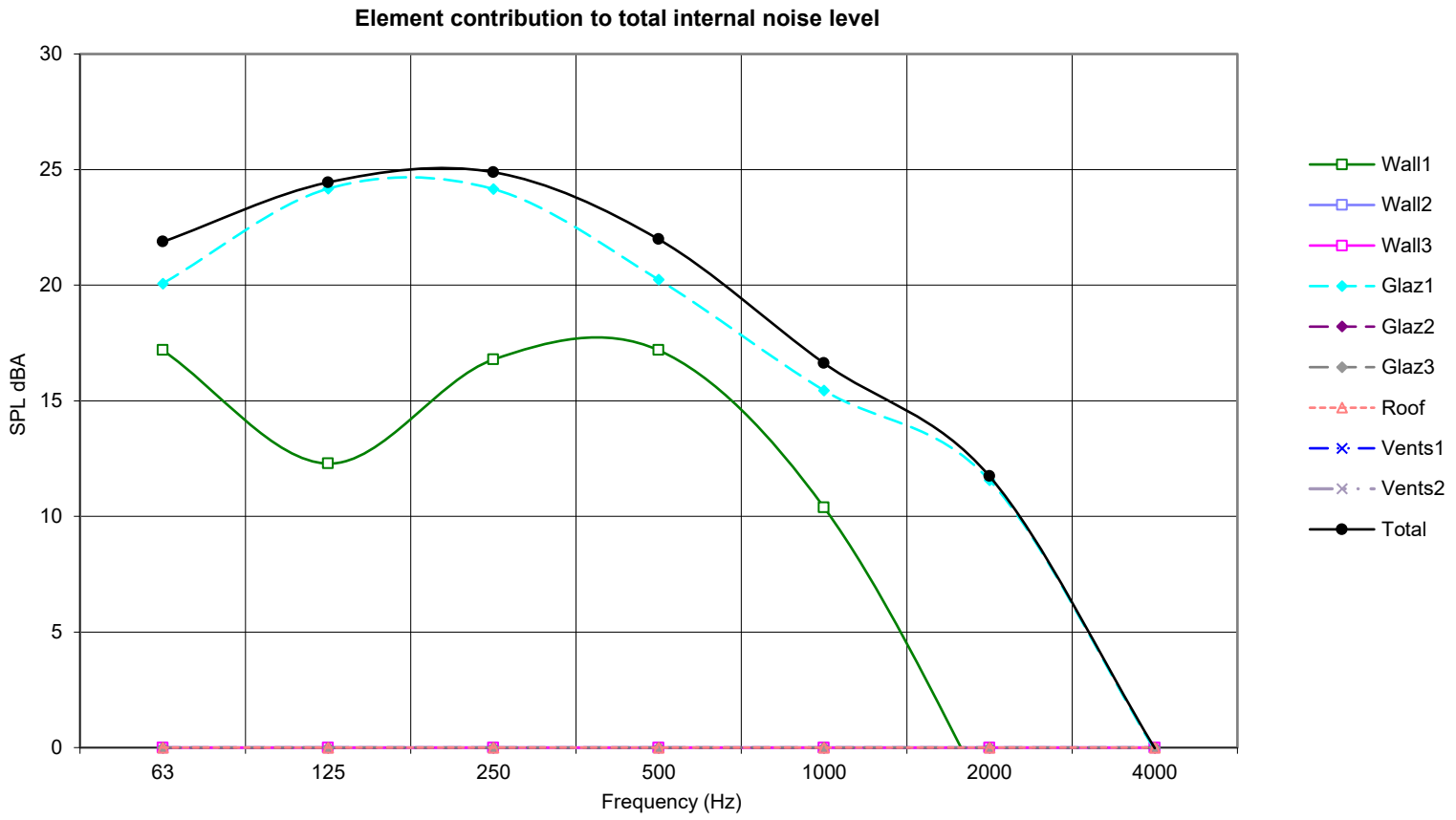
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5		**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	19%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	35 dB Rw + Ctr - High Acoustic Performance Double Glazing	1.5	26	26	29	37	45	46	52	81%	35 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		32	34	37	43	52	54	60				
	Resultant SPL inside room excluding ventilators dB	29.8	22	24	25	22	17	12	0	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	MVHR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**29.8**	22	24	25	22	17	12	0



FACSIM V2.7.7 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT:	Dollis Hill
ROOM:	Bedroom
VARIANT:	Night-time Maximum Noise Levels (LAmax) - train
NOTES:	22229

Room Dimensions [m] W 4.0 X L 3.0 X H 2.4

Room Volume = 28.8 m3
Partition Area = 9.5 m2
Ventilation ref area = 10.0 m2
SELECT Free Field or Façade SPL for model input >>>
Free Field SPL K = 3 dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	83.9	62.3	63.3	71.2	73.6	78.6	74.7	80.1	
Road traffic spectrum (according to BS 8233:1999 section 6)									
		62.3	63.3	71.2	73.6	78.6	74.7	80.1	**Direct input**

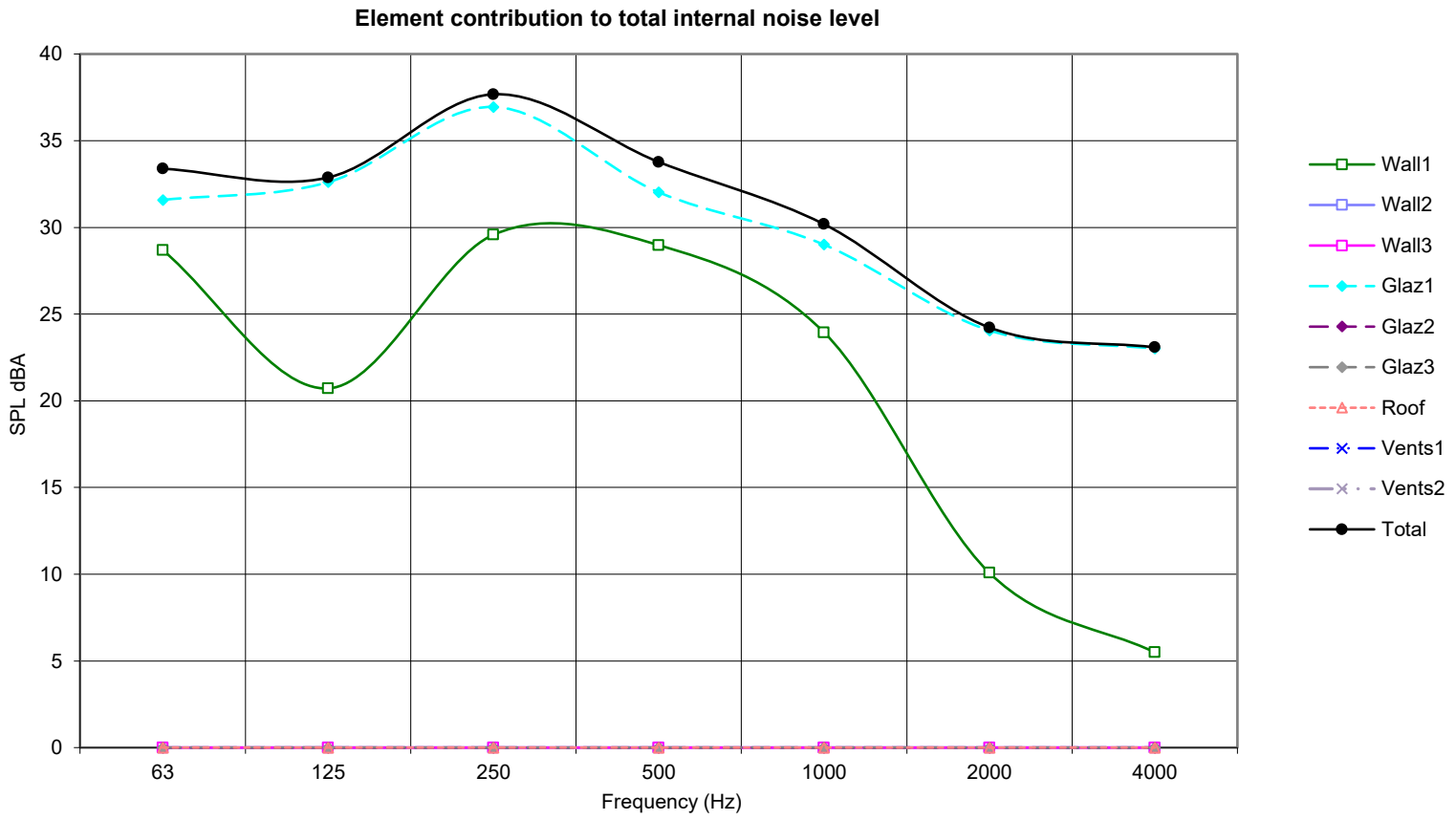
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5		**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	20%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	35 dB Rw + Ctr - High Acoustic Performance Double Glazing	1.5	26	26	29	37	45	46	52	80%	35 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		32	34	37	43	52	54	60				
	Resultant SPL inside room excluding ventilators dB	41.4	33	33	38	34	30	24	23	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	MVHR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**41.4**	33	33	38	34	30	24	23



FACSIM V2.7.7 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT:	Dollis Hill
ROOM:	Bedroom
VARIANT:	Night-time Maximum Noise Levels (LAmax) - car
NOTES:	22229

Room Dimensions [m] W 4.0 X L 3.0 X H 2.4

Room Volume = 28.8 m3
Partition Area = 9.5 m2
Ventilation ref area = 10.0 m2
SELECT Free Field or Façade SPL for model input >>>
Free Field SPL K = 3 dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	87.0	62.6	65.3	72.0	78.3	84.6	80.5	70.7	
Road traffic spectrum (according to BS 8233:1999 section 6)									
		62.6	65.3	72.0	78.3	84.6	80.5	70.7	**Direct input**

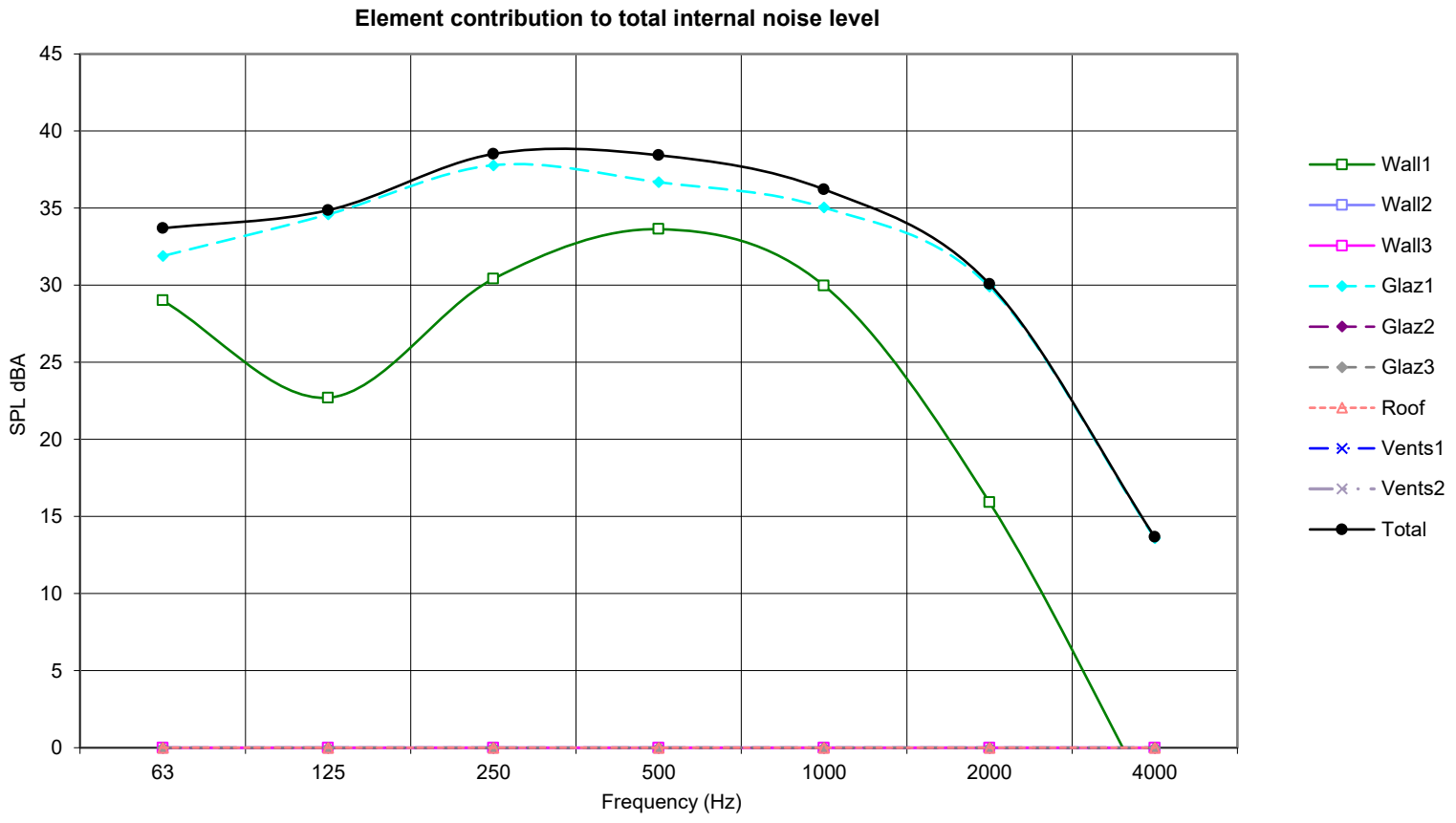
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5		**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	8.0	36	45	44	47	57	67	77	22%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	35 dB Rw + Ctr - High Acoustic Performance Double Glazing	1.5	26	26	29	37	45	46	52	78%	35 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		32	34	37	43	52	54	60				
	Resultant SPL inside room excluding ventilators dB	43.9	34	35	39	38	36	30	14	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	MVHR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**43.9**	34	35	39	38	36	30	14



FACSIM V2.7.7 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

PROJECT:	Dollis Hill
ROOM:	Living Room
VARIANT:	Daytime Noise Levels (LAeq,16hr)
NOTES:	22229

Room Dimensions [m] W 4.0 X L 5.0 X H 2.4

Room Volume = 48.0 m3
Partition Area = 17.0 m2
Ventilation ref area = 10.0 m2
SELECT Free Field or Façade SPL for model input >>>
Free Field SPL K = 3 dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	74.0								
		55.8	59.9	63.4	66.8	70.0	67.2	62.0	**Reference spectrum**

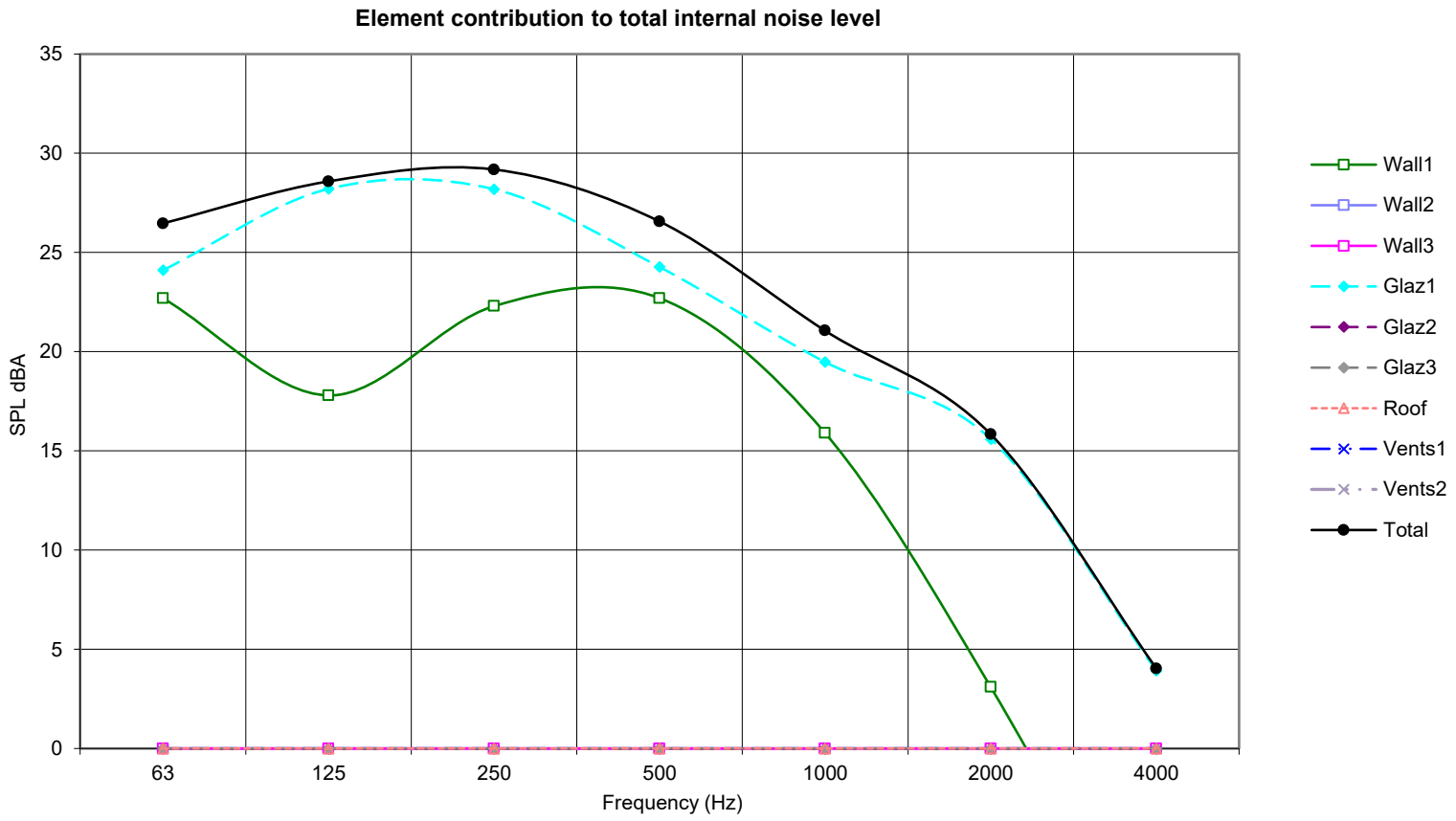
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	15.0	36	45	44	47	57	67	77	25%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	35 dB Rw + Ctr - High Acoustic Performance Double Glazing	2.0	26	26	29	37	45	46	52	75%	35 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		33	35	38	44	52	55	61				
	Resultant SPL inside room excluding ventilators dB	34.2	26	29	29	27	21	16	4	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation	MVHR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**34.2**	26	29	29	27	21	16	4



cass allen

Architectural & Environmental Acousticians

Noise & Vibration Engineers

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