

Technical Annexes 6 – Noise

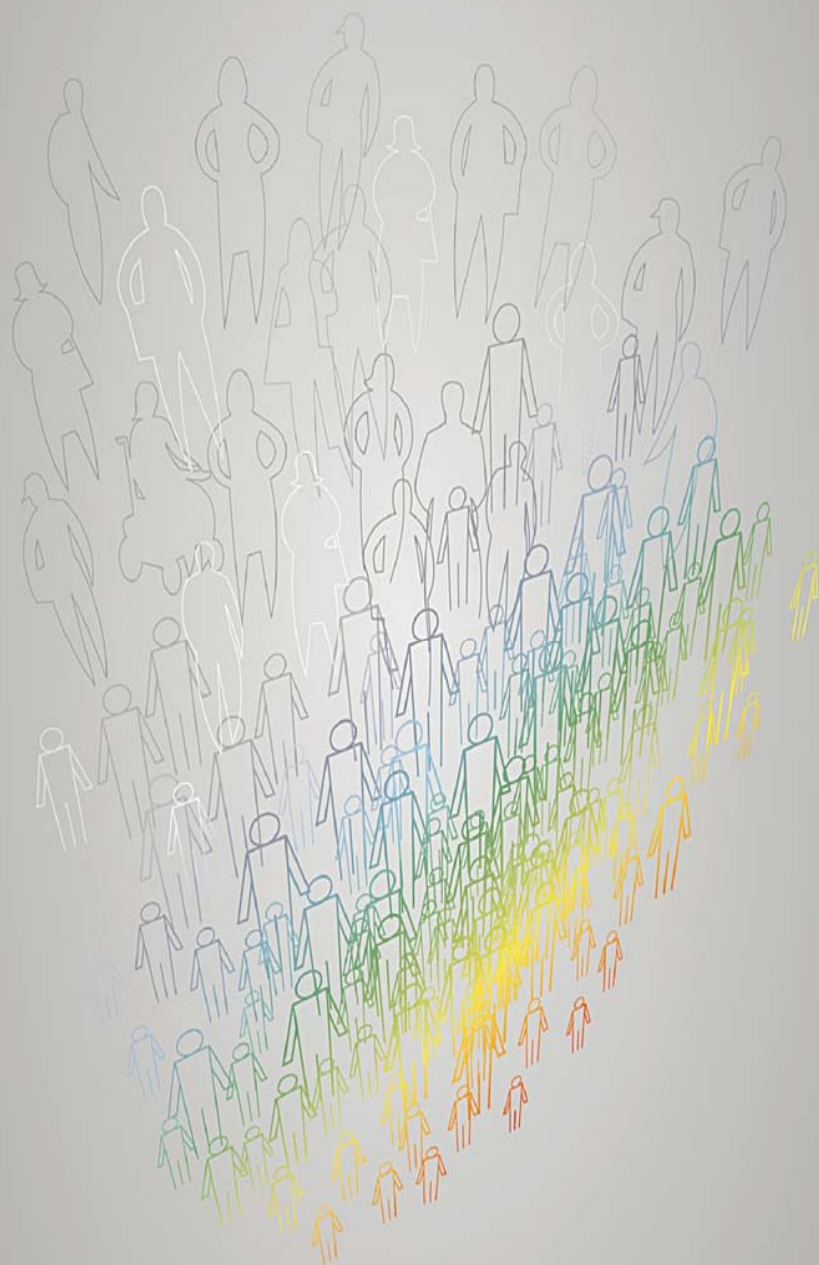
Contents

Technical Annexe 6A – Environmental noise survey

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Hayle Harbour

Environmental noise survey



Buro Happold **Specialist Consulting**
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00	Hayle Harbour Environmental Noise Survey	D.Yates	15.08.2007	I.Thompsons

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Contents

1	Survey	5
1.1	Introduction	5
1.2	Site	7
1.3	Instrumentation	7
1.4	Method	8
1.5	Results	10
1.5.1	Ambient noise levels for building locations and areas of interest	10
1.5.2	Road traffic noise results	12
1.5.3	Rail noise	14
1.5.4	Boat events	14

1 Survey

1.1 Introduction

The survey methodology was designed with reference to the type and extent of development proposed and in accordance with the guidance in BS 7445-1:1991. The measurement approach provided data for the various types of assessment required:

The survey was conducted over 2 periods; the first was on 11th to 12th June 2007 and the second 10th July to 11th July 2007. The surveyor was David Yates of Buro Happold.

Weather conditions were considered acceptable for measuring noise levels.

Table 1-1 and Figure 1-1 present the new development building types and locations.

Building Use	Location
Residential	North Quay, South Quay and The Towans
Commercial	North Quay and South Quay
Industrial	North Quay
Plant works	South Quay

Table 1-1: Locations of building types

Noise measurements were made in Falmouth Marina to provide supporting information for assessment of noise levels due to marina and boating activities broadly comparable with the outline proposal for Hayle.

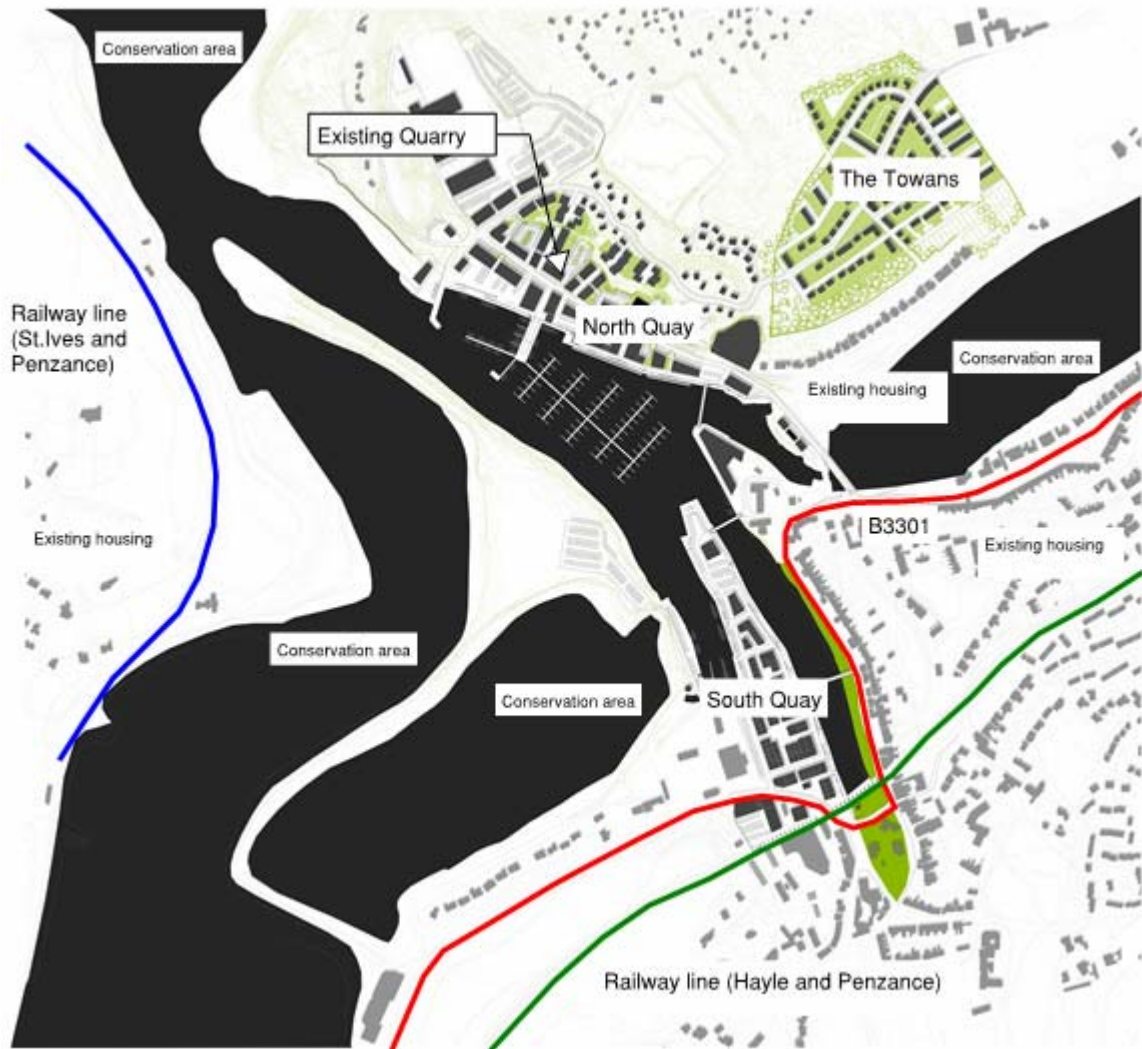


Figure 1-1: Site plan for Hayle Harbour Development

1.2 Site

The site is located near the north coast of Cornwall. Hayle is a small town with strong tourism area with natural local attractions, specifically the nature reserves and beaches containing sand dunes.

North Quay is an area which has very little developed land. The noise sources within the area are the Quarry, the associated traffic to the Quarry, fishing activity and road traffic to the beaches located to the North West of North Quay. A canoe club was located on North Quay, though there was no sign of activity from the club during the survey.

The existing residential buildings on North Quay are all located along Clifton Terrace.

A small number of industrial units located on Fish Quay, mainly comprised of workshops generating noise from machines such as sawing mills etc.

There is a mooring area for fishing boats on South Quay with a few cars using the Quay. To the East of South Quay is a line of residential and commercial buildings.

All locations within Hayle were noted as being affected by noise from road traffic, rail noise and bird song/sea gulls. The road traffic noise came from the B3301 and A30 (audible when traffic flow along B3301 reduced at late evening and night time periods). Both rail lines between Hayle and Penzance and St.Ives and Penzance were heard from most locations. The St.Ives line was hard to distinguish at South Quay during daytime periods. Gulls were heard from early morning to evening times.

1.3 Instrumentation

A Brüel & Kjær 2260 Investigator (Serial # 2466988) was used throughout the survey. All measurements were A-weighted and measured with 'Fast' response.

The meter calibration was verified before and after the surveys using a Brüel & Kjær 4231 calibrator (Serial # 2438725) with no significant deviations found (-0.01dB).

1.4 Method

An attended environmental noise survey was conducted at Hayle Harbour site starting at 20:37 on 11th June and finished at 12:34 on 12th June. A second survey to obtain further data was conducted on 10th July from 14:45 to 16:15 on 11th July. The survey comprised of a mixture of recording parameters for the specific type of noise data being analysed.

- Data for PPG24 assessments: The meter was set to measure 5 minute or 15 minute periods logging every 15s. The measurements included daytime (07:00-19:00), evening (19:00-23:00) and night time (23:00-07:00) periods.
- Data for Calculation of Road traffic noise: The meter was set to measure over a 20 minute period and to log every 1s. The 20 minute measurements were taken in 3 consecutive hours between the hours of 10:00 – 17:00.
- Data for Calculation of Rail traffic noise: The meter was set to log every 1s and was manually operated (starting and stopping) coinciding with the rail event. Measurements were taken in both daytime periods (06:00-22:00) and night time periods (22:00-06:00).

(The data for general ambient noise levels around the site can be used for assessing other criteria such as construction noise)

Figure 1-2 shows the microphone locations across the site.



Figure 1-2: Measurement locations

1.5 Results

The following are the results from 11th – 12th June 2007 and 10th – 11th July:

1.5.1 Ambient noise levels for building locations and areas of interest

Commercial and residential					
Position	Start time hh:mm	Period mm:ss	L _{Aeq} [dB]	L _A F90 [dB]	NEC
P2	20:52	05:00	42.8	39.8	A
P2	06:12	15:00	45.3	41.9	A/B
P2	12:00	05:00	44.5	42.1	A
P3	21:04	05:00	53.7	47.8	A
P3	06:58	15:00	55.0	48.6	B
P4	05:18	15:00	41.0	34.5	A
P4	07:43	15:00	52.6	45.1	A
P4	10:55	05:00	52.8	50.2	A
P4	18:48	15:00	42.8	39.1	A
P5	05:40	15:00	43.0	35.5	A
P5	08:04	15:00	51.6	45.9	A
P5	11:17	05:00	49.7	46.6	A
P5	18:28	15:00	48.4	41.5	A
P6	07:20	15:00	64.9	48.5	B/C
P6	08:25	15:00	68.1	55.9	C
P6	11:27	05:00	67.8	56.3	C
P7	11:06	05:00	57.5	44.7	B
P12	19:35	15:00	51.5	48.4	A
P12	05:55	15:00	47.9	40.4	B
P12	13:26	15:48	57.7	51.2	B
P13	19:55	15:00	55.0	51.5	A/B
P15	05:38	15:00	50.5	39.0	B
P15	07:48	15:00	53.0	44.4	A
P15*	08:04	15:00	52.0	42.8	A
P15	13:44	15:00	48.5	44.1	A

Table 1-1: Noise levels for commercial and residential building site locations

Industrial					
Position	Start time hh:mm	Period mm:ss	LAeq [dB]	LAFMax [dB]	LAF90 [dB]
P4	05:18	15:00	41.0	64.2	34.5
P4	07:43	15:00	52.6	75.5	45.1
P4	10:55	05:00	52.8	65.6	50.2
P4	18:48	15:00	42.8	61.0	39.1
P9	16:19	15:00	48.6	62.2	43.1
P9	23:00	15:00	39.0	48.1	37.9
P18	16:01	15:00	53.6	75.4	41.8

Table 1-2: Noise levels for industrial building site locations

Residential					
Position	Start time hh:mm	Period mm:ss	LAeq [dB]	LAF90 [dB]	NEC
P9	16:19	15:00	48.6	43.1	A
P9	23:00	15:00	39.0	37.9	A
P10	17:35	15:00	40.9	36.3	A
P10	06:28	15:00	39.2	33.1	A
P11	18:08	15:00	48.6	40.6	A

Table 1-3: Noise levels for the residential building site locations (10th July – 11th July 2007)

Points of conservation interest						
Position	Start time hh:mm	Period mm:ss	LAeq [dB]	LAFMax [dB]	LAF10 [dB]	LAF90 [dB]
P1	20:34	05:00	43.1	58.9	46.3	36.1
P1	06:35	15:00	42.5	55.7	46.6	36.1
P1	12:28	05:00	44.3	66.4	45.4	40.6
P11	18:08	15:00	48.6	67.3	48.7	40.6
P17	14:22	15:00	44.7	73.6	45.7	37.5
P18	16:01	15:00	53.6	75.4	49.1	41.8

Table 1-4: Noise levels site locations for conservation areas

Falmouth						
	Start time hh:mm	Period mm:ss	LAeq [dB]	LAFMax [dB]	LAF10 [dB]	LAF90 [dB]
Fal 1	16:43	15:00	56.3	72.8	56.7	53.6
Fal 2	17:44	02:58	48.5	66.3	52.8	40.9
Fal 3	17:49	15:00	48.3	69.6	49.5	40.8
Fal 4	18:27	15:00	52.8	72.4	54.0	47.3
Fal 5	18:48	01:17	51.4	57.9	53.3	49.0

Table 1-5: Noise levels from a typical Marina

1.5.2 Road traffic noise results

Table 1-6 contains the traffic counts which relate to the associated noise levels in Table 1-7.

Traffic counts hourly								
Position	Start time hh:mm	Period mm:ss	Cars	HGV	Buses	Motorbikes	Total	% Heavy
P8	14:46:14	0:20:00	1086	36	12	0	1134	4.23
P8	15:36:17	0:20:00	1089	18	15	6	1128	2.93
P8	16:40:06	0:20:00	1290	36	12	18	1356	3.54
P8	23:28:06	0:20:00	87	9	3	0	99	12.12
P14	05:15:58	0:20:00	21	6	0	0	27	22.22
P14	10:00:05	0:20:00	789	33	18	6	846	6.03
P14	11:05:15	0:20:00	972	48	9	15	1044	5.46
P14	12:04:59	0:20:00	921	27	9	0	957	3.76
P16	10:36:33	0:20:00	48	9	0	0	57	15.79
P16	11:37:06	0:20:00	90	0	0	0	90	0.00
P16	12:32:43	0:20:00	135	3	0	3	141	2.13

Results highlighted in yellow are during quiet traffic flow periods

Table 1-6: Traffic counts simultaneous with noise level measurements

Traffic noise

Position	Start time hh:mm	Period mm:ss	LAeq [dB]	LAFMax [dB]	LAF10 [dB]	LAF90 [dB]
P8	14:46	20:00	66.4	87.4	68.8	59.3
P8	15:36	20:00	66.0	84.3	68.9	57.9
P8	16:40	20:00	67.3	80.8	69.8	60.7
P8	23:28	20:00	57.5	82.9	61.5	34.0
P14	05:15	20:00	57.5	78.8	58.5	44.6
P14	10:00	20:00	67.8	84.9	72.5	56.1
P14	11:05	20:00	64.5	81.3	66.3	57.0
P14	12:04	20:00	62.7	81.6	64.9	56.0
P16	10:36	20:00	53.0	73.9	55.5	43.2
P16	11:37	20:00	50.0	63.1	54.0	43.4
P16	12:32	20:00	56.8	75.6	60.5	44.1

Results highlighted in yellow are during quiet traffic flow periods

Table 1-7: Noise level results for road traffic data

Position	LA10 3 Hour [dB]	LA10 18 Hour [dB]
P8	69.2	68.2
P14	67.9	66.9
P16	56.7	55.7

Table 1-8: Noise levels from road traffic positions calculated for CRTN analysis

1.5.3 Rail noise

Rail noise								
Position	Train type	Direction	L _{Aeq}	Duration	Distance to track	SEL [dB]	L _{Aeq} 16hour [dB]	L _{Aeq} 6hour [dB]
P13	Long	H - P	65.1	25.0	172.1	70.7	40.8	35.1
P12	Long	P - H	60	50	86.3	71.6	41.7	36.0
P13	Long	H - P	66.3	51	172.1	75.0	45.1	39.4
P12	Small	P - H	58.8	66.0	86.3	71.6	41.7	36.1
P17	Small	L - S	53.4	25.0	80.2	62.3	32.4	26.8
P14	Small	P - H	70.2	28	38.6	82.8	52.9	47.2
P14	Small	H - P	65.4	15	38.6	75.3	45.4	39.7
P15	Long	H - P	63.9	47	146.2	73.0	43.1	37.4
Average						72.8	42.9	37.2

Table 1-9: Noise level data from rail events

1.5.4 Boat events

Boat events						
Position	Start time hh:mm	Period mm:ss	L _{Aeq} [dB]	L _{AF} Max [dB]	L _{AF} 10 [dB]	L _{AF} 90 [dB]
P1	12:13	00:43	45.1	56.4	46.2	42.8
P1	12:18	00:49	53.2	65.9	57.5	43.2
P1	12:21	01:11	49.2	54.4	52.7	42.3
P1	12:24	00:55	51.6	56.2	54.3	45.1
P1	12:26	00:38	53.9	58.2	56.5	48.5
P1	12:27	00:47	52.1	60.3	55.3	45.1

Table 1-10: Noise levels from boat events at Hayle Harbour.

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