RESIDENTIAL DEVELOPMENT
TAVISTOCK HOUSE
UXBRIDGE

PRIOR APPROVAL DETERMINATION APPLICATION

TRANSPORT & HIGHWAYS AND FLOODING

SEPTEMBER 2016



the journey is the reward

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SEPTEMBER 2016

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Residential Development

Tavistock House

Uxbridge

Prior Approval Determination Application

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1 Introduction

1.1 Mayer Brown has been appointed by STA Associates to prepare this report regarding the potential for the conversion of Tavistock House in Uxbridge (hereafter referred to as “the site”) from B1(a) office use to C3 residential use in terms of Class O of the Town and Country Planning (General Permitted Development) (England) Order and to support a Prior Notification Application if so required by the Local Planning Authority.

1.2 This note is divided into the following sections:

- Site Description & Development Proposals
- Transport & Highways Impacts
- Flooding Risks
- Noise Impacts
- Summary & Conclusions

1.3 Following recent changes to 'permitted development' categories introduced by the Town and Country Planning (General Permitted Development) (England) (Amendment) Order 2016, the development proposals comprise a "Class O" development where conversion is proposed from an existing Class B1(a) (office) to Class C3 (dwelling houses).

1.4 The General Permitted Development Order 2016 states:

"Development under Class O is permitted subject to the condition that before beginning the development, the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to -

(a) transport and highways impacts of the development;

*(b) contamination risks on the site,**

(c) flooding risks on the site, and

(d) impacts of noise from commercial premises on the intended occupiers of the development.

and the provisions of paragraph W (prior approval) shall apply to any such application." (General Permitted Development Order 2016, Paragraph O.2, Page 3)

1.5 *Contamination risks are assessed in a separate report and are not assessed in this document.

1.6 Where consideration of any transport and highway impacts or flooding risks are requested by a Local Planning Authority, further clarification of the requirements are provided within Paragraph W 'Procedure for applications for prior approval under Part 3' of the General Permitted Development Order 2015, which states:

"Where the application relates to prior approval as to transport and highways impacts of the development, on receipt of the application, where in the opinion of the local planning authority the development is likely to result in a material increase or a material change in the character of traffic in the vicinity of the site, the local planning authority must consult

(a) where the increase or change relates to traffic entering or leaving a trunk road, the highway authority for the trunk road;

(b) the local highway authority, where the increase or change relates to traffic entering or leaving a classified road or proposed highway, except where the local planning authority is the local highway authority; and

(c) the operator of the network which includes or consists of the railway in question, and the Secretary of State for Transport, where the increase or change relates to traffic using a level crossing over a railway."

(General Permitted Development Order 2015, Paragraph W(5), Page 47)

1.7 The application site does not fall adjacent to a trunk road nor is it directly related to or materially impacts upon any level crossing over a railway and therefore is not subject to (a) and (c) set out above and within the General Permitted Development Order 2015, paragraph W(5).

1.8 With regard to (b), the conversion of approximately 659sqm of existing B1 office use to provide 12 residential apartments will result in a significant reduction of vehicle trip generation during the weekday peak periods and throughout the day (see Section 3 of this report). It is therefore reasonable to conclude that the proposed development will not result in a material increase or a detrimental change in the character of traffic entering or leaving a classified road or proposed highway in the vicinity of the site, and is not therefore subject to requirement N(5)(b) of General Permitted Development Order 2015.

"Where the application relates to prior approval as to the flooding risks on the site, on receipt of the application, the local planning authority must consult the Environment Agency(b) where the development is -

(a) in an area within Flood Zone 2 or Flood Zone 3; or

(b) in an area within Flood Zone 1 which has critical drainage problems and which has been notified to the local planning authority by the Environment Agency for the purpose of paragraph (zc)(ii) in the Table in Schedule 4 to the Procedure Order."

(General Permitted Development Order 2015, Paragraph W(6), Page 48)

1.9 The Development would not be at risk of flooding from fluvial sources because it is located in a low risk Flood Zone 1.

1.10 Given that the development proposals do not compromise the criteria for transport and highway impacts, flooding risks or noise impacts as detailed within the General Permitted Development Order, it is reasonable to assume that "Prior Approval" is unnecessary. However, should the local planning authority consider that "Prior Approval" is required; the proposals meet the requirements for "Prior Approval" in relation to transport and highways impacts and flooding risks.

1.11 This report establishes that:

- the site is accessible by non-car modes of transport
- the proposed residential development will have a beneficial impact on the existing operation of the local highway network
- the site would not be at risk of flooding from fluvial sources because the site is located in a Flood Zone 1 area indicating a low risk of flooding
- the site would not alter the surface water arrangements of the existing site and will not increase the risk of flooding to itself or surrounding properties
- the proposed development should not have any significant adverse impact on the health and/or quality of life for existing residential and commercial neighbours of the site arising from noise and that the use of an appropriate sound insulation scheme (as promoted in the Council's interim guidance on noise) will mitigate and reduce other adverse impacts to a minimum.

1.12 The development proposals are therefore considered to be wholly acceptable in transportation planning and flood risk terms and, if necessary, meet the transport, highways and flooding requirements for "Prior Approval" as defined within the General Permitted Development Order.

2 Site Location and Existing Conditions

2.1 The site is located on the north side of Rockingham Road (A4007), just east of its junction with Waterloo Road, and approximately 500m directly west of Uxbridge town centre and 750m southwest of Uxbridge Underground Station. The River Colne is located to the west and Fray's River is located to the east of the site

2.2 As set out in the introduction to this report, the building at the site is currently used as an office, with a total GFA of approximately 659sqm.

2.3 The location of the site in relation to the local highway network is illustrated below:



Figure 2.1: Site Location in Relation to the Local Highway Network

2.4 Access to the site's car park is directly off Rockingham Road (via a simple bell-mouthed priority junction incorporating dropped kerbs), as is its separate pedestrian access for the building. The site entrance for service vehicles is the same as for cars.

2.5 The site's car park is provided at ground level directly under the building. On-site observations have identified that this car park is well used and operates at or near capacity when the existing office use is in operation.

2.6 The site is bordered by the A4007 to the south beyond which is a predominately residential area. To the north is a predominantly industrial/commercial area.

Pedestrian/Cycle Accessibility

2.7 The footways in the vicinity of the site are in good condition and are well lit. Wide footways are provided along both sides of Rockingham Road. A zebra crossing, incorporating tactile paving and Belisha beacons, is provided directly in front of the site over Rockingham Road.

2.8 The majority of shops and services in Uxbridge (including the Underground Station) are within easy cycling distance of the site via Rockingham Road. National Cycle Network Route 6 runs just to the west of the site, heading north-south alongside the Grand Union Canal. To facilitate to uptake of bicycle use, the proposed development will meet or exceed the requirements for bicycle parking set out by the London Borough of Hillingdon (LBH).

2.9 The following table presents a list of accessible transportation, retail, health and educational facilities and their distance in relation to the site. Typical walking and cycling times to the sites are also provided. From these times, it can be seen that many key facilities are within easy walking or cycling distance of the site:

Location	Distance	Walk time @ 80m/min	Cycle time @ 260m/min
Uxbridge Underground / Train Station	750m	9.4 mins	2.9 mins
Rockingham Road Bus Stop	20m	0.3 mins	-
Sainsbury's York Rd	1.0km	12.5 mins	3.9 mins
Iceland Foods	550m	6.9 mins	2.1 mins
Tesco Metro	700m/1.0km (walk/bike)	8.8 mins	3.9 mins
Lidl Cowley Rd	1.3km	16.3 mins	5.0 mins
Belmont Medical Centre	1.0km/1.3km (walk/bike	12.5 mins	5.0 mins
Boots Pharmacy	850m	10.6 mins	3.3 mins
Post Office	650m	8.2 mins	2.5 mins
Banks (Multiple companies)	c.800m	c.10 mins	c.3 mins
Primary School (St Mary's Catholic)	160m	2.0 mins	-
Secondary School (Uxbridge High)	1.6km	20.0 mins	6.2 mins
College (Uxbridge College)	1.4km	17.5 mins	5.4 mins

Table 2.1: Accessible Facilities in Uxbridge

Accessibility by Bus

2.10 The site is readily accessible by public transport. The nearest bus stops are located immediately adjacent and opposite to the site on Rockingham Road, offering services to Britwell, Slough, Langley, Iver, Colnbrook, and Heathrow Airport. The next closest bus stops are a 450m walk away on Oxford Road by the multi-storey car park for The Pavilions shopping centre. The buses that stop here are frequent and offer services to many locations, including Hounslow, Cranford, West Drayton, Cowley, Hillingdon, Ruislip, Heathrow Airport, Hayes, Southall, Ealing, and Acton. The accessible bus services within a 640m walk of the site are summarised in the following table:

Bus	Route	Weekday	Saturday	Sunday
3	Slough – Langley – Iver – Iver Heath – Uxbridge	Every 20 minutes	Every 20 minutes	-
7	Heathrow Airport (Central + T5) – Colnbrook – Langley – Uxbridge – Iver Heath – Wexham Ct – Upton Lea – Slough	Every 30 minutes	Every 30 minutes	-
58	Britwell – Slough – Langley – Iver – Iver Heath – Uxbridge	Every 30 minutes	Every 30 minutes	4x daily
222	Hounslow – Cranford – Nene Rd – Sipson – West Drayton – Cowley – Uxbridge	Every 6-10 minutes	Every 7-11 minutes	Every 12-13 minutes
427	Acton – Ealing – Southall – Hayes – Hillingdon – Uxbridge	Every 6-10 minutes	Every 6-10 minutes	Every 8-12 minutes
U1	West Drayton – Cowley – Uxbridge – Ickenham – Ruislip	Every 15 minutes	Every 15 minutes	Every 30 minutes
U3	Heathrow Airport Central – Harmondsworth – West Drayton – Cowley – Hillingdon Hospital – Brunel University – Uxbridge	Every 10-13 minutes	Every 9-12 minutes	Every 20 minutes
U4	Stockley Park – Hayes Town – Hayes – Hillingdon Hospital – Uxbridge	Every 6-10 minutes	Every 6-10 minutes	Every 15 minutes
U5	Hayes Town – Hayes – Stockley Park – West Drayton – Cowley – Hillingdon Hospital – Uxbridge	Every 10-13 minutes	Every 10-14 minutes	Every 20 minutes
U7	Hayes – North Hillingdon – Hayes End – Hillingdon Hospital – Uxbridge	Every 30 minutes	Every 30 minutes	Every 30 minutes
N207	New Oxford St – Tottenham Ct Rd – Marble Arch – Notting Hill Gate – Shepherd's Bush – East Acton – Acton – Ealing – Hanwell – Southall – Yeading – Hayes End – Hillingdon – Uxbridge	Nightbus – midnight until 4am	Nightbus – midnight until 4am	Nightbus – midnight until 4am

Table 2.2: Accessible Bus Services

Accessibility by Rail

2.11 Uxbridge Underground Station, a terminus of both the Metropolitan and Piccadilly Lines, is located just 750m to the northeast of the site (a 10-minute walk assuming an average walking speed of 800m/min), and provides underground train services every 6-8 minutes throughout the day into Central London. Connections to the National Rail Network can be made along the Metropolitan Line, at stations such as Harrow-on-the-Hill (for Chiltern services), Farringdon (for Thameslink services), Moorgate (for Great Northern services) and Liverpool Street (for Greater Anglia services).

Accessibility by Car

2.12 The site is accessed from the A4007/Rockingham Road. From the A4007 a vehicle can quickly access the wider road network, including the M40 motorway.

Accessibility Summary

2.13 As can be seen from the above, the location of the site is accessible on foot, by bicycle or via public transport.

2.14 The site is located close to Uxbridge town centre, with short walking distances to schools, supermarkets, and other retail and community facilities, thus making it transport-sustainable: a private car should rarely, if ever, be required in order to access locations within Uxbridge, in surrounding towns, or in London.

2.15 It can therefore be concluded that the site is well suited for its proposed residential use.

Development Proposals

2.16 The building on the site currently comprises two storeys of Class B1(a) office space, with a GFA of approximately 659 sqm, and is its associated car park.

2.17 The proposed development will result in change of use for the building to Class C3 residential use under Part 3, Class O of The Town and Country Planning (General Permitted Development) Order. This proposed redevelopment of the building will result in a total of 12 apartments including two studio apartments, eight 1-bedroom apartments and two 2-bedroom apartments.

2.18 Pedestrian and vehicular access to the site will be fundamentally unchanged and no changes will be made to the existing parking arrangements.

2.19 LBH's Further Proposed Alteration to the Parking Policies and Standards of Hillingdon's Unitary Development Plan (UDP) provides the following parking standards for residential development:

Parking Type	SBC Parking Standard
Maximum Car Parking	1.5 spaces per dwelling
Minimum Cycle Parking	1 space per dwelling

Table 2.3: LBH Parking Standards

2.20 During pre-application discussions with LBH the Case Officer has suggested that a parking ratio of 1 space per dwelling would most likely be acceptable for a residential use at the site. As stated previously, no changes are currently proposed to the existing car park layout.

2.21 The following section of this report concludes that the proposed conversion of the site from B1 to C3 use will likely result in a reduction in both peak hour and daily traffic attraction and hence it is likely that parking demand at the site will reduce as a result of the proposals.

2.22 In addition, secure and covered cycle parking provision will be provided in-line with the minimum cycle parking standards set out in Table 2.3.

3 Transport and Highways Impacts

3.1 This section assesses the impact on traffic generation at the site as a result of the proposed conversion of approximately 659sqm of B1 office floorspace to a 12 dwelling residential development.

Trip Assessment Methodology

3.2 The potential trip generation during the critical weekday morning (08:00-09:00) and evening peak periods (17:00-18:00) has been assessed. These periods are when baseline network demand on the surrounding highway and transportation infrastructure is likely to be at its highest.

3.3 The existing office and proposed residential trip rates have been calculated with reference to the TRICS database. The TRICS database contains the result of numerous surveys of various developments around the country and is a widely accepted method of calculating traffic attraction.

3.4 The full TRICS outputs for the existing office and proposed residential development, including site selection criteria, are contained within Appendix A of this report and the results have been summarised in the remainder of this section.

Trip Generation Analysis

3.5 The trip generation associated with the existing office is summarised within the following table:

Existing Development	Weekday AM Peak 0800-0900			Weekday PM Peak 1700-1800			Daily 24hrs		
	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
659sqm B1 Office	9	0	9	1	10	11	28	27	55

Table 3.1: Existing Traffic Attraction

Proposed Traffic Attraction Potential

3.6 The traffic attraction of the proposed residential development has also been assessed, as set out in Table 3.2:

Proposed Development	Weekday AM Peak 0800-0900			Weekday PM Peak 1700-1800			Daily 24hrs		
	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
12 Dwellings (Flats privately owned)	1	3	4	3	1	4	21	19	40

Table 3.2: Proposed Traffic Attraction

Traffic Attraction Comparison

3.7 The net trip generation change is set out within Table 3.3:

Development	Weekday AM Peak 0800-0900			Weekday PM Peak 1700-1800			Daily 24hrs		
	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
Existing	9	0	9	1	10	11	28	27	55
Proposed	1	3	4	3	1	4	21	19	40
Comparison	**-8**	**+3**	**-5**	**+2**	**-9**	**-7**	**-7**	**-8**	**-15**

Table 3.3: Traffic Attraction Comparison

3.8 Table 3.3 illustrates that the development proposals will result in a significant reduction in trips generated at the site during both weekday peak periods and throughout the day.

3.9 The proposals will therefore have a beneficial impact on the operation of the local highway network and are thus considered to be acceptable in transport planning terms.

4 Flooding Risks

4.1 The building on the site currently comprises two storeys of Class B1(a) office space, with a GFA of approximately 659 sqm, and is its associated car park.

4.2 The development proposals seek the change of use from B1a (Offices) to C3 (Residential).

4.3 The development is for 12 residential units across 2 storeys, with the ground floor remaining as a car park.

Surface Water Drainage

4.4 The levels and extent of the existing external hard standing areas will be fundamentally unchanged, and as such the existing surface water drainage arrangements will remain.

Flood Risk and Mitigation Measures

4.5 In theory there are five principal types / sources of flooding that could affect the proposed development, these are described below:

- **Fluvial –** The EA flood map identifies the site is located in a low risk Flood Zone 1, refer to Appendix B for the EA flood maps. The London Borough of Hillingdon Surface Water Management Plan (SWMP) affirms this by indicating a very low flood hazard at the site for both the 1in100yr event + climate change and the 1in200yr event. The SWMP does not identify any historic fluvial flooding events in the vicinity of the site, refer to Appendix C for the SWMP flood maps. The risk of fluvial flooding is therefore considered low, there are no mitigation measures required and it will not be addressed further in this report.
- **Tidal –** There are no tidal influences in the vicinity of the site so flooding from tidal sources is considered a low risk. There are no mitigation measures required to address flooding from tidal sources so it will not be addressed further in this report.
- **Groundwater –** The SWMP identifies that the site (and large areas within the Borough) are located above Permeable Superficial deposits, however it does not identify any groundwater flooding incidents in the vicinity of the site, refer to Appendix C for the SWMP maps. The risk of groundwater flooding is therefore considered low, there are no mitigation measures required and it will not be addressed further in this report.

- **Surface Water Run-off –** The site is not located within a critical drainage area. The EA and SWMP flood maps identify the site has a low risk of experiencing surface water flooding, refer to Appendices B and C for EA and SWMP flood maps. The SWMP does not identify any surface water flooding incidents in the vicinity of the site. There are therefore no mitigation measures required to address surface water flooding and it will not be addressed further in this report.
- **Sewer Flooding –** The SWMP identifies there have been 21 and 50 sewer flooding incidents in the UB8 2 post code between 2001 and 2011. Thames Water provided postcode linked data on records of sewer flooding, however more detailed data on the location and cause was not available. The drainage arrangement is remaining as existing, and a car park is located at ground floor level (with residential dwellings on the 1st and 2nd floors), therefore no mitigation measures are required to address sewer flooding and it will not be addressed further in this report.

Flood Mechanism	Source	Flood Risk to the Development	Mitigation Required?
Fluvial	Local Watercourses	Low	No
Tidal	N/A	Low	No
Groundwater	Underlying geology and groundwater levels	Low	No
Surface Water / Overland Flow	Runoff from surrounding elevated land and highway corridors	Low	No
Sewer Flooding	Local Sewers	Low	No

Table 4.1: Flood Risk Summary Table

5 Noise Impacts

Legislative Background

5.1 The *"Town and Country Planning (General Permitted Development) (England) (Amendment) Order 2016"* permits the change of use class of premises, subject to the condition that before beginning the development, the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required. With regard to development under Class O, the matters for which a requirement for prior approval to be determined includes *"the impacts of noise from commercial premises on the intended occupiers of the development,"*

5.2 For the purposes of Class O, "commercial premises" means any premises normally used for the purpose of any commercial or industrial undertaking which existed on the date of application under paragraph O.2(1), and includes any premises licensed under the Licensing Act 2003(a) or any other place of public entertainment.".

Potential Noise Sources

5.3 The site is located in a mixed use area. To the north, the site is bounded by Rockingham Wharf which provides access to a number of light industrial units, including a sign writer, a light engineering workshop and a joinery workshop. Observations during site attendances did not indicate any dominant noise from these uses, other than the furniture workshop which was noted to operate with an external roller shutter open and through which noise "break-out" from the use of internal machinery was occasionally audible.

5.4 To the east, the site overlooks Rockingham Road, on the far side of which is St Mary's Catholic Primary School, a commercial unit at 69 Rockingham Road and a residential terrace of two storey properties to the south.

5.5 The southern boundary of the site is formed with Sheraton House, a three storey block of flats, to the south of which is a public house (The Dolphin).

5.6 To the west, the site adjoins Dolphin Wharf, which is formed by two light industrial units currently in occupation by a lift engineering company and home automation engineering company.

Planning Policy Context and Legislative Background

National Planning Policy

National Planning Policy Framework, (NPPF, 2012)

5.7 Current governmental guidance for the determination of planning applications is given in the *"National Planning Policy Framework"* (NPPF).

5.8 Paragraph 109 of the NPPF advises:

> *"The planning system should contribute to and enhance the natural and local environment by:*
>
> *…….*
>
> *preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability;…."*

5.9 With specific regard to noise, paragraph 123 of the NPPF states:

> *"Planning policies and decisions should aim to:*
>
> - *avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
> - *mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*
> - *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and*
> - *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

5.10 With regard to the 'adverse impacts' referred to in the first two of the above bullet points, the NPPF directs the reader to the advice contained in DEFRA's *"Noise Policy Statement for England"* (NPSE). This Policy Statement introduces the concept of a *"Significant Observed Adverse Effect Level"* (SOAEL), *"Lowest Observed Adverse Effect Level"* (LOAEL) and *"No Observed Adverse Effect Level"* (NOAEL). These are concepts aligned with toxicology outcomes derived from guidance given by the World Health Organisation.

Noise Policy Statement for England

5.11 Whilst the intent of the NPSE in relation to the NPPF is clear, the NPSE does not, at this time, provide any quantitative threshold values for each identified level of *"effect"*. Indeed, the NPSE carefully highlights that:

> *"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."*

National Planning Practice Guidance

5.12 The application of national planning is amplified in the governments *"National Planning Practice Guidance"* (NPPG). This seeks to help clarify understanding the perception of noise effects, outcomes and actions that should be taken to align decision making with the NPPF. In line with the NPPF concept of basing decision making on the identification of "significant" or "other" impacts on health and quality of life, the NPPG aligns its guidance with the NPSE.

5.13 The table below summarises this guidance:

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level (NOAEL)			
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

Table 5.1: NPSE Guidance

5.14 Whilst the NPPF and associated planning practice guidance sets out stringent imperatives to ensure the satisfactory development of land in relation to possible noise impacts, this policy and guidance does not generally provide any detailed technical guidance defining what may be considered to constitute a *"significant"* or *"other"* adverse impact. In the absence of such technical guidance, reference needs to be made to

sustainable development standards set out in local policy and/or relevant 'industry standard' guidance.

Regional Planning Policy

5.15 The applicable regional planning policy includes:

- The London Plan[1]
- Greater London Authority Ambient Noise Strategy[2]

Local Planning Policy

5.16 The London Borough of Hillingdon's Development Plan for the borough includes:

- The Hillingdon Local Plan: Part 1- Strategic Policies; and
- The extant 2007 Saved Unitary Development Plan policies adopted as the Hillingdon Local Plan: Part Two

5.17 Policies relevant to noise adopted in the above documents include:

> ***Policy EM8: Land, Water, Air and Noise***
>
> *(…) Noise*
>
> *The Council will investigate Hillingdon's target areas identified in the Defra Noise Action*
>
> *Plans, promote the maximum possible reduction in noise levels and will minimise the number of people potentially affected.*
>
> *The Council will seek to identify and protect Quiet Areas in accordance with Government*
>
> *Policy on sustainable development and other Local Plan policies.*
>
> *The Council will seek to ensure that noise sensitive development and noise generating development are only permitted if noise impacts can be adequately controlled and mitigated.(…)"*

[1] The Greater London Authority (GLA) (2015) The London Plan. Spatial development strategy for London. Consolidated with alterations since 2011. GLA, London.

[2] Greater London Authority (GLA). (2004).The Mayor's Ambient Noise Strategy. GLA, London.

Strategic Objective SO10:

Improve and protect air and water quality, reduce adverse impacts from noise including the safeguarding of quiet areas and reduce the impacts of contaminated land.

Policy DME 1: Employment Uses on Designated Employment Sites

….

E) Development adjacent to SILs, LSIS and LSELs must be located and/or designed so as to not to compromise the integrity or operation of these employment areas

5.18 The Borough also has an adopted Supplementary Planning Document on noise (adopted 2006).

5.19 With regard to the siting of new residential development, Key Point 1 of the SPD states:

4.5 The following approach to assessing sites according to various categories is derived from the approach set out in Annex 1 of PPG 24 "Planning and Noise" (September 1994). The guidance below takes account of PPG 24 and local circumstances.

4.6 When assessing a proposal for residential development subject to transport related noise, the Local Planning Authority will use Table 1 to determine which of the four Noise Exposure Categories (NECs) A to D the proposed development site falls, taking account of both day and night-time noise levels. Values in Table 1 refer to average noise levels determined for an open site at the position of the proposed dwellings, well away from any existing buildings. Noise levels should be determined at a height of 1.2m to 1.5m above ground at the position of the proposed dwellings, and also at upper or lower floor levels if significant differences in noise exposure are found at the various proposed floor levels. Where the average falls on the boundary between NECs B and C, it will be for the local planning authority to determine the more appropriate NEC for the proposal. Where sites are affected by existing buildings, bunds or screens, specific advice should be sought from the Council's Environmental Protection Unit.

TABLE 1: NOISE EXPOSURE CATEGORIES FOR NEW DWELLINGS NEAR EXISTING NOISE SOURCES

Noise Exposure Categories	Times (hrs)	$L_{Aeq,T\ dB}$ Road	$L_{Aeq,T\ dB}$ Rail	$L_{Aeq,T\ dB}$ Aircraft	Mixed Sources $L_{Aeq,T\ dB}$	Advice
A	07:00 – 23:00 23:00 – 07:00	< 55 < 45	< 55 < 45	< 57 < 48	< 55 < 45	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	07:00 – 23:00 23:00 – 07:00	55 – 63 45 – 57	55 – 66 45 – 59	57 – 66 48 – 57	55 – 63 45 – 57	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise to meet the Council's recommended outdoor and indoor noise levels.
C	07:00 – 23:00 23:00 – 07:00	63 – 72 57 – 66	66 – 74 59 – 66	66 – 72 57 – 66	63 – 72 57 – 66	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise to meet the Council's recommended outdoor and indoor noise levels.
D	07:00 – 23:00 23:00 – 07:00	> 72 > 66	> 74 > 66	> 72 > 66	> 72 > 66	Planning permission should normally be refused.

Source: Derived from PPG24, 1994

Note:

(i) Values in the above table refer to noise levels at the position of the proposed dwelling.

(ii) The noise levels used should be representative of typical conditions. This may include predictions of noise. This could include predictions about various operating conditions but also the effect of proposed buildings adjoining the site.

(iii) Sites where night time noise events (23.00 - 07.00) regularly exceed 82 dB$L_{Amax,Slow}$, several times in any hour should be treated as being in category C (except where the L_{Aeq} level already puts the site in category D).

(iv) For aircraft noise, daytime values accord with contour values which relate to levels measured 1.2m above ground.

(v) $L_{Aeq,T}$ the equivalent continuous sound level - the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T).

(vi) $L_{Aeq,T}$ is used to describe many types of noise and can be measured directly with an integrating sound level meter.

4.7 The Local Planning Authority will have regard to the advice in Table 1 for the appropriate noise exposure category. These levels will be used in any initial discussions. In applying the standards in Table 1 the dominant noise source should be determined. To check if any individual noise source is dominant the noise level from individual sources should be determined and then combined by decibel addition. If the level of any one source lies within 2 dB(A) of the calculated combined value, that source should be taken as the dominant one and the site assessed against the appropriate NEC for that source, rather than using the mixed source NECs. If the site is affected by industrial noise then special considerations will apply. Further guidance is given in Key Point 6.

4.8 Further detailed residential noise standards are given in Table 2: Residential Noise Criteria (see section 5) and refer to predicted noise levels for the development following any mitigation measures, such as those outlined in Key Point 10.

4.9 The noise exposure categories values for mixed sources refer to where there is no dominant noise source. Noise effects from mixed sources could combine in a way that increases their overall effect. Sites adversely affected by a number of sources will need an assessment of combined impacts. Specific advice should be sought from the Council's Environmental Protection Unit. If the site is affected by industrial noise or noise with particularly annoying features and characteristics then special considerations will apply. Regard should be given to the characteristics of the noise source involved in each case. Further guidance is given in Key Point 6.

5.20 "Key Point 6" deals with noise from industrial uses and recommends that the potential impacts are assessed in line with the guidance of BS 4142: 1997: *"Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas"*. It should be noted that this standard is now superseded by BS 4142: 2014: *"Methods for Rating and Assessing Industrial and Commercial Sound"* to provide a closer alignment with the principles of national planning policy (NPPF, NPSE)

5.21 With regard to technical design standards for residential development, Table 2 of the SPD provides the following design guidance:

TABLE 2: RESIDENTIAL NOISE CRITERIA

		Recommended Noise Level (dB)
Daytime Noise (07:00 - 23:00)	Outdoor living areas	As low as practicable, and < 50 $L_{Aeq,T}$ *(free field)
	Indoor living areas	< 35 $L_{Aeq,T}$*
Night-time Noise (23:00 - 07:00)	Outside bedroom windows	< 45 $L_{Aeq,T}$ *(façade) < 60 $L_{Amax,Fast}$ (façade)
	Inside bedrooms	< 30 $L_{Aeq,T}$* < 45 $L_{Amax,Fast}$

Source: Derived from BS8233:1999 and "Guidelines for Community Noise", World Health Organisation, 1999
* Time base T should be appropriate for the circumstances, typically 1 hour day and 5 minutes night

Design Guidance

BS 8233: 2014; "Sound Insulation and Noise Reduction for Buildings

5.22 BS 8233: 2014 *"Sound Insulation and Noise Reduction for Buildings"* offers the following design guidance for indoor ambient noise levels within dwellings:

Activity	Location	07.00 to 23.00 hours	23.00 t0 07.00 hours
Resting	Living Room	35dB $L_{Aeq,16hour}$	--
Dining	Dining Room/Area	40dB $L_{Aeq,16hour}$	--
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$

Table 5.2: BS 8233 Indoor Ambient Noise Level Design Guidance

5.23 Whilst the above guidance is given for dwellings, the above values are also considered to be appropriate for *"rooms for residential purposes"*, such as student accommodation.

5.24 A note accompanying the above Table states:

> *"Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or*

$L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values."

5.25 Despite identifying that maximum values *'may'* be set, guidance values for differing types of noise/frequency of events is not given. It can, however, be noted that the recommendations of BS8233 are aligned with guidance set out in the World Health Organisation's *"Guidelines for Community Noise"*. On that basis, it would seem appropriate to seek to limit night-time noise intrusion such that maximum noise levels do not normally exceed a maximum internal value of 45dB $L_{Amax,fast}$. Section 3.4 of the WHO guidelines implies that *'not normally'* would be an occurrence of more than 10-15 times per night.

5.26 A further note to the above Table indicates that where *"development is considered necessary or desirable"*, the above guideline values can be relaxed by 5dB and *"reasonable"* internal conditions still be achieved.

BS 4142: 2014: "Methods for Rating and Assessing Industrial and Commercial Sound"

5.27 BS 4142 provide a rating and assessment methodology for assessing the potential adverse impact of industrial and commercial noise sources on neighbouring dwellings.

5.28 The assessment procedure initially compares the ***'Rating Level'*** of the source with the '***Background Noise Level'*** when the source is not present.

5.29 The ***'Rating Level'*** (L_{Ar}) referred to is the specific noise level of the noise source under investigation (in terms of the L_{Aeq} noise index), to which corrections are applied if the noise has certain audible characteristics. **Table 5.1** below summarises the corrections to be applied based on a subjective assessment of noise source characteristics.

Character Correction				
Feature / Perception	**Tonality**	**Impulsivity**	**Intermittency**	**Other acoustic characteristics**
Just Perceptible	+2dB	+3dB	When the specific sound has identifiable On/Off conditions that are readily distinctive. +3dB	+3dB
Clearly Perceptible	+4dB	+6dB		
Highly Perceptible	+6dB	+9dB		

Table 5.3: BS4142 Character Correction for Rating Level Calculation

5.30 The ***'Background Noise Level'*** (L_{A90}) represents the noise level that is exceeded for 90% of the stated measurement period. For assessment purposes, the background noise level needs to be determined without the noise source under investigation operating.

5.31 The time of operation needs to be taken into account. During the day (normally taken to be 07.00 to 23.00 hours) a one hour measurement period is considered appropriate. During the night (normally taken to be 23.00 – 07.00 hours) a 15 minute time period is normally used.

5.32 The following guidance is then offered based on the outcome of this initial assessment:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- 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.

5.33 A note accompanying the above guidance states:

"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."

5.34 The initial estimate of the impact should then be modified to account for its context. Such considerations include:

- The absolute level of the sound - the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

- Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.

- The character and level of the residual sound compared to the character and level of the specific sound.

- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

Existing Noise Environment

Noise Monitoring

5.35 An environmental noise survey of the site has been undertaken to determine existing noise levels characterising the site. Due to security concerns at the site, it was not possible to install automated noise monitoring equipment, therefore the survey was fully undertaken using manned measurement instrumentation. The presence of the surveyor also enabled detailed commentary on noise source influencing measurements to be clearly identified.

5.36 The survey was undertaken between monitoring was undertaken over a five day period between approximately 08.15 to 15.30 hours on 7 September 2016.

Automated noise monitoring equipment was installed at two locations as described in **Table 5.4** and shown in **Figure 5.1** below.

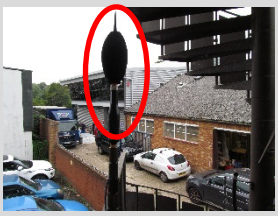
Monitoring Location	Description	Photograph
1	Overlooking Rockingham Road. The measurement was positioned approximately 1m from the front façade of the existing building, by means of a boom pole extended to approximately 1st floor level.	
2	Overlooking industrial units in Rockingham Wharf. The measurement microphone was positioned approximately 1m from the rear elevation of the building, mounted on a boom pole strapped to the external fire escape at 1st floor level.	

Table 5.4: Automated Noise Survey Locations

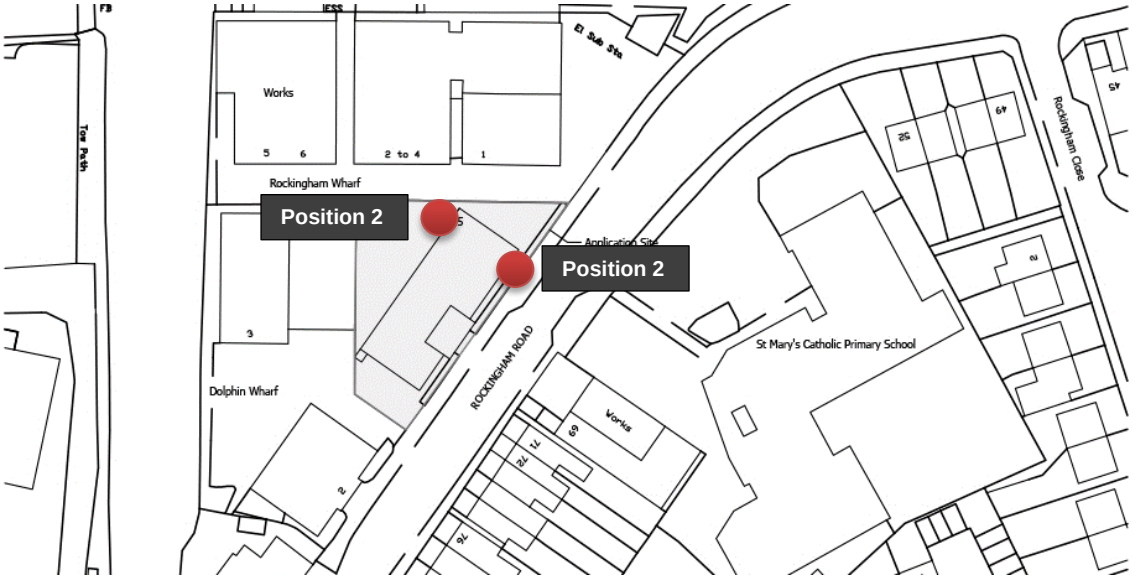


Figure 5.1: Noise Survey Measurement Locations

5.37 The following instrumentation was used for the surveys:

Position	Description	Make	Model	S/No.	Calibration
1	Sound Level Analyser	Norsonic	Nor140	1405946	24/03/2016
	Microphone	Norsonic	Nor1225	41489	
	Preamplifier	Norsonic	Nor1209	15799	
	Outdoor Microphone Kit	Norsonic	Nor 1217	12175120	n/a
2	Sound Level Analyser	Norsonic	Nor140	1405948	24/03/2016
	Microphone	Norsonic	Nor1225	208221	
	Preamplifier	Norsonic	Nor1209	15806	
	Outdoor Microphone Kit	Norsonic	Nor 1217	12175120	n/a
1 & 2	Calibrator	Norsonic	Nor 1251	34058	24/03/2016

Table 5.5: Instrumentation Details

5.38 The sound level analysers were calibrated prior to the survey and the calibration was checked upon completion. No drift in calibration was observed.

Survey Procedure

5.39 The sound level analysers were both configured to record the L_{A90}, $L_{Aeq,}$ and $L_{Amax,fast}$ sound levels over consecutive 1 second periods to provide a detailed time history profile showing fluctuations in noise levels. The analysers were also configured to make real-time contemporaneous audio recordings to assist in identifying the source of specific higher magnitude noise “events” observed in the time history profiling.

Noise Monitoring Results

5.40 Noise levels measured at Positions 1 and 2 are presented on **Time History Graphs 1** and **2** attached at **Appendix D**.

Weather

5.41 Weather conditions during the survey were suitable for undertaken environmental noise measurements being sunny with a temperature of 20-25°C, a light south-easterly breeze (<5m/s) and no precipitation.

Observations and Discussion

5.42 Noise levels at Position 1 were dominated by road traffic noise associated with vehicle movements on Rockingham Road. No other sources of commercial noise were observed to have any significant effect on measured noise levels.

5.43 Noise levels at Position 2 were also influenced by noise from Rockingham Road (albeit acoustically screened by the massing of the building), but were more generally dominated by noise from building services installations (condenser units) associated with the current commercial occupation of the building. Noise from the joinery workshop in Rockingham Wharf was intermittently audible.

Site Suitability

5.44 As noted above, the London Borough of Hillingdon's adopted supplementary planning guidance on noise guidance on noise advocates that the suitability of a site for residential development should be determined based on the "Noise Exposure Category" of the site in line with legacy guidance of PPG24.

5.45 The measurements made at Position 1 have been processed to determine typical daytime ($L_{Aeq,16hour}$) and night-time ($L_{Aeq,8hour}$) values, in line with the conversion methodology set out in TRL publication *"Converting the UK Traffic Noise Index $L_{A10,18hour}$ to EU Noise Indices for Noise Mapping"*. Values of 67.1dB $L_{Aeq,16hour}$ and 63.4 dB $L_{Aeq,8hour}$ are calculated [3]. The measurement data also indicates that it is unlikely that night-time noise levels would normally exceed a value of 82dB $L_{Amax,slow}$.

5.46 The above values would place the site in NEC C for both daytime and night-time noise.

5.47 The advice given in SPG 10 for sites falling into NEC C is that:

> *"Planning permission should not normally be granted. Where it is considered that permission should be given, for example, because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise to meet the Council's recommended outdoor and indoor noise levels".*

[3] These values include a correction of 3dB to account for measurements being made 1m from the façade of the building to convert to "free-field" values for comparison with Hillingdon SPD requirements.

5.48 It is therefore concluded that, subject to appropriate mitigation, the site is suitable for residential development.

Mitigation

5.49 In order to consider the degree of mitigation necessary to provide acceptable internal living condition, reference is made to the guidance of BS8233: 2014. This has been published since the publication of the Council's adopted SPD, but reflects the internal design requirements set out in the policy guidance.

Preliminary Review of Required Sound Insulation

5.50 Based on measured "worst case" incident noise levels, the external fabric to the residential areas of the proposed building will need to maintain the following sound reduction in order to deliver the internal design targets outlined above:

Parameter	"Worst Case" Sound Reduction Required (dBA)
Daytime ($L_{Aeq,16hour}$)	32 dB(A)
Night-time ($L_{Aeq,8hour}$)	33 dB(A)

Table 5.6: Calculated "Worst Case" Sound Reduction Requirements

5.51 Whilst PPG 24 has been formally withdrawn and superseded by the NPPF, the former guidance also contains a substantial amount of technical guidance that provides useful context when considering the feasibility of mitigating noise from external sources. In particular, Annex 6 of PPG 24 provides technical advice with regard to the typical "outside-to-inside" noise reduction that can expected for various types of noise. For road traffic noise, this guidance indicates that single glazing would typically offer a sound reduction of 28dB(A) and that 34dB(A) should be achievable with secondary glazing.

5.52 In order to protect future occupants from external noise in, it is therefore recommended that secondary glazing is utilised on both the front and rear elevations of the building.

5.53 The use of such a glazing configuration should effectively control noise intrusion into the proposed flats in line with the guidance of BS8233: 2014 and the Council's adopted SPD.

Alternative Means of Ventilation

5.54 Approved Document F (ADF) of the Building Regulations 2010 requires that all habitable rooms in dwellings have background ventilation. A partially open window will typically reduce traffic noise by around 10-15dB(A). It is clear, therefore, that reliance on openable windows to provide background ventilation will not be compatible with maintaining acceptable internal noise levels within the flats. As such, alternative means of ventilation will need to be provided to deliver the statutory requirements of ADF.

5.55 Alternative means of ventilation could include a mechanical ventilation strategy (such as the use of a whole house heat recovery system) or the use of an acoustically rated passive ventilation strategy (e.g. use of acoustically rated ventilators).

5.56 Both of the above options are consistent with the guidance given in section 6.4.5.4 of BS 8233; 2014 which states:

> *"The Building Regulations' supporting documents on ventilation recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice."*

Conclusions

5.57 The above assessment demonstrates that noise intrusion into the proposed dwellings should be adequately controlled with the use of secondary glazing and alternative means of ventilation (i.e. the use acoustically rated passive ventilators or mechanical ventilation/heat recovery (MVHR) systems).

Industrial Noise

5.58 As commented on earlier, the site adjoins existing industrial uses in Rockingham Wharf and these have some intermittent influence on the noise climate at the rear of the existing building. In practice, the situation is complicated by noise emissions from existing condenser units, which generally serve to 'mask' noise from the adjoining industrial uses, but will not form a feature of the future noise environment should the proposed conversion of the premises proceed.

5.59 The detailed time history profiles obtained at Position 2 have therefore been analysed to define periods which are characterised by general community noise (e.g. road traffic); by the condenser units only operating and by the cumulative noise levels of activities, including noise emissions from the adjoining industrial unit.

5.60 This analysis has been used to determine specific noise levels for the adjoining industrial use, typical background noise levels, etc., as required to inform an assessment of the potential impact of such noise in line with the assessment methodology of BS 4142: 2014.

5.61 The outcome of this assessment is summarised in Table An assessment of noise from these units in line with the assessment methodology of BS 4142: 2014 has therefore been undertaken, the results of which are summarised in **Table 5.7** below:

Results		Relevant Clause	Commentary
Background sound level (day)	$L_{A90,1hour}$ = 48 dB	8.3	The background noise level has been based on the typical minimum values, measured prior to the commencement of operation of condenser units associated with the existing commercial use.
Assessment made during the day, so the reference time period is 1 hour		7.2	
Specific sound level	$L_{Aeq(1\ hour)}$ = 56 dB	7.3	The specific sound level has been calculated assuming plant will be operational at its maximum operational noise level for 20% of the measurement period.
Acoustic feature correction	3dB	9.2	The operation of the unit is intermittent (so a 3dB correction is added)
Rating Level	(56 + 3) dB = 59 dB	9.2	
Background sound level	$L_{A90,1hour}$ = 48 dB	8.3	
Excess over rating level	(59 – 48) dB = +11 dB	11	The assessment indicates that the rating level exceeds the background level by 11dB.
Assessment indicates likelihood of a significant adverse impact,		11	

depending on the context.			
Context		10	The building will incorporate design measures (i.e. secondary glazing and alternative means of ventilation) to control external noise intrusion and capable of reducing noise from the proposed plant to secure good internal conditions in line with the guidance for habitable rooms in BS 8233: 2014 and the Council's adopted SPD on noise

Table 5.7: BS 4142 Assessment

5.62 As noted earlier, secondary glazing has been recommended for both the front and rear elevations of the existing building, which will assist in providing an enhanced level of sound insulation against external noise sources. The implementation of such works should be compatible with controlling indoor ambient noise levels in line with the guidance of BS 8233: 2014 and the Borough's adopted SPD (taking into account the characteristics of the incident noise).

5.63 It is therefore concluded that the control of noise intrusion into the new residential units to be created by the proposed change of use can be adequately controlled to avoid significant adverse noise impacts and reduce other adverse impacts to a minimum. The proposed change of use is therefore considered to comply fully with noise related national, regional and local planning policy.

Other Considerations

5.64 The survey work undertaken does not indicate that other existing commercial uses in the vicinity of the site had any significant influence on the noise climate at the site, which is dominated by noise associated from adjoining transport infrastructure.

5.65 This conclusion is drawn on the basis of daytime noise measurements and does not therefore specifically address noise that may be associated with other commercial uses in the vicinity of the site which may be operational during the evening or at night (e.g. The Dolphin public house, which is located to the south of the site). It is possible that public houses may, subject to the specific terms of their license, offer regulated entertainment, which could potentially include the use of sound amplification systems.

5.66 Notwithstanding that potential, it is concluded that, in the context of this site, there is a very low risk of any late night usage of the public house/provision of entertainment causing unacceptable noise disturbance to the proposed residential accommodation. This derives from a consideration of two primary factors:

- First, in order to adequately control traffic noise intrusion, the new dwellings will be provided with alternative means of ventilation in order that double glazed windows may remain closed. The ability to keep windows shut will also provide effective mitigation against noise from neighbouring commercial activities.
- Second, that there are existing residential dwellings in closer proximity to the public house (Sherton House). It therefore follows that if the public house was operated in such a manner so as to cause nuisance to future occupants of the proposed dwellings, a more significant nuisance would also be caused to existing residential receptors which are in closer proximity to the public house. The prevention of nuisance forms one of the four guiding tenets of the Licensing Act 2003 and it therefore follows that an effective regulatory regime to prevent such adverse noise impacts arising at this site.

5.67 In light of the above, it is concluded that the risk of any adverse noise impact that could theoretically arise as a result of the proximity of the adjoining public house and possible use of those premises for the provision of regulated entertainment will be controlled, as a matter of course, through the regulatory controls of the Licensing Act 2003 (most particularly given that there are existing residential uses in closer proximity to the public house which would be more significantly affected by any unreasonable use of the public house than the new dwellings to be created by the proposed development).

Conclusions

Existing Noise Environment

Noise monitoring has been undertaken to determine the existing environmental noise climate at the site. The front (Rockingham Road) elevation of the building was found to be dominated by traffic movements on Rockingham Road. Noise levels at the rear of the site (overlooking Rockingham Wharf) were also influenced by noise “break-out” from an adjoining joinery workshop.

Planning Policy Context and Design Guidance

5.69 The requirements of national, regional and local planning policy relevant to the proposed scheme are discussed. Reference has also been made to industry standard design guidance.

Site Suitability

5.70 The suitability of the site for residential development has been reviewed in the context of national planning policy and the particular requirements of the Borough's adopted PSD relating to noise. This concludes that the site is suitable for residential development, subject to the implementation of appropriate mitigation.

Noise Intrusion

5.71 A preliminary review of noise intrusion into the proposed flats confirms that noise intrusion can be readily controlled through the use of secondary glazing. In order that windows can remain closed, allowance will also need to be made for alternative means of ventilation (in line with the requirements of Approved Document F of the Buildings Regulations 2010). This can be achieved either through the use of acoustically rated passive ventilators or mechanical ventilation.

5.72 A more detailed (BS4142) assessment of noise associated with the adjoining industrial units has also been undertaken. Once allowance for the context of the site has been made (i.e. the building will incorporate design measures including secondary glazing and alternative means of ventilation) to substantially enhance the sound insulation of the external fabric and remove the needs for windows to be open for ventilation purposes, it is concluded that existing plant noise can be adequately reduced to secure good internal conditions in line with the guidance for habitable rooms in BS 8233: 2014 and the Council's adopted SPD on noise.

Conclusion

5.73 In light of the above, it is concluded that the proposed development should not have any significant adverse impact on the health and/or quality of life for existing residential and commercial neighbours of the site arising from noise, and that the use of an appropriate sound insulation scheme (as promoted in the Council's guidance on noise) will mitigate and reduce other adverse impacts to a minimum.

5.74 It is therefore concluded that the proposed development complies fully with noise related national, regional and local planning policy.

6 Summary and Conclusions

6.1 Mayer Brown has been appointed by STA Associates to prepare this report regarding the potential for the conversion of Tavistock House in Uxbridge (hereafter referred to as “the site”) from B1(a) office use to C3 residential use in terms of Class O of the Town and Country Planning (General Permitted Development) (England) Order and to support a Prior Notification Application if so required by the Local Planning Authority.

6.2 The building on the site currently comprises two storeys of Class B1(a) office space, with a GFA of approximately 659 sqm, and is its associated car park.

6.3 The proposed redevelopment of the building will result in a total of 12 apartments including two studio apartments, eight 1-bedroom apartments and two 2-bedroom apartments.

6.4 This report has established that:

- the site is accessible by non-car modes of transport
- the proposed residential development will have a beneficial impact on the existing operation of the local highway network
- the site would not be at risk of flooding from fluvial sources because the site is located in a Flood Zone 1 area indicating a low risk of flooding
- the site would not alter the surface water arrangements of the existing site and will not increase the risk of flooding to itself or surrounding properties
- the proposed development should not have any significant adverse impact on the health and/or quality of life for existing residential and commercial neighbours of the site arising from noise and that the use of an appropriate sound insulation scheme (as promoted in the Council’s interim guidance on noise) will mitigate and reduce other adverse impacts to a minimum.

6.5 The development proposals are therefore considered to be wholly acceptable in transportation planning, flood risk and noise terms and, if necessary, meets the transport, highways and flooding requirements for "Prior Approval" as defined within the General Permitted Development Order.

APPENDIX A: TRICS Outputs

Calculation Reference: AUDIT-807401-160905-0930

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : A - OFFICE
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	BD	BEDFORDSHIRE	1 days
	HF	HERTFORDSHIRE	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Gross floor area
Actual Range:	610 to 5000 (units: sqm)
Range Selected by User:	186 to 7000 (units: sqm)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/08 to 26/11/15

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Wednesday	1 days
Thursday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	3 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	1
Built-Up Zone	1
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

B1	3 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

25,001 to 50,000	3 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

125,001 to 250,000	3 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 BD-02-A-03 OFFICES BEDFORDSHIRE
BROMHAM ROAD

BEDFORD
Edge of Town Centre
No Sub Category
Total Gross floor area: 1469 sqm
Survey date: MONDAY 14/10/13 Survey Type: MANUAL

2 HF-02-A-03 OFFICE HERTFORDSHIRE
60 VICTORIA STREET

ST ALBANS
Edge of Town Centre
Built-Up Zone
Total Gross floor area: 610 sqm
Survey date: WEDNESDAY 16/10/13 Survey Type: MANUAL

3 HF-02-A-04 OFFICES HERTFORDSHIRE
STATION WAY

ST ALBANS
Edge of Town Centre
Residential Zone
Total Gross floor area: 5000 sqm
Survey date: THURSDAY 02/10/14 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
ES-02-A-12	Low parking ratio
KC-02-A-09	Low parking ratio
KC-02-A-10	No parking

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	3	2360	0.692	3	2360	0.028	3	2360	0.720
08:00 - 09:00	3	2360	1.384	3	2360	0.014	3	2360	1.398
09:00 - 10:00	3	2360	0.848	3	2360	0.170	3	2360	1.018
10:00 - 11:00	3	2360	0.198	3	2360	0.198	3	2360	0.396
11:00 - 12:00	3	2360	0.113	3	2360	0.184	3	2360	0.297
12:00 - 13:00	3	2360	0.099	3	2360	0.283	3	2360	0.382
13:00 - 14:00	3	2360	0.353	3	2360	0.311	3	2360	0.664
14:00 - 15:00	3	2360	0.141	3	2360	0.226	3	2360	0.367
15:00 - 16:00	3	2360	0.184	3	2360	0.254	3	2360	0.438
16:00 - 17:00	3	2360	0.042	3	2360	0.523	3	2360	0.565
17:00 - 18:00	3	2360	0.170	3	2360	1.483	3	2360	1.653
18:00 - 19:00	3	2360	0.014	3	2360	0.396	3	2360	0.410
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.238			4.070			8.308

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	610 - 5000 (units: sqm)
Survey date date range:	01/01/08 - 26/11/15
Number of weekdays (Monday-Friday):	3
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	5
Surveys manually removed from selection:	3

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
08:00 - 09:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
09:00 - 10:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
10:00 - 11:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
11:00 - 12:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
12:00 - 13:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
13:00 - 14:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
14:00 - 15:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
15:00 - 16:00	3	2360	0.028	3	2360	0.028	3	2360	0.056
16:00 - 17:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
17:00 - 18:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
18:00 - 19:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.028			0.028			0.056

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	610 - 5000 (units: sqm)
Survey date date range:	01/01/08 - 26/11/15
Number of weekdays (Monday-Friday):	3
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	5
Surveys manually removed from selection:	3

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	3	2360	0.014	3	2360	0.000	3	2360	0.014
08:00 - 09:00	3	2360	0.085	3	2360	0.000	3	2360	0.085
09:00 - 10:00	3	2360	0.028	3	2360	0.000	3	2360	0.028
10:00 - 11:00	3	2360	0.014	3	2360	0.000	3	2360	0.014
11:00 - 12:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
12:00 - 13:00	3	2360	0.014	3	2360	0.014	3	2360	0.028
13:00 - 14:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
14:00 - 15:00	3	2360	0.000	3	2360	0.000	3	2360	0.000
15:00 - 16:00	3	2360	0.000	3	2360	0.014	3	2360	0.014
16:00 - 17:00	3	2360	0.014	3	2360	0.000	3	2360	0.014
17:00 - 18:00	3	2360	0.014	3	2360	0.085	3	2360	0.099
18:00 - 19:00	3	2360	0.014	3	2360	0.028	3	2360	0.042
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.197			0.141			0.338

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	610 - 5000 (units: sqm)
Survey date date range:	01/01/08 - 26/11/15
Number of weekdays (Monday-Friday):	3
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	5
Surveys manually removed from selection:	3

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-807401-160905-0900

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED
VEHICLES

Selected regions and areas:

01	GREATER LONDON		
	EN	ENFIELD	1 days
	HG	HARINGEY	1 days
02	SOUTH EAST		
	EX	ESSEX	1 days
	HC	HAMPSHIRE	1 days
	OX	OXFORDSHIRE	1 days
	SC	SURREY	1 days
05	EAST MIDLANDS		
	NR	NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS		
	ST	STAFFORDSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 6 to 36 (units:)
Range Selected by User: 6 to 50 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/08 to 16/11/15

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	1 days
Wednesday	4 days
Thursday	1 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	8 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	7

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	5
Built-Up Zone	2
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	8 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	2 days
10,001 to 15,000	1 days
20,001 to 25,000	1 days
25,001 to 50,000	3 days
50,001 to 100,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	3 days
250,001 to 500,000	1 days
500,001 or More	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.5 or Less	1 days
0.6 to 1.0	2 days
1.1 to 1.5	5 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	8 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 EN-03-C-01 BLOCK OF FLATS ENFIELD
SOUTH STREET

ENFIELD
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Number of dwellings: 16
Survey date: MONDAY 16/11/15 Survey Type: MANUAL

2 EX-03-C-01 FLATS ESSEX
WESTCLIFF PARADE
WESTCLIFF
SOUTHEND-ON-SEA
Edge of Town Centre
Residential Zone
Total Number of dwellings: 6
Survey date: TUESDAY 22/10/13 Survey Type: MANUAL

3 HC-03-C-02 FLATS HAMPSHIRE
WORTING ROAD

BASINGSTOKE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 16
Survey date: THURSDAY 21/10/10 Survey Type: MANUAL

4 HG-03-C-02 BLOCK OF FLATS HARINGEY
HIGH ROAD
WOODSIDE PARK
WOOD GREEN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 30
Survey date: WEDNESDAY 01/10/14 Survey Type: MANUAL

5 NR-03-C-01 BLOCK OF FLATS NORTHAMPTONSHIRE
ROCKINGHAM ROAD

CORBY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 20
Survey date: FRIDAY 21/11/08 Survey Type: MANUAL

6 OX-03-C-01 BLOCK OF FLATS OXFORDSHIRE
OXFORD ROAD
COWLEY
OXFORD
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 14
Survey date: WEDNESDAY 20/10/10 Survey Type: MANUAL

7 SC-03-C-02 FLATS SURREY
CONSTITUTION HILL

WOKING
Suburban Area (PPS6 Out of Centre)
Built-Up Zone
Total Number of dwellings: 36
Survey date: WEDNESDAY 23/07/08 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8 ST-03-C-01 BLOCKS OF FLATS STAFFORDSHIRE
ETRURIA COURT
HUMBERT ROAD
STOKE-ON-TRENT
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 33
Survey date: WEDNESDAY 26/11/08 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
CN-03-C-01	No parking
DS-03-C-01	Too much parking
HK-03-C-03	High PTAL Rating
IS-03-C-01	High PTAL Rating
IS-03-C-03	High PTAL Rating
SK-03-C-02	High PTAL Rating
TH-03-C-02	High PTAL Rating
WH-03-C-01	High PTAL Rating

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	21	0.053	8	21	0.170	8	21	0.223
08:00 - 09:00	8	21	0.053	8	21	0.246	8	21	0.299
09:00 - 10:00	8	21	0.029	8	21	0.076	8	21	0.105
10:00 - 11:00	8	21	0.094	8	21	0.094	8	21	0.188
11:00 - 12:00	8	21	0.088	8	21	0.058	8	21	0.146
12:00 - 13:00	8	21	0.117	8	21	0.135	8	21	0.252
13:00 - 14:00	8	21	0.082	8	21	0.082	8	21	0.164
14:00 - 15:00	8	21	0.076	8	21	0.064	8	21	0.140
15:00 - 16:00	8	21	0.058	8	21	0.053	8	21	0.111
16:00 - 17:00	8	21	0.117	8	21	0.070	8	21	0.187
17:00 - 18:00	8	21	0.251	8	21	0.088	8	21	0.339
18:00 - 19:00	8	21	0.158	8	21	0.129	8	21	0.287
19:00 - 20:00	2	15	0.333	2	15	0.200	2	15	0.533
20:00 - 21:00	2	15	0.100	2	15	0.033	2	15	0.133
21:00 - 22:00	2	15	0.133	2	15	0.100	2	15	0.233
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.742			1.598			3.340

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	6 - 36 (units:)
Survey date date range:	01/01/08 - 16/11/15
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	8

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	21	0.000	8	21	0.000	8	21	0.000
08:00 - 09:00	8	21	0.000	8	21	0.000	8	21	0.000
09:00 - 10:00	8	21	0.000	8	21	0.000	8	21	0.000
10:00 - 11:00	8	21	0.000	8	21	0.000	8	21	0.000
11:00 - 12:00	8	21	0.000	8	21	0.000	8	21	0.000
12:00 - 13:00	8	21	0.012	8	21	0.012	8	21	0.024
13:00 - 14:00	8	21	0.000	8	21	0.000	8	21	0.000
14:00 - 15:00	8	21	0.000	8	21	0.000	8	21	0.000
15:00 - 16:00	8	21	0.000	8	21	0.000	8	21	0.000
16:00 - 17:00	8	21	0.000	8	21	0.000	8	21	0.000
17:00 - 18:00	8	21	0.000	8	21	0.000	8	21	0.000
18:00 - 19:00	8	21	0.000	8	21	0.000	8	21	0.000
19:00 - 20:00	2	15	0.000	2	15	0.000	2	15	0.000
20:00 - 21:00	2	15	0.000	2	15	0.000	2	15	0.000
21:00 - 22:00	2	15	0.000	2	15	0.000	2	15	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.012			0.012			0.024

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	6 - 36 (units:)
Survey date date range:	01/01/08 - 16/11/15
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	8

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	21	0.000	8	21	0.012	8	21	0.012
08:00 - 09:00	8	21	0.000	8	21	0.000	8	21	0.000
09:00 - 10:00	8	21	0.006	8	21	0.006	8	21	0.012
10:00 - 11:00	8	21	0.000	8	21	0.000	8	21	0.000
11:00 - 12:00	8	21	0.000	8	21	0.012	8	21	0.012
12:00 - 13:00	8	21	0.018	8	21	0.006	8	21	0.024
13:00 - 14:00	8	21	0.006	8	21	0.006	8	21	0.012
14:00 - 15:00	8	21	0.006	8	21	0.006	8	21	0.012
15:00 - 16:00	8	21	0.000	8	21	0.000	8	21	0.000
16:00 - 17:00	8	21	0.018	8	21	0.018	8	21	0.036
17:00 - 18:00	8	21	0.000	8	21	0.000	8	21	0.000
18:00 - 19:00	8	21	0.000	8	21	0.000	8	21	0.000
19:00 - 20:00	2	15	0.000	2	15	0.000	2	15	0.000
20:00 - 21:00	2	15	0.000	2	15	0.000	2	15	0.000
21:00 - 22:00	2	15	0.000	2	15	0.000	2	15	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.054			0.066			0.120

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

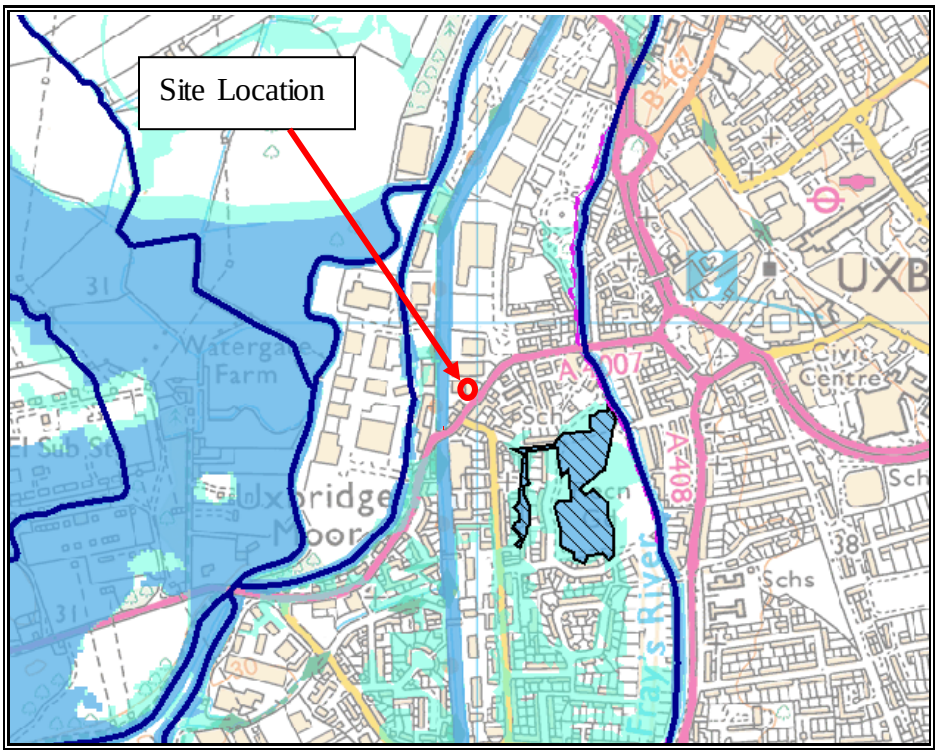
Parameter summary

Trip rate parameter range selected:	6 - 36 (units:)
Survey date date range:	01/01/08 - 16/11/15
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	8

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

APPENDIX B: EA Flood Maps

ENVIRONMENT AGENCY FLOOD MAP
(July 2016)
Tavistock House, Uxbridge



London Borough of Hillingdon, Post code: UB8 2XN Co-ords: E504984, N183956

1. Floodplain

A floodplain is the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.
There are two different kinds of area shown on the Flood Map. They can be described as follows:-

- Dark blue ■ shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:
- from the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year
- or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.
- Light blue □ shows the additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1% (1 in 1000) chance of occurring each year.

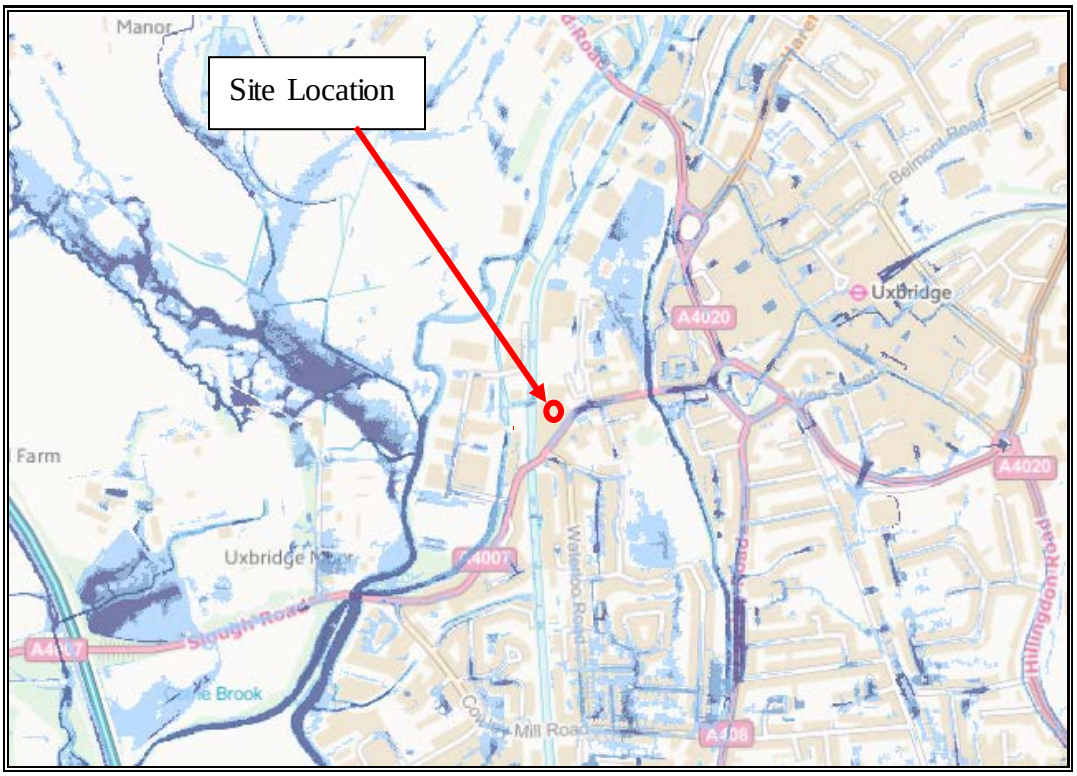
These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements.
For a fuller explanation of flood likelihood, follow the link at the bottom of the page.

2. Flood Defences
The purple line shows all flood defences built in the last five years to protect against river floods with a 1% (1 in 100) chance of happening each year, or floods from the sea with a 0.5% (1 in 200) chance of happening each year, together with some, but not all, older defences and defences which protect against smaller floods. Flood defences that are not yet shown, and the areas that benefit from them, will be gradually added.

Hatched areas benefit from the flood defences shown, in the event of a river flood with a 1% (1 in 100) chance of happening each year, or a flood from the sea with a 0.5% (1 in 200) chance of happening each year. If the defences were not there, these areas would be flooded.

APPENDIX C: SWMP Flood Maps

ENVIRONMENT AGENCY SURFACE WATER FLOOD MAP
(July 2016)
Tavistock House, Uxbridge



London Borough of Hillingdon, Post code: UB8 2XN Co-ords: E504984, N183956

Risk of Flooding from Surface Water

Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

The shading on the map shows the risk of flooding from surface water in this particular area.

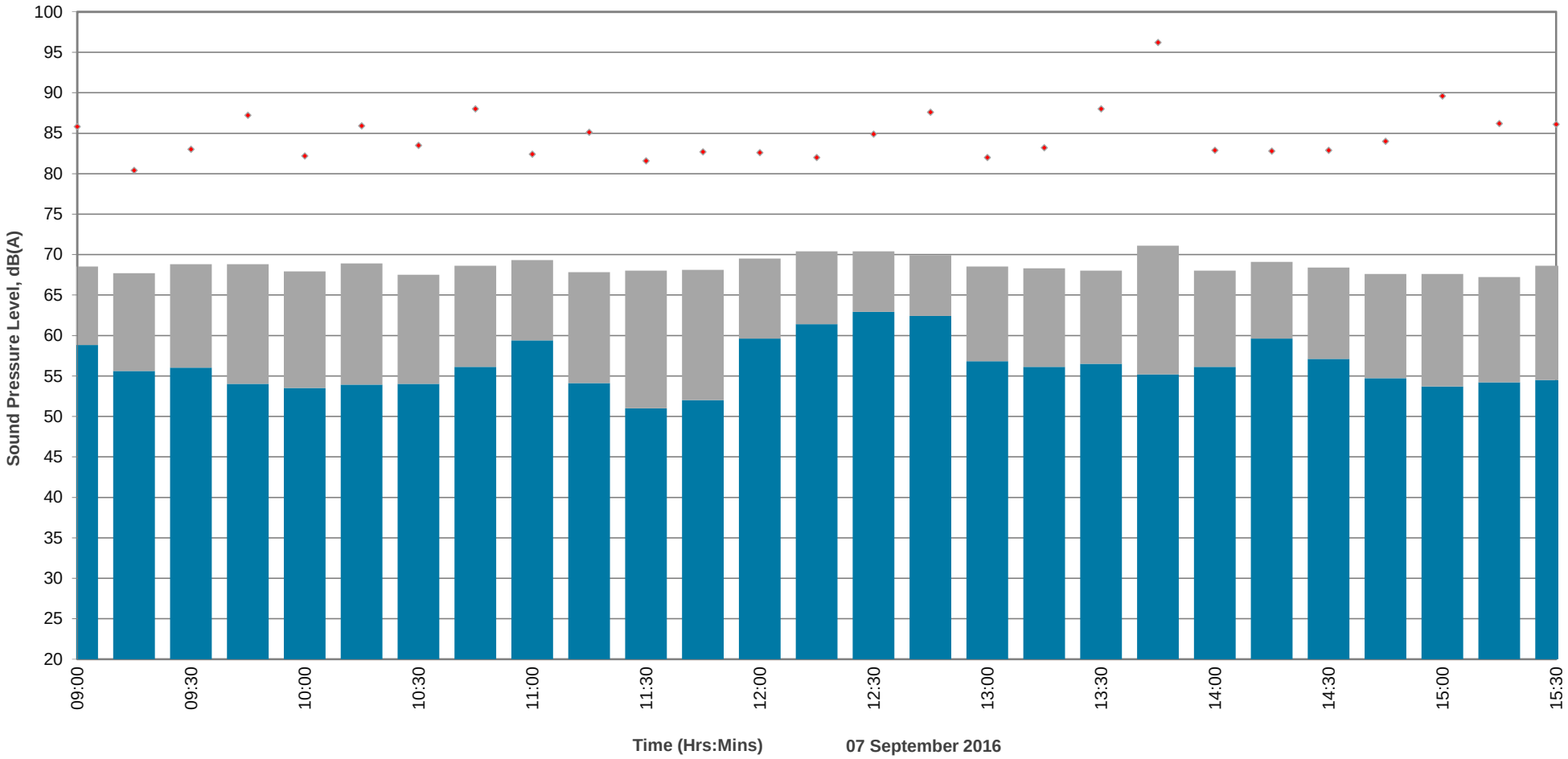
There are four different kinds of area shown on the Flood Map. They can be described as follows:-

- High Risk Area – Each year this area has a greater than 1in30 (3.3%) chance of flooding from surface water:
- Medium Risk Area – Each year this area has between a 1in100 and a 1in30 (1%-3.3%) chance of experiencing flooding from Surface Water:
- Low Risk Area – Each year this area has a between a 1in1000 and 1in100 (0.1%-1%) chance of experiencing flooding from Surface Water.
- Very Low Risk Area – Each year this area has a less than 1in1000 (0.1%) chance of experiencing flooding from Surface Water.

APPENDIX D: Time History Graphs

Time History Graph 1

Project:	Tavistock House, Uxbridge
Measurement Location:	Position 1 - Overlooking Rockingham Road
Survey Period:	07 September 2016

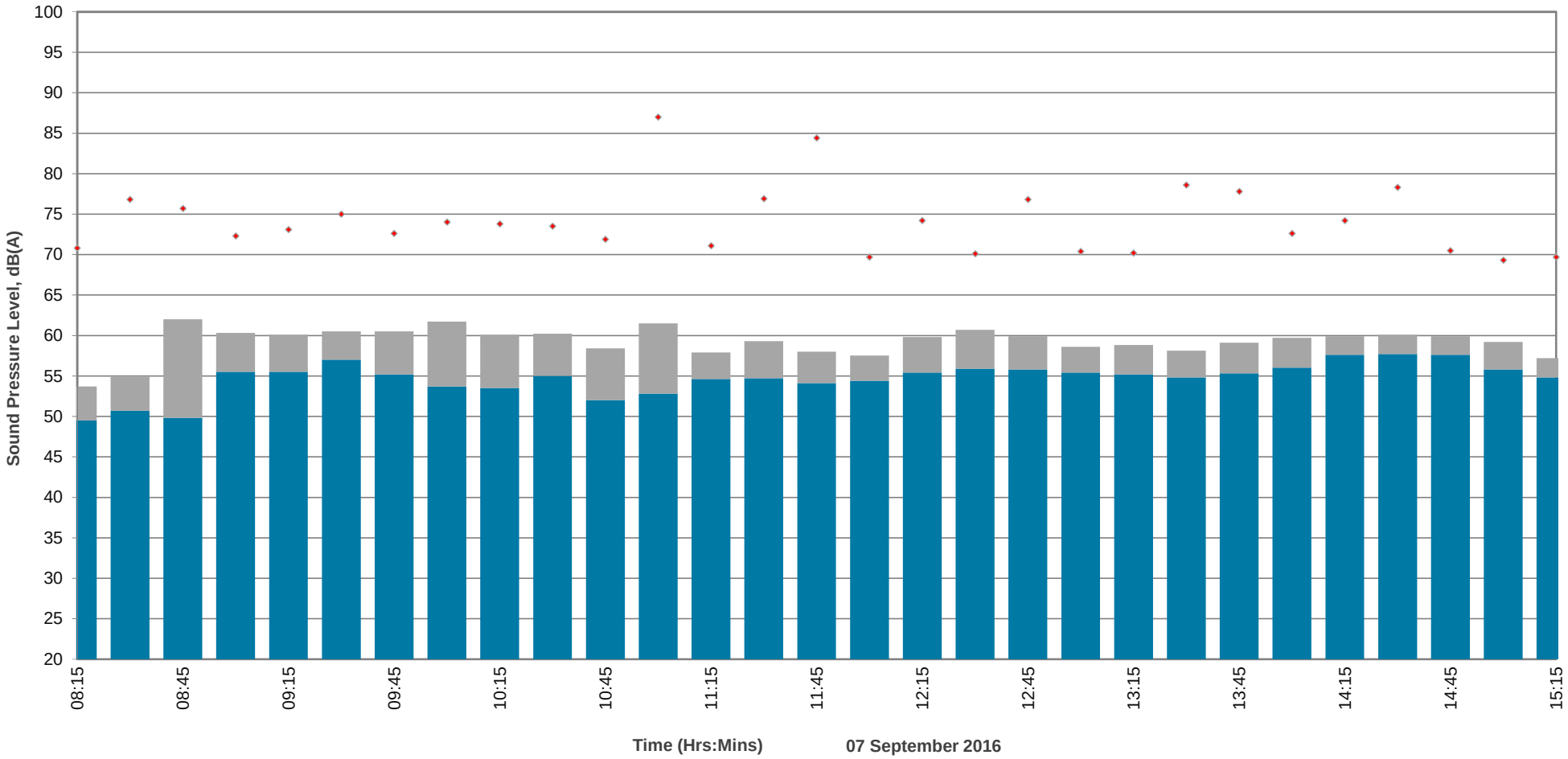


KEY: $L_{A90,15mins}$ $L_{Aeq,15mins}$ $L_{Amax,fast}$

Lion House, Oriental Road, Woking, Surrey GU22 2BR
Telephone: 01483 750508 Fax: 01483 750437

Time History Graph 2

Project:	Tavistock House, Rockingham Road, Uxbridge
Measurement Location:	Position 2 - Overlooking Rockingham Wharf
Survey Period:	07 September 2016



KEY: $L_{A90,15mins}$ $L_{Aeq,15mins}$ $L_{Amax,fast}$

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