ScotchPartners
Building Services Engineering | Sustainability | Acoustics

Regent's Place Pavilion

British Land

Noise emission assessment

Revision 02

24/04/2020

Scotch Partners LLP
Building Services Engineering | Sustainability | Acoustics

Scriptor Court
157 Farringdon Road
London EC1R 3AD

+44 (0) 203 544 5400
www.scotchpartners.com

Project Particulars

Client Name: British Land

Project Name: Regent's Place Pavilion

Disclaimer

Revision History

Revision	Description	Date	Prepared By	Checked By
00	Initial issue	03/04/2020	Jacob Perry BMus MIOA	John Lloyd BEng MSc CEng MCIBSE MIOA
01	Updated descriptions	08/04/2020	Jacob Perry BMus MIOA	-
02	Wording changes	24/04/2020	Jacob Perry BMus MIOA	-

Contents

1 Introduction 5
2 External noise levels and site context 6
2.1 Site description 6
2.2 Nearest noise-sensitive receivers 7
2.3 External ambient noise levels 8
3 Assessment of noise impact 11
3.1 Assessment criteria and methodology 11
3.2 Proposals and anticipated noise levels 12
3.3 Calculation of noise emission levels 13
3.4 Assessment of noise impact 14
3.5 Building services noise 14
4 Summary of conclusions 15

1 Introduction

1.1 Proposals are in place for a two-storey pavilion formed from recycled shipping containers, providing flexible A1/A3/D1/D2/B1 uses, to be constructed in Regent's Place plaza, adjacent to Euston Road.

1.2 This report presents an assessment of noise emission that may arise from these proposals, and the effect of this on neighbouring properties.

1.3 It would be usual to complete an external noise survey to inform such an assessment, however the current situation regarding COVID-19 in London has meant that it is not possible to conduct such a survey while following government advice. Furthermore, any data collected at present would not be representative of noise levels during typical traffic flow once the lockdown has ended. This assessment has therefore been informed using publically available data, both predicted and historic.

1.4 Section 2 describes the site and the establishment of representative noise levels for use in the assessment. Section 3 details the results of noise emission assessments relating to noise sources associated with the development. Section 4 summarises the conclusions of the assessment.

2 External noise levels and site context

2.1 Site description

2.1.1 The proposed site is within Regent's Place Pavilion, an open area close to Euston Road. Regent's Place hosts a number of small "pop-up" shops and cafes, with occasional small screenings during the summer months.

2.1.2 The site is adjacent to Euston Road, a particularly busy dual-carriageway that connects the Kings Cross area to Marylebone Road and, ultimately, the Westway (A40). Immediately next to the site there are 9 lanes of Euston Road (including a bus lane); 4 of which lead to an underpass under Hampstead Road.

2.1.3 Experience with other sites close to Euston Road tells us that traffic is typically heavy and consistent, with a relatively modest reduction in traffic noise levels overnight.

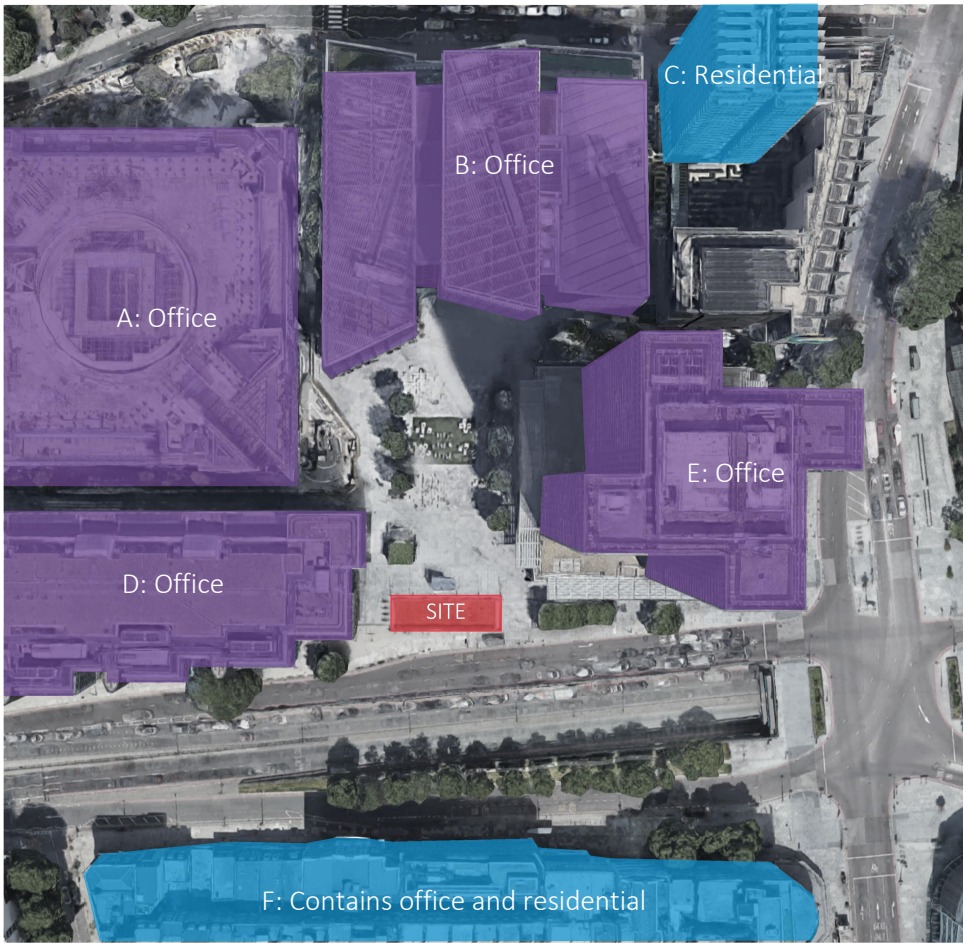
2.1.4 Noise levels from traffic on Hampstead Road are thought to be notably less than on Euston Road, owing to it being less heavily trafficked.

2.1.5 Regent's Place itself is surrounded by several high-rise buildings, and the number and type of shops would suggest a relatively high footfall at around lunchtime.

2.2 Nearest noise-sensitive receivers

2.2.1 The nearest/most likely to be affected noise-sensitive receivers to the proposed site are labelled A through F and are highlighted below:

Figure 2.1 Satellite image (courtesy of Google) with noise-sensitive receivers highlighted



2.2.2 Of particular note are the surrounding residential properties, as offices are usually closed in the evening and night-time periods when background sound levels are at their lowest.

2.2.3 The highest apartments of the residential tower to the north-east are expected to overlook the site. Experience with other high-rise buildings suggests that background sound levels do not change significantly with altitude. This is thought to be because other roads become visible with increasing height, while the nearest roads become further away and therefore quieter.

2.2.4 It is not clear which of the row of buildings opposite Euston Road are still residential and which have been converted to office accommodation, so to consider a worst-case scenario the entire row will be assessed as residences.

2.3 External ambient noise levels

2.3.1 Due to the recent COVID-19 outbreak and subsequent lockdown, it is not currently possible to conduct an original external noise survey. The external ambient noise levels have therefore been established using data within the public domain, to act as a basis for design, with the intention to complete a full external noise survey if necessary once the lockdown has been lifted and levels of traffic restored to what might be considered typical.

2.3.2 DEFRA has published strategic noise map data representing noise levels from traffic across England as part of implementing the Environmental Noise Directive. The daytime $L_{Aeq,\ 0700\text{-}2300}$ and night-time $L_{Aeq,\ 2300\text{-}0700}$ are presented in the next two figures.

Figure 2.2 Daytime $L_{Aeq,\ 0700\text{-}2300}$ from DEFRA END data

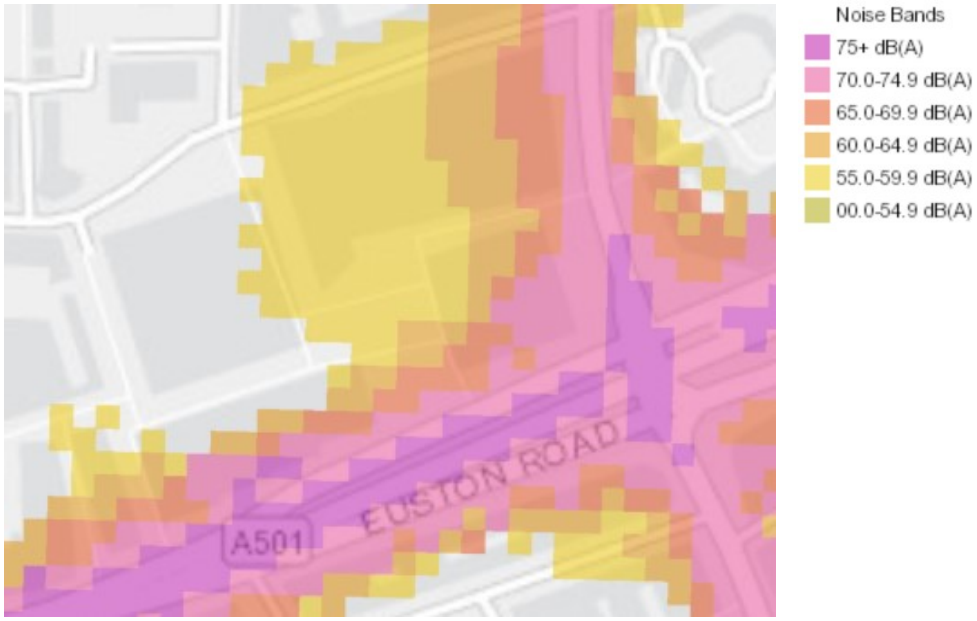
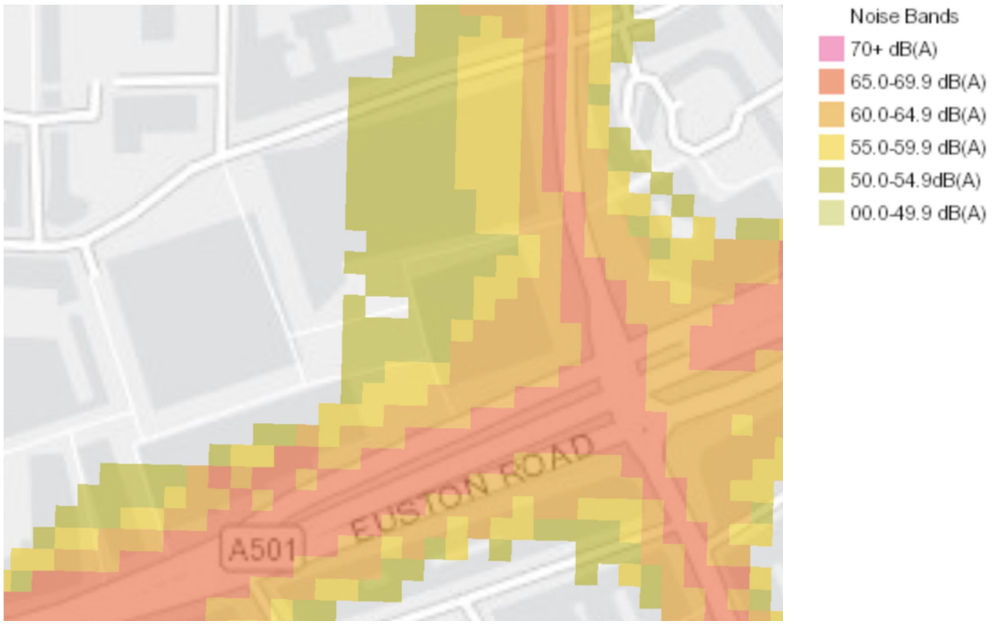


Figure 2.3 Night-time $L_{Aeq, 2300-0700}$ from DEFRA END data



2.3.3 A search of recent planning applications has revealed that the nearest external noise survey conducted for planning purposes appears to be that completed by Hoare Lea in August 2013 in support of a planning application at 373 Euston Road, approximately 200m further down Euston Road. Their report can be found on the London Borough of Camden's Planning Website, application reference 2014/0603/P. Their study incorporated two sets of unattended measurements at second floor level, one facing Euston Road and the other shielded from Euston Road (facing Warren Street). It is considered that their measurements facing Euston Road are likely to be representative of most façades along this stretch of Euston Road, and their measurements on Warren Street could be considered typical of the many side streets that lead from Euston Road. The measurement results from both of these locations are shown in the next two figures:

Figure 2.4 Results from 2014 survey at 373-375 Euston Road – facing Euston Road

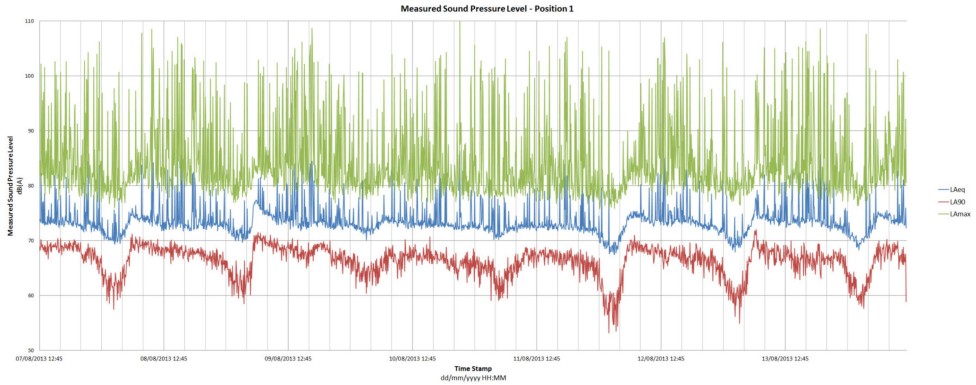
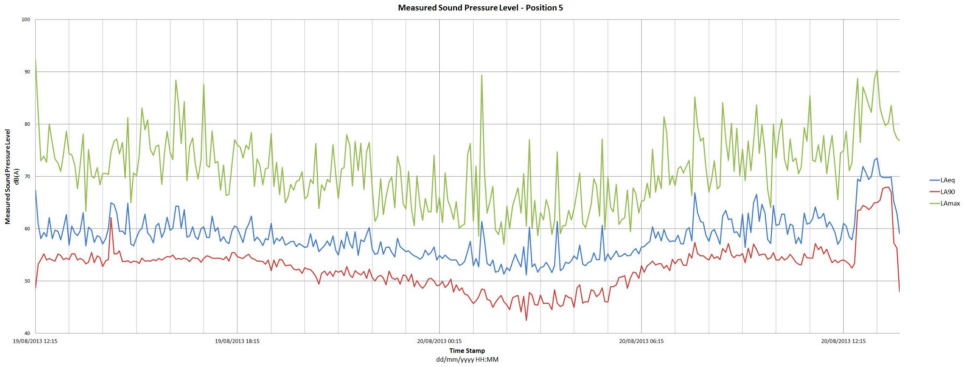


Figure 2.5 Results from 2014 survey at 373-375 Euston Road – facing Warren Street



2.3.4 The difference between the Hoare Lea $L_{Aeq,T}$ data and the END data for the site is about 5 dB during the day and 13 dB overnight. A -5 dB correction has been applied to the sound level data from the Hoare Lea survey to account for this. It is believed that this difference in noise level may be due to the Hoare Lea survey being conducted closer to Euston Road than the Regent's Place site, and also in close proximity to the junctions around Great Portland Street station where traffic has been observed to be less free flowing than by Regent's Place Pavilion.

2.3.5 The following levels have therefore been determined for use in the assessment:

Table 2.1 Established noise levels used in assessment

Location	Time period	Lowest Ambient Sound Level*	Background Sound Level
Facing/close to Euston Road	Daytime 0700-1900	67 dB $L_{Aeq,5min}$	59 dB $L_{A90,5min}$
	Evening 1900-2300	66 dB $L_{Aeq,5min}$	57 dB $L_{A90,5min}$
	Night-time 2300-0700	63 dB $L_{Aeq,5min}$	48 dB $L_{A90,5min}$
Side streets, partially shielded from Euston Road	Daytime 0700-1900	52 dB $L_{Aeq,5min}$	48 dB $L_{A90,5min}$
	Evening 1900-2300	50 dB $L_{Aeq,5min}$	44 dB $L_{A90,5min}$
	Night-time 2300-0700	46 dB $L_{Aeq,5min}$	38 dB $L_{A90,5min}$

*Includes -5 dB correction described in 2.3.4

3 Assessment of noise impact

3.1 Assessment criteria and methodology

3.1.1 There is no widely adopted methodology of objectively assessing the impact of activity noise from patrons on noise-sensitive receivers, as such objective values cannot be used to evaluate the noise impact of these proposals on the neighbouring premises. Furthermore, noise levels from groups of people are inherently unpredictable and so any figures established in this assessment should be considered to have a wide margin of error.

3.1.2 The London Borough of Camden have provided a set of Noise and Vibration Thresholds in their 2017 Local Plan. One of these relates to customer noise levels from places of entertainment on residential sites, and so it is believed that a proposal demonstrating a level below the *Lowest Observed Adverse Effect Level (LOAEL)* would be considered acceptable from a planning perspective. The LOAELs established in the Local Plan are given below:

Table 3.1 LBC LOAEL from places of entertainment to residential sites (customer noise)

Design period	Lowest Observed Adverse Effect Level
Day (0700-1900)	The higher of 55 dB $L_{Aeq,5min}$ OR 10 dB below the $L_{Aeq,5min}$ without entertainment noise
Evening (1900-2300)	The higher of 50 dB $L_{Aeq,5min}$ OR 10 dB below the $L_{Aeq,5min}$ without entertainment noise
Night (2300-0700)	The higher of 45 dB $L_{Aeq,5min}$ OR 10 dB below the $L_{Aeq,5min}$ without entertainment noise

3.1.3 The adopted assessment methodology is to estimate the noise levels arising as a result of patrons to the proposal, calculate the propagation losses between the patron area and the noise-sensitive receiver, and compare the resultant level to the lowest ambient sound level established in Table 2.1.

3.1.4 The Camden Local Plan contains further criteria believed to relate to internal ambient noise levels, although it is not clear whether this relates to the lowest observed adverse effect level. These criteria are reproduced below:

Table 3.2 LBC Indoor ambient noise level criteria

Room	Design period	Noise rating curve
Bedroom	Night (2300-0700)	NR 25 $L_{eq,15min}$
All habitable rooms	Day (0700-2300)	NR 35 $L_{eq,15min}$

The noise emission levels will also be compared to these criteria in the assessment.

3.2 Proposals and anticipated noise levels

3.2.1 The applicant is applying for 5 units of flexible A1/A3/B1/D1/D2 with an external terrace area. The expected maximum occupancy rate is around 102 people, some of which will be within the units themselves.

3.2.2 The current proposal is for opening hours between 0700 and 2230. As the available external noise data relates to the day period of 0700 to 2300, this has been assumed as the opening times for the assessment.

3.2.3 To provide some context on the noise levels that could be expected to arise from patrons in the F&B square, attended noise surveys were taken at three street food markets within central London that were well-shielded from other sources of noise. Photographs of these markets when measurements were undertaken are presented in Figure 4.2. These measurements were taken in March 2017, when the markets were relatively busy. Surveys cannot be carried out at these markets at time of writing as they are closed due to the COVID-19 situation.

3.2.4 Noise levels of these activities were found to vary between 69 and 73 dB $L_{Aeq,1min}$. The measurements were undertaken during lunchtime periods, which is expected to be the busiest times for these markets. As the markets surveyed are well-established and were busy during the surveys, a value of 73 dB $L_{Aeq,1min}$ is considered to be representative of worst case noise levels at **peak times** within the new units, once opened.

Figure 3.1 Photographs of surveyed street food markets representing "worst-case" noise levels (March 2017)

Leather Lane market, Friday lunchtime

Whitecross Street market, Monday lunchtime

Camden market, Friday lunchtime

3.2.5 Analysis of the spectra for the measured noise levels suggests that the level will decrease by around 4 dB when expressed as an NR, compared to an A-weighted value.

3.3 Calculation of noise emission levels

3.3.1 The noise-sensitive receivers identified in Figure 2.1 all have windows that directly overlook the site, and so the only propagation losses that have been calculated are those relating to geometric divergence (i.e. sound reduction over distance).

3.3.2 The predicted resultant noise levels from the patrons at each noise sensitive receiver are shown in Table 3.3, along with a comparison to the Lowest Ambient Sound Level. Values relate to the nearest overlooking window.

Table 3.3 Predicted noise emission levels

Receiver	Noise emission level	Comparison to Lowest Ambient Sound Level		
		Day	Evening	Night
A	39 dB L_{pA}	-13	-11	-7
B	37 dB L_{pA}	-15	-13	-9
C (residential)	31 dB L_{pA}	-21	-19	-15
D	54 dB L_{pA}	-13	-12	-9
E	47 dB L_{pA}	-20	-19	-16
F (residential)	39 dB L_{pA}	-28	-27	-24

3.3.3 The predicted noise emission levels in Table 3.3 are external noise levels, and so consideration will need to be given to the sound insulation performance of the façade in order to estimate the indoor ambient noise level. A 21 dB correction is proposed to account for the difference between outdoor and indoor noise levels. This is considered to be representative of a fairly low performance façade with a slightly open window (based on the value used in the WHO *Night Noise Guidelines for Europe 2009)*, and so would be a significant underestimate of the likely sound insulation performance at the receivers (many of which have curtain walling which is unlikely to be openable). The use of this correction means that the predicted indoor ambient noise levels are likely to be far higher than the level in reality.

3.3.4 The predicted indoor ambient levels, assuming a 21 dB façade reduction, are as follows:

Table 3.4 Predicted indoor ambient noise levels owing to customer noise

Receiver	Indoor ambient noise level
A	NR 14 L_{eq}
B	NR 12 L_{eq}
C (residential)	NR 6 L_{eq}
D	NR 29 L_{eq}
E	NR 22 L_{eq}
F (residential)	NR 14 L_{eq}

3.4 Assessment of noise impact

3.4.1 It can be seen from the predictions in Table 3.3 that customer noise emission from the proposals is expected to achieve the criteria for *Lowest Observed Adverse Effect Level* from the London Borough of Camden's Local Plan (see Table 3.1). The same criteria are achieved for the surrounding office developments during the day and evening periods.

3.4.2 The predictions in Table 3.4 show that the London Borough of Camden's other criteria for noise to *bedrooms* is expected to be achieved for the two assessed residences, and the criteria for *all habitable rooms* achieved for the surrounding offices.

3.4.3 The following noise limits, derived from the calculations presented within this report, are intended to represent the loudest possible activity that would still result in a *Lowest Observed Adverse Effect Level* at the neighbouring residences:

- Daytime (0700-1900): 83 dB $L_{Aeq,5min}$
- Evening (1900-2300): 82 dB $L_{Aeq,5min}$
- Night-time (2300-0700): 78 dB $L_{Aeq,5min}$

3.4.4 The current proposal will not be open between 2230 and 0700, and so the night-time criterion provided above is for information only.

3.5 Building services noise

3.5.1 If tenants of the F&B units were to install building services plant, eg an extract fan, this would need to be assessed using the methodology within BS 4142: 2014 and Table C of the London Borough of Camden's Local Plan.

3.5.2 The assessment methodology is similar to the one presented for entertainment noise in this report, with the exception that noise emission is compared to the *background sound level* (L_{A90}) and corrections made to account for features such as tonality, impulsivity, and intermittency.

3.5.3 Noise from a properly installed and maintained extract fan would not be expected to exhibit any features that would warrant a correction. On this basis, the following limits are recommended (on the basis that three of the units install building services) in order to achieve the criterion for *Lowest Observed Adverse Effect Level* from the London Borough of Camden's Local Plan:

Table 3.5 Recommended building services noise limits (indicative)

Time period	Limit per F&B unit
Daytime (0700-1900)	63 dB L_{pA} at 1 metre
Evening (1900-2300)	61 dB L_{pA} at 1 metre
Night-time (2300-0700)	52 dB L_{pA} at 1 metre

3.5.4 The above limits may be increased if the units are located in such a way as to obscure line of sight to the neighbours.

3.5.5 These limits are expected to be readily met with typically small kitchen extract fans, possibly with some attenuation/silencing, as would be expected for the size of the units.

4 Summary of conclusions

4.1 Customer noise from future patrons to the development has been assessed against the criteria given in the London Borough of Camden's Local Plan. Based on existing survey data of the site, and of developments similar to that proposed, it is predicted that the noise impact will be below the threshold for *Lowest Observed Adverse Effect Level*.

4.2 Indicative limits for activity noise have been provided in Section 3.4.3 for information.

4.3 Indicative noise level limits for building services plant have also been provided, targeting a *Lowest Observed Adverse Effect Level* according to the thresholds in the London Borough of Camden Local Plan. It is believed that these can be readily met with typical unit selections.

ScotchPartners
Building Services Engineering | Sustainability | Acoustics

Scriptor Court
157 Farringdon Road
London EC1R 3AD

T 0203 544 5400

www.scotchpartners.com