

Samares Nurseries Noise Assessment



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Samares Nurseries
Noise Assessment

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1				

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Reference EWFR

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1 Introduction

AECOM Ltd was commissioned to carry out a noise assessment for a proposed residential development at the Samares Nurseries site, St Clement, Jersey.

The purpose of this report is to assess the suitability of the site for residential development using guidance within PPG 24: *'Planning and noise'*, and derive as necessary any mitigation measures.

A road traffic noise assessment was also carried out to gauge the noise impact on existing residents due to the increase in road traffic flows using guidance within DMRB and WebTAG. This assessment was carried out to comply with guidance within the Health Policy Guidance 1 – Guidelines on Noise Control for Construction Sites, which states:

'If access is off La Grande Route de St Clement, the noise environment for a significant number of existing residents will deteriorate. It is recommended that a noise impact assessment is completed prior to determining this site for reclassification'

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2 Policy and Assessment Criteria

2.1 Perception of Noise

Between the quietest audible sound and the loudest tolerable sound there is a million to one ratio in sound pressure (measured in pascals, Pa). Because of this wide range a noise level scale based on logarithms is used in noise measurement called the decibel (dB) scale. Audibility of sound covers a range of approximately 0 to 140 dB.

The human auditory system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure noise is weighted to represent the performance of the ear. This is known as the 'A weighting' and annotated as dB(A).

Table 1 lists the sound pressure level in dB(A) for common situations.

Table 1: Noise Levels for Common Situations

Typical Noise Level, dB(A)	Example
0	Threshold of hearing
30	Rural area at night, calm conditions
40	Public library, Refrigerator humming at 2m
50	Quiet office, no machinery, Boiling kettle at 0.5m
60	Normal conversation
70	Telephone ringing at 2m, Vacuum cleaner at 3m
80	General factory noise level
90	Heavy goods vehicle from pavement, Powered lawnmower, operator's ear
100	Pneumatic drill at 5m
120	Discotheque - 1m in front of loudspeaker
140	Threshold of pain

The noise level at a measurement point is rarely steady, even in rural areas, and varies over a range dependent upon the effects of local noise sources. Close to a busy motorway, the noise level may vary over a range of 5 dB(A), whereas in a suburban area this may increase up to 40 dB(A) and more due to the multitude of noise sources in such areas (cars, dogs, aircraft etc.) and their variable operation. Furthermore, the range of night-time noise levels will often be smaller and the levels significantly reduced compared to daytime levels. When considering environmental noise, it is necessary to consider how to quantify the existing noise (the ambient noise) to account for these second to second variations.

A parameter that is widely accepted as reflecting the background noise level is the L_{A90} noise index. This is the noise level exceeded for 90% of the measurement period and generally reflects the noise level in the lulls between individual noise events. Over a 1-hour period, the L_{A90} will be the noise level exceeded for a total of 54 minutes during that period.

The total noise or ambient noise at a location during a specific period is usually measured using the equivalent continuous A-weighted sound pressure level, L_{Aeq} , (as recommended by BS 7445). This is the single number that represents the sound energy measured over that period. L_{Aeq} is the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period. It is commonly used to express the energy level from individual sources that vary in level over their operational cycle.

The $L_{Amax,fast}$ measurement parameter is the maximum instantaneous sound pressure level attained during the measurement period (30 seconds, 5 minutes etc.), measured on the 'fast' response setting of the

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sound level meter. It is generally used to assess the likelihood of night-time sleep disturbance. The $L_{Amax,slow}$ parameter is as above, but with the 'slow' time response and is specified in PPG 24.

In the UK the parameter that is traditionally used to assess the impacts of road traffic noise is the L_{A10} . This is the noise level exceeded for 10% of the measurement period and generally reflects the highest noise levels during that period and has been shown to provide a reasonable correlation with the subjective impact of traffic noise, certainly more so than many other indices. Over a 1-hour period, the L_{A10} will be the noise level exceeded for a total of 6 minutes during that period. The $L_{A10, 18h}$ is the standard index for assessing road traffic noise in the UK.

Human subjects, under laboratory conditions, are generally only capable of noticing changes in steady levels of no less than 3 dB(A). It is generally accepted that a change of 10 dB(A) in an overall, steady noise level is perceived to the human ear as a doubling (or halving) of the noise level. (These findings do not necessarily apply to transient, non-steady or intermittent noise sources). A list of acoustic terminology can be found in Appendix A.

2.2 Noise Criteria

2.2.1 Local Planning Policy

2.2.1.1 Island Plan 2002

Policies within The States of Jersey Island Plan specifically relating to noise are summarised below:

"Policy G2 – General Development Considerations

Applicants need to demonstrate that the proposed development ... will not have an unreasonable impact on public health, safety and the environment by virtue of noise, vibration, dust, light, odour, fumes, electro-magnetic fields or effluent."

2.2.2 Planning Policy Guidance Note 24: Planning and Noise

Planning Policy Guidance PPG 24 'Planning and Noise' was introduced by the Department of the Environment in 1994. Paragraph 1 on page 1 of PPG 24 indicates that it was issued to:

'...provide advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business ... It outlines some of the main considerations which local planning authorities should take into account in drawing up development plan policies and when determining planning applications for development which will either generate noise or be exposed to existing noise sources.'

PPG 24 includes advice to local authorities in England on the use of their planning powers to minimise the adverse impact of noise when determining planning applications for new residential developments. It introduces the concept of noise exposure categories (NECs) for residential development, encourages their use and recommends appropriate levels for exposure to different sources of noise.

Paragraph 8 of PPG 24 states:

'This guidance introduces the concept of Noise Exposure Categories (NECs), ranging from A-D, to help local planning authorities in their consideration of applications for residential development near transport-related noise sources. Category A represents the circumstances in which noise is unlikely to be a determining factor, while Category D relates to the situation in which development should normally be refused. Categories B and C deal with situations where noise mitigation measures may make development acceptable.'

PPG 24 recommends adopting a 16-hour daytime period of 07.00-23.00 and an 8-hour night-time period of 23.00-07.00 and in Paragraph 9 states:

'The table in Annex 1 contains a recommended range of noise levels for each NEC covering day and night-time periods'

The recommended values for specifying NEC bands are tabulated in PPG 24 and repeated exactly in Table 2.

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Table 2: Noise Exposure Category Noise Levels for New Dwellings

NOISE LEVELS CORRESPONDING TO THE NOISE EXPOSURE CATEGORIES FOR NEW DWELLINGS $L_{Aeq,T}$ dB				
NOISE SOURCE	Noise Exposure Category			
	A	B	C	D
Road Traffic				
07:00 – 23:00	<55	55 - 63	63 - 72	>72
23:00 – 07:00	<45	45 - 57	57 - 66	>66
Rail Traffic				
07:00 – 23:00	<55	55 - 66	66 - 74	>74
23:00 – 07:00	<45	45 - 59	59 - 66	>66
Air traffic				
07:00 – 23:00	<57	57 - 66	66 - 72	>72
23:00 – 07:00	<48	48 - 57	57 - 66	>66
Mixed Sources				
07:00 – 23:00	<55	55 - 63	63 - 72	>72
23:00 – 07:00	<45	45 - 57	57 - 66	>66

Note: If at night $L_{Amax,slow}$ noise levels exceed more than 82 dBA more than several times in any hour, the site shall be classed as falling in NEC C, unless the $L_{Aeq,t}$ noise levels fall within NEC D.

Once noise levels across the site have been measured and the consequential day and night-time NEC rating of the site assessed the recommended action specific to applications for planning permission are tabulated in PPG 24 and repeated exactly in Table 3.

Table 3: Recommended Actions specific for each NEC

NEC rating	Determination
A	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	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	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.
D	Planning permission should normally be refused.

For example, for an area of a site subject predominantly to road traffic noise an existing daytime noise level of less than 55 dB $L_{Aeq,16h}$ corresponds to Noise Exposure Category A. An existing night-time noise level of less than 45 dB $L_{Aeq,8h}$ corresponds to Noise Exposure Category A. No noise mitigation works would be required at a site falling entirely into NEC A for day and night-time purposes.

For areas falling into Noise Exposure Category B or C it is possible to address moderate levels of environmental noise for future residents by specifying noise reduction measures such as acoustic barriers to reduce noise levels to future gardens and facades, and acoustic ventilation and glazing to reduce internally transmitted noise.

In exceptional circumstances, where it is deemed necessary to build in areas falling into NEC D, it can be possible to adequately mitigate noise levels, using similar but more comprehensive measures to those described above.

2.2.3

Road Traffic Noise Assessment Criteria

The significance of predicted increases in road traffic noise as a result of the proposed scheme has been assessed according to the criteria described in Table 2, which are based upon the principles of the Institute of Acoustics (IOA) and the Institute of Environmental Management and Assessment's (IEMA) draft Guidelines for Noise Impact Assessment, and the guidance provided within the Design Manual for Roads and Bridges (DMRB)¹ and Transport Analysis Guidance² methodologies.

¹ Highways Agency, Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7, Traffic Noise & Vibration, August 2008.

² Department for Transport, TAG Unit 3.3.2 Noise, November 2006.

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Table 4: Assumed Significance Criteria – Road Traffic Noise

Change in Road Traffic Noise, $L_{A10, 18h}$ (dB)	Significance
0	No Change
0.1 – 0.9	Negligible
1 – 2.9	Minor
3 – 4.9	Moderate
5 +	Major

It is stated in WebTAG:

'It should be recognised that, in many situations, relatively large changes in traffic flows are required (assuming other factors remain unchanged) to bring about significant changes in the response to road traffic noise levels in the longer term. For freely flowing traffic, a difference of about 3 dB in noise level is required before there is a statistically significant change in the average assessment of nuisance. The assessment of nuisance however could still be affected even if there is only a 1 dB change in the noise level if the change is associated with changes in the view of traffic, or if the change occurs suddenly.'

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3 Noise Survey

3.1 Measurement Parameters

Attended noise measurements during daytime and night-time periods were undertaken with a fully calibrated Norsonic 140 Sound Level Meter (SLM), s/n 1402919. Field calibration was undertaken using a B&K 2238 calibrator, s/n 2106194. Certificates of calibration can be found in Appendix B.

The daytime road traffic noise measurements were made according to the shortened measurement procedure described within CRTN which states:

"Measurements of L_{10} are made over any three consecutive hours between 1000 and 1700 hours. Using L_{10} (3-hour) as the arithmetic mean of the three consecutive values of hourly L_{10} , the current value of L_{10} (18-hour) can be calculated from the relation:

$$L_{10} (18\text{-hour}) = L_{10} (3\text{-hour}) - 1 \text{ dB(A)."}$$

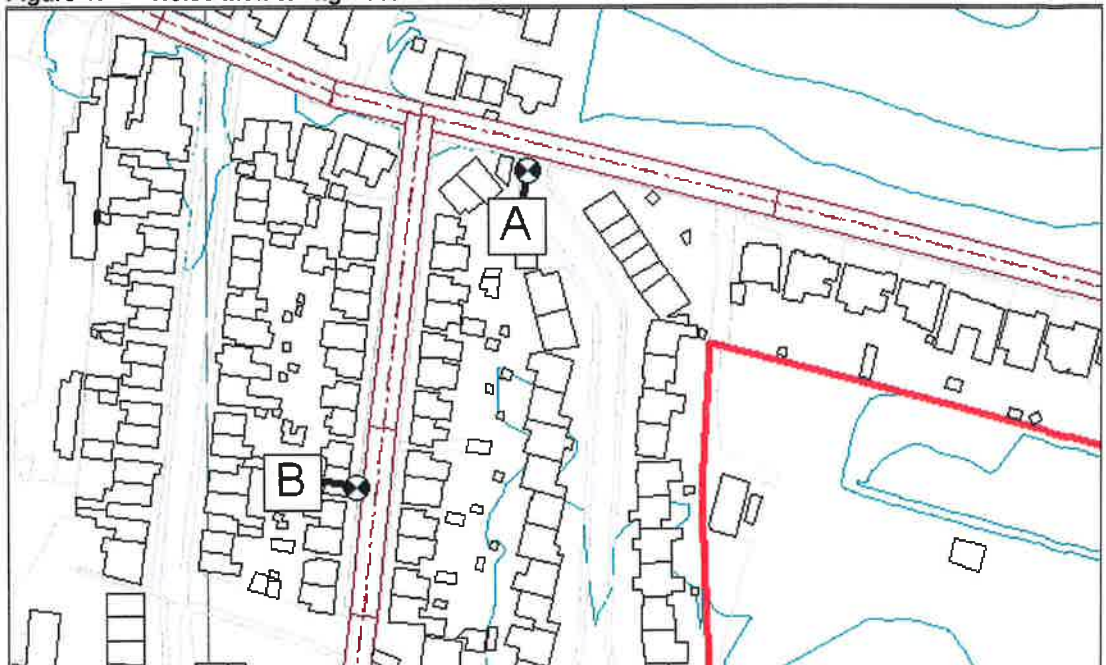
The monitoring was undertaken according to the principles of BS 7445: Description and Measurement of Environmental Noise.

Various A-weighted statistical noise parameters were recorded including the equivalent continuous noise level, L_{Aeq} , the road traffic noise level, L_{A10} , and the background noise level, L_{A90} . The sound level meters were set to the 'fast' time response.

3.2 Monitoring Locations

Noise measurements were taken on Marina Avenue during the daytime period and La Grande Route de Saint-Clement during the daytime and night-time periods. Measurement locations can be seen in Figure 1.

Figure 1: Noise Monitoring Locations



3.3 Meteorological Conditions

Weather conditions during the monitoring period were within the limits specified in BS 7445:1991 and so conducive for noise measurements. Temperature averaged approximately 12°C with an average wind speed generally below 5 m/s and no precipitation.

3.4 Noise Sources

The dominant source of noise in the area originated from road traffic on La Grande Route de Saint-Clement and Marina Avenue which were directly adjacent to measurement positions. Banging from

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construction work being undertaken on a nearby residential property was also audible at the measurement location.

3.5 Results

The results of the noise monitoring undertaken from 17th November to 18th November 2009 can be seen in Table 4 and Table 5.

Table 5: 3 Hour Noise Monitoring Results

Position	Date	Time	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)	L _{A90} dB(A)	L _{A10, 18h} dB(A)
A	17/11/09	13:47	65.3	83.6	70.0	44.2	-
A	17/11/09	14:47	65.4	82.9	69.7	46.2	-
A	17/11/09	15:47	66.3	87.9	70.3	44.7	-
A	17/11/09	Average	65.7	87.9	70.0	45.0	69.0

All values are A-weighted sound pressure levels in dB re 2×10^{-5} Pa

Table 6: Spot Measurements Results

Position	Date	Time	Duration (mins)	L _{Aeq} dB(A)	L _{Amax} dB(A)	L _{A10} dB(A)	L _{A90} dB(A)
B	17/11/09	12:32	60	61.5	90.7	60	44.2
A	18/11/09	01:07	30	51.7	79.3	49	41.6

All values are A-weighted sound pressure levels in dB re 2×10^{-5} Pa

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4 Noise Prediction Model

4.1 Noise Model Set-Up

A noise model was developed using the Cadna-A noise modelling software to predict how noise propagates across the proposed development site. Cadna-A employs the Calculation of Road Traffic Noise (CRTN) methodology. This method, which is referred to in PPG24, predicts road traffic noise levels using traffic flow data and takes into account the principal factors influencing the propagation of noise outdoors including; distance, ground conditions and screening.

4.2 Model Inputs

The Cadna-A noise prediction model was constructed using base mapping and road traffic data provided by AECOM traffic engineers. Road traffic data used within the noise model can be seen in Table 6. A figure displaying road sections can be seen in Appendix C.

Table 7: AAWT Road Traffic Data

Road	AAWT			HGV %	Speed (km/h)
	DM	DS	Percentage Increase %		
Le Grande Route de Saint-Clément	7729	8222	6.4%	0	50
Marina Avenue	1000	1000	0	0	47
Access Road	-	657	-	0	33

The AAWT for Marina Avenue was estimated to correspond with the 1 hour noise measurement taken at location B as no data was made available. Despite there not being any guidance for converting $L_{A10,1h}$ to $L_{A10,18h}$, it was considered prudent to include an estimated traffic flow on Marina Avenue to ensure that road traffic noise would not impact on noise levels at the Samares nurseries site.

4.3 Noise Model Verification

The model was calibrated by comparing the predicted levels with the surveyed levels at the measurement positions.

The predicted noise level at noise monitoring location A was an $L_{A10,18h}$ of 66.4 dB(A). This is 2.6 dB(A) less than the measured $L_{A10,18h}$ of 69.0 dB(A). This discrepancy may have occurred due to noise from construction work being undertaken on a nearby property. Additionally, traffic flows on Manor Close were not included in the noise model due to data not being available. However, it was noted during the noise survey that there may have been sufficient enough number of movements to affect measured noise levels.

Hence it can be considered that the difference between the measured and predicted noise levels is marginal and so the noise model is adequately validated.

4.4 Night-time Noise Model

Road traffic activity during the night-time period was monitored over a 30 minute period. As no night-time traffic data was available, the night-time noise model was created by subtracting the difference between the measured daytime and night-time L_{Aeq} of 14 dB(A).

4.5 Noise Model Results

Noise models displaying the predicted PPG 24 and $L_{A10,18h}$ noise contours can be seen in Appendix D.

Noise contours in the PPG 24 model were converted from $L_{A10,18h}$ into $L_{Aeq,16h}$ format (required for PPG 24 assessment) using guidance within PPG 24 which states: $L_{Aeq,16h} \approx L_{A10,18h} - 2$ dB

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5 Noise Assessment

5.1 PPG24 Assessment

The predicted daytime and night-time noise models are presented in Figure D.1 and Figure D.2 respectively of Appendix D. The daytime and night-time noise models show that the entire site is located in NEC A. NEC A states:

'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.'

5.2 Road Traffic Noise

Road traffic noise requires an increase in movements of 25% for an increase in noise level of 1 dB(A). The percentage increase in road traffic flow of 6.4%, as seen in Table 6, is not high enough to noticeably increase noise levels on existing roads.

The Do-Something scenario, shown in Figure E.3 of Appendix E, shows a scenario where an access road links the site to La Grande Route de Saint-Clement. The actual location of the access road for the proposed site may not be consistent with the location in the noise model. However, noise levels adjacent to La Grande Route de Saint-Clement will be consistent along the section of the road adjacent to the site so the change in noise levels due to the access road would be similar regardless of the access road location.

The difference between the Do-minimum scenario and the Do-Something scenario is shown in Figure E.4 of Appendix E. This model shows that there will be an increase in noise levels at properties adjacent to the access road. The worst case increase in noise level is predicted to be approximately 10 dB(A) which is considered as a 'Major' increase according to guidance within Table 4. It may be necessary to provide noise mitigation for existing residential properties to minimise the increase in noise levels due to the proposed access road.

Mitigation of noise levels can be achieved by:

- Design of the access road so, wherever possible, it is not directly adjacent to existing residential properties,
- A noise barrier between the access road and existing residential properties may mitigate noise by up to 10 dB(A)³; and
- Wherever possible, buildings on site could be constructed between the access road and existing residential properties to act as a screen to mitigate noise levels.

It should be noted that comparison of the Do-Minimum noise models and the Do-Something noise model indicate that the access road is not predicted to increase noise levels at any properties from below 55 dB(A) to above 55 dB(A). World Health Organisation guidance states:

'During the daytime, few people are seriously annoyed by activities with L_{Aeq} levels below 55 dB; or moderately annoyed with L_{Aeq} levels below 50 dB'

Despite noise levels increasing by up to 10 dB(A), they will not increase above the level at which few people are seriously annoyed.

³ BS 8233: 1999 Sound Insulation and Noise Reduction for buildings – Code of Practice, Paragraph 5.5.4

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6 Summary

6.1 PPG 24 Assessment

Noise predictions indicate that the entire Samares Nurseries site is in NEC A, as defined in PPG 24, so noise is not a determining factor when granting planning permission.

6.2 Road Traffic Noise

The predicted increase in road traffic on La Grande Route de Saint-Clement due to development of the proposed site is of small enough magnitude that any increase in noise levels will not be noticeable.

The proposed access road could potentially increase noise levels at adjacent residential properties by up to 10 dB(A). Any increase in noise levels could be mitigated by:

- Considered design of the access road location,
- Considered design of building locations so they act as a screen between the access road and existing residential properties; and
- Noise barriers between the proposed access road and adjacent existing residential properties.

Appendices

Appendix A: Acoustic Terminology

An explanation of the specific acoustic terminology referred to within this report is provided below.

dB Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.

dB(A) Instead, the dB(A) figure is used, as this is found to relate better to the loudness of the sound heard. The dB(A) figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dB(A) value provides a good representation of how loud a sound is.

L_{Aeq} Since almost all sound vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq, 07:00 - 23:00}$ for example, describes the equivalent continuous noise level over the 16 hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower than the $L_{Aeq, 07:00 - 23:00}$.


L_{Amax} The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.

L_n Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dB(A) is exceeded for say, 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $L_{A10, 1 hr} = x$ dB.

The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90} , the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.

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Appendix B: Calibration Certificates

Certificate of Calibration	
Certificate No.: 1400220	
Object	Sound Analyser Nor-140
Supplier	Norsonic AS
Type	Nor140
Serial number	1402919
Client	Faber Maunseff ENGLAND
Calibration complies with the following standard(s)	
	IEC 61672-1:2002 class 1 IEC 60851 type 1 IEC 60804 type 1 IEC 61260 class 1 ANSI S1.4-1983 (R2001) with amd. S1.4A-1985 class 1 ANSI S1.43-1987 (R2002) class 1 ANSI S1.11-2004 class 1 DIN 45 657, Applicable parts Norsonic production standard set for the Nor-140
Instrumentation used for calibration traceable to	
	Electrical Parameters: MT, Norway Acoustical Parameters: PTB, Germany Environmental Parameters: IKM, Norway, Justervesenel, Norway
Adjustments	None
Comments	None
Date of calibration	Calibration Interval recommended
06.09.2007	2 years
The environmental parameters applicable to this calibration are kept well within limits ensuring negligible deviation on obtained measurement results.	
Calibrated by	
Hien Van Le Thanh	
Sign.	<i>Hien Van Le Thanh</i>
 <small>Norsonic AS, P.B. 24, 3421 Lierskogen, Visitor address: Gunnarshøien 2, Tisted, Norway Phone: +47 32850900 Fax: +47 32852206 email: norsonic@urline.no</small>	

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Acoustic Calibration Services Limited,
Unit 6F, Diamond Industrial Centre,
Works Road, Letchworth Garden City,
Hertfordshire SG6 1LW

Tel: 01462-610085/87 Fax: 01462-610087
e-mail: cal@acousticcalibration.co.uk
web: www.acousticcalibration.co.uk

ACSL
Acoustic Calibration Services Limited

CERTIFICATE OF CALIBRATION

Model: B&K 4231

Serial Number: 2385082

Organisation:

Faber Maunsell Limited, Enterprise House
160 Croydon Road, Beckenham, Kent BR3 4DE

Job Number: 1483

Customer Order Reference: BE 1958

The acoustic calibrator was run for a period of time until a stable level was measured. The output level was compared to the certified level of the laboratory measurement references. The measurements were repeated 5 times and the average value calculated.

The ambient temperature during calibration was $24.0 \pm 1^\circ\text{C}$.
The barometric pressure was 101.0 to 101.1 kPa.

The output of the acoustic calibrator when applied to the B&K 4188 microphone is
93.9dB or 113.9dB
The signal output frequency of the acoustic calibrator operates at 1000Hz.

All ACSL's calibration instrumentation is fully traceable to National Standards. The acoustic references are calibrated by laboratories which are UKAS accredited for the purpose.

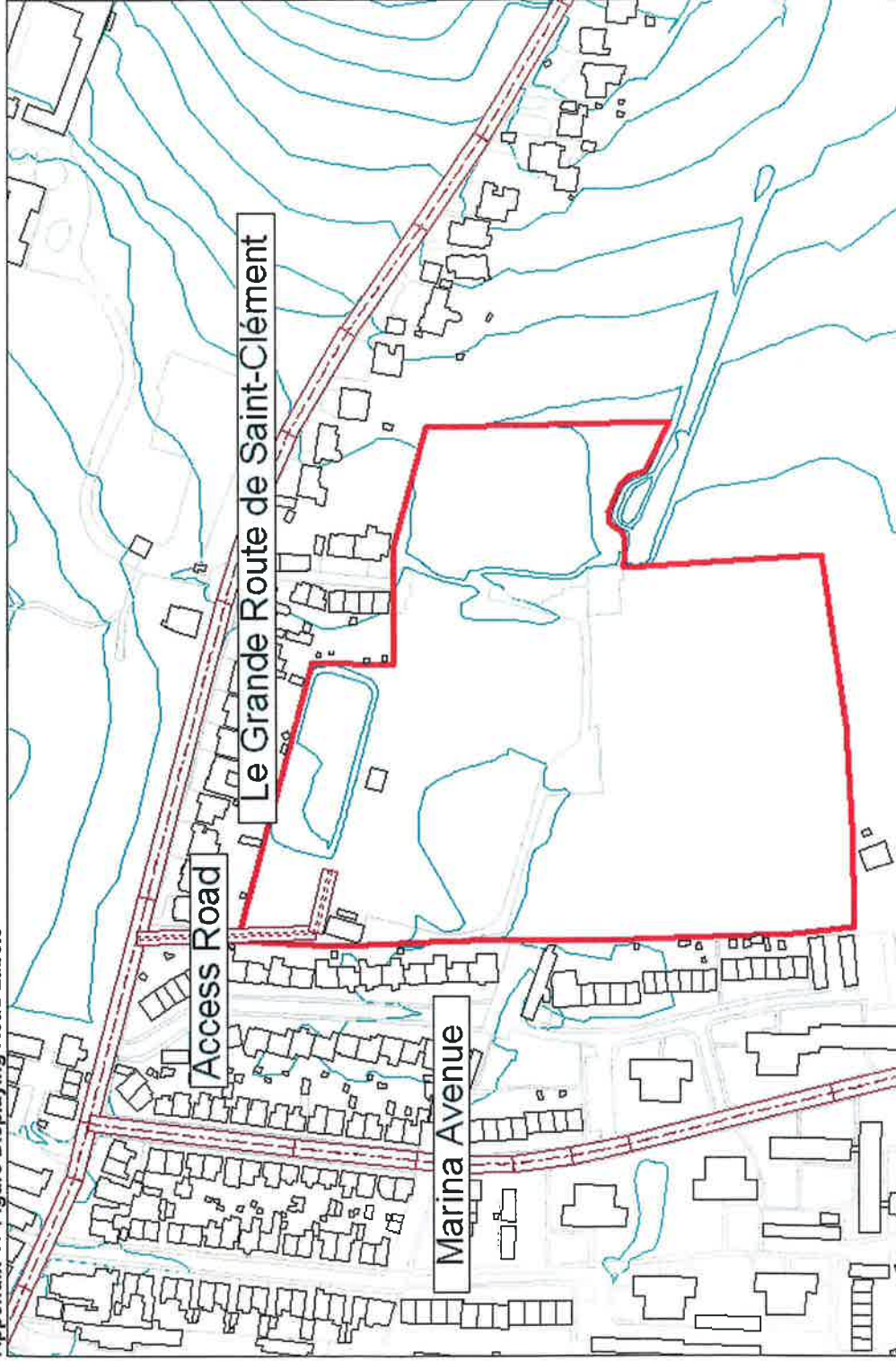
Certificate No: 12617
Date of Issue: 31st March, 2008

Signature: 
Print Name: Trevor Lewis

Registered Office: UMS Accountancy, Peak House, Works Road, Letchworth Garden City, Hertfordshire SG6 1GF
Registered No: 4143457 VAT No: GB 770505441
Directors: Trevor J Lewis, Owen R Clingan MICA

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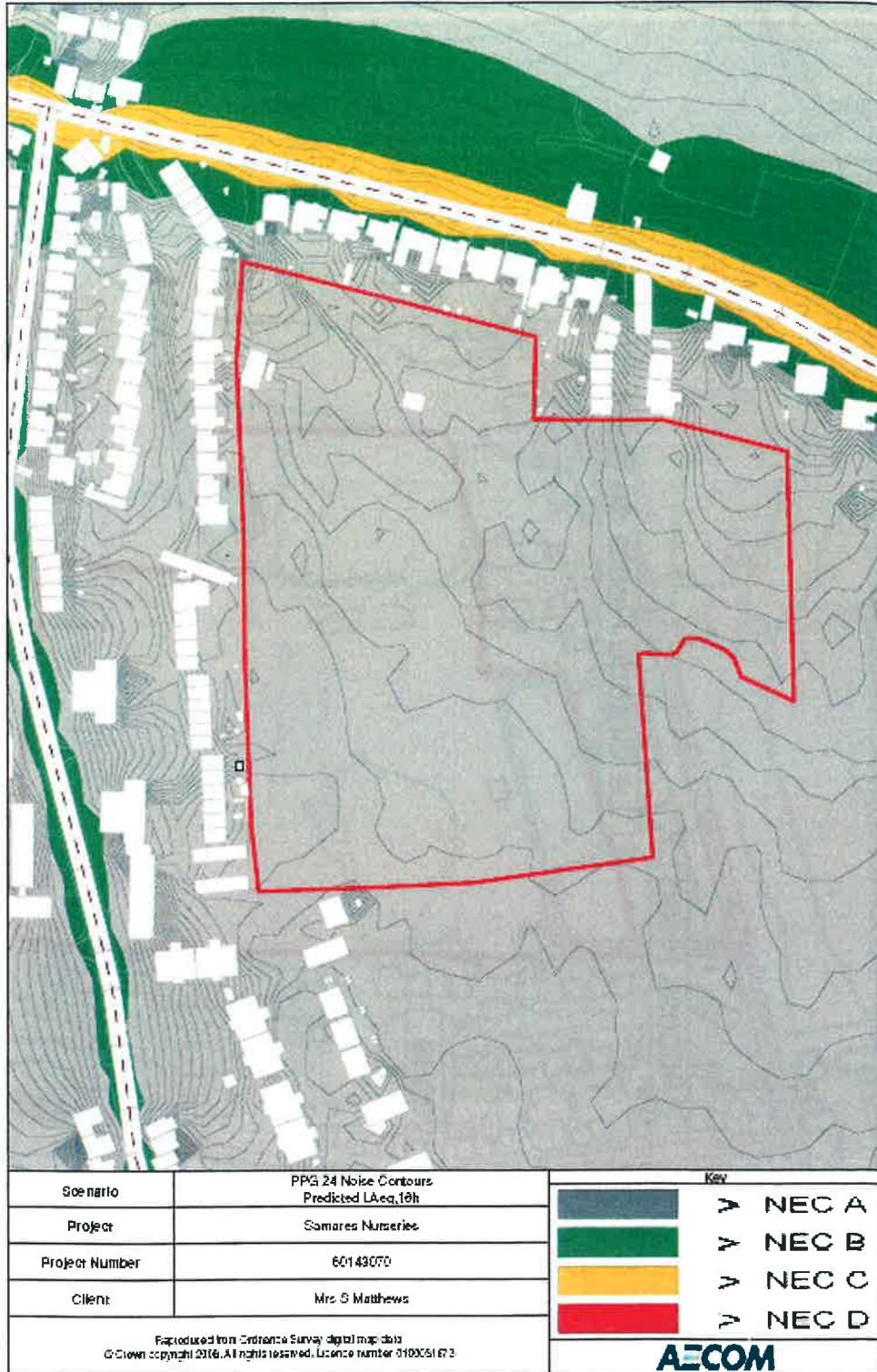
Appendix C: Figure Displaying Road Labels



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Appendix D: Noise Contour Plots

Figure D.1: Daytime PPG 24 Noise Contour Plot



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Figure D.2: Night-time PPG 24 Noise Contour Plot



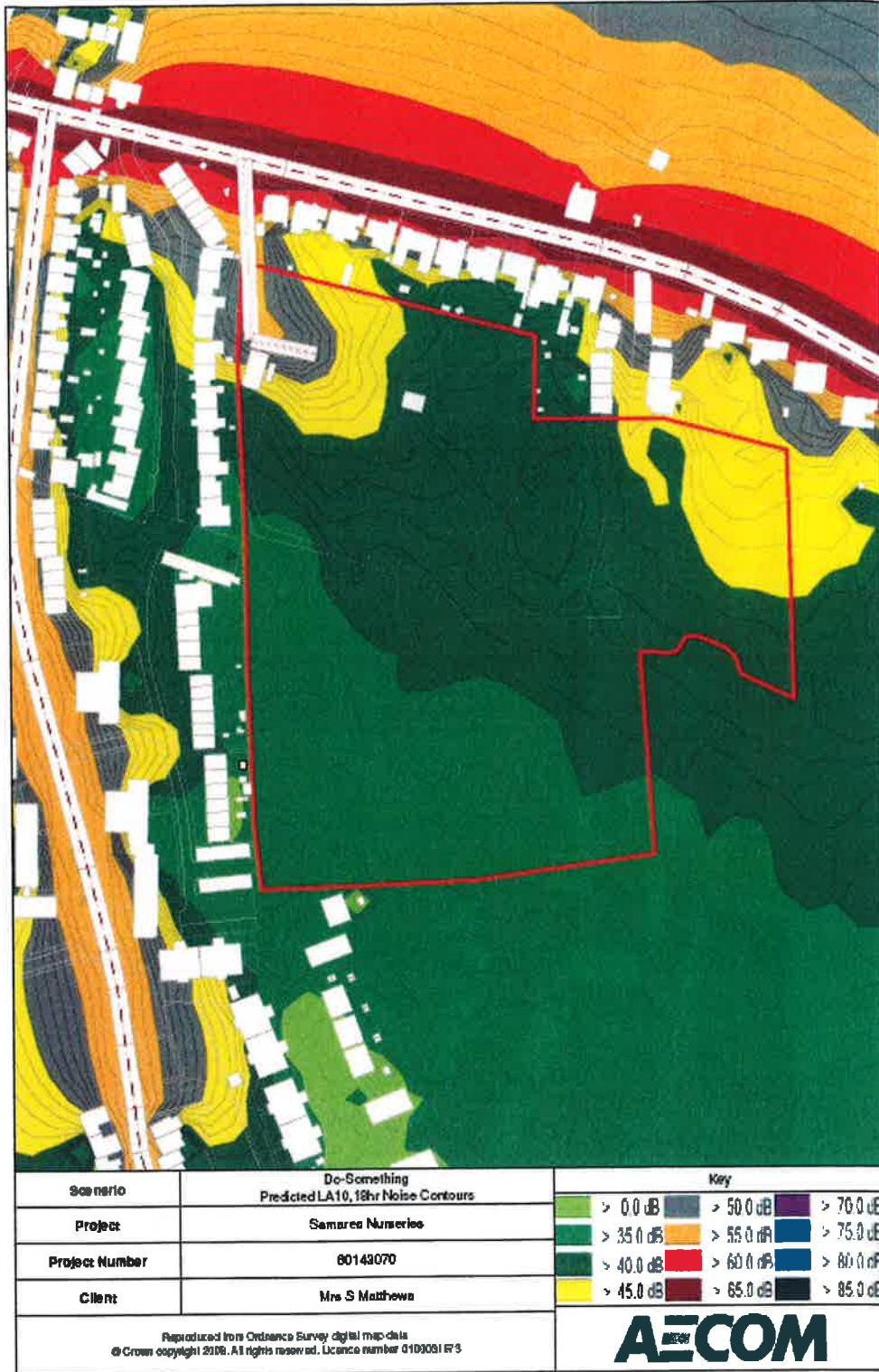
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Figure D.3: Do-Minimum $L_{A10,18h}$ Noise Contour Plot



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Figure D.4: Do-Something LA10,18h Noise Contour Plot



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Figure D.5: Do-Something minus Do-Minimum Difference Model




APPENDIX 6

Samares Nurseries, St Clement: Ecology-Extended Phase 1 Survey Report



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Samares Nurseries, St Clement: Ecology-Extended Phase 1 Survey Report

Rev No	Comments	Checked by	Approved by	Date
1	Draft report for review	PJH	JS	30/11/09
2	Final Report	PJH	JS	02/12/09

Enterprise House, 160 Croydon Road, Beckenham, Kent, BR3 4DE
Telephone: 0870 905 0906 Website: <http://www.aecom.com>

Job No 60143070

Reference

Date Created December 2009

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Capabilities on project:
Environment

1 Introduction

1.1 Background

AECOM has been commissioned by MS Planning to conduct an ecological Extended Phase 1 Survey, which includes: a desktop study, a Phase 1 Habitat Survey and a protected species assessment on site, for the Samares Nurseries site, at St Clement, Jersey.

According to the Draft Jersey Island Plan, September 2009 (which is currently in its consultation phase until the 18th December 2009), the site is proposed to be rezoned specifically for the development of Category A housing. Based on the gross site area of 9.8 acres, the site is capable of being developed for between 100 no dwellings (10 dwellings per acre) to 150 no dwellings (15 dwellings per acre).

The purpose of this report is to help address the ecological Status issue raised in Appendix B - Draft Housing Development Briefs of the Draft Island Plan: "no ecological issues identified but further site investigation will be required".

1.2 Site Location and Surroundings

The site is located on the edge of St Helier to the east of the A5 La Grande Route de Saint Clement, a principal route out of St Helier to the east.

The site is a redundant horticultural site previously used for tomato production. It covers 9.8 acres and consists of two nursery areas, with large greenhouses of which only the metal frames are left; two water reservoirs on the east and north of the site; and ancillary buildings, tanks and hard standing areas.

The north and west boundaries of the site are defined by the back gardens of the houses along Le Grand Route de Saint Clement and Manor Close respectively. The east and south boundaries of the site consists of hedges with agricultural fields beyond.

1.3 Aims

The aims of the survey detailed in this report were to:

- (1) outline ecological issues associated with the site;
- (2) provide necessary advice for further detailed surveys ; and
- (3) provide advice on potential ecological constraints (e.g. seasonal) regarding the re-development of the site and the potential for enhancements.

1.4 Quality Assurance

All UK AECOM Ecologists are members of the Institute of Ecology and Environmental Management (IEEM) at the appropriate level and follow the IEEM code of professional conduct when undertaking ecological work. AECOM is ISO 9001:2000, ISO 14001:1996 and OHAS 18001 Health and Safety accredited.

2 Legislation and Policy Framework

2.1 Legislation

The sections below summarise the legislation relating to protected species, habitats and areas relevant to the site.

2.1.1 Protected Species

The Conservation of Wildlife (Jersey) Law 2000 (as amended) makes provision for the protection of specific wild animals, bird and plants and their habitats and empowers the Environment and Public Services Committee to grant licences in respect of activities that would otherwise be prohibited.

Protected wild animals in Jersey include:

- bats, horseshoe (all species);
- bats, typical (all species)
- dolphins (all species);
- agile frog;
- hedgehog;
- green lizard;
- wall lizard;
- palmate newt;
- porpoises (all species);
- seals (all species);
- common shrew;
- lesser white-toothed shrew;
- slow worm;
- grass snake;
- red squirrel;
- common toad
- marine turtles (all species);
- Jersey bank vole; and
- Whales (all species).

Under the Conservation of Wildlife (Jersey) Law, 2000, all species of birds their nests and eggs are fully protected (with the exception of the carrion crow, feral pigeon, wood pigeon, magpie and starling).

In February 2009 an order made by the Minister for Planning and Environment came into force. The order lists 66 wild plants which are now protected under the Conservation of Wildlife (Jersey) Law 2000¹.

2.1.2 Protected Areas and Habitats

Under Article 51 of the Planning and Building (Jersey) Law 2002, the Planning and Environment Department is required to maintain a list of places or buildings of special zoological, botanical, ecological, geological, archaeological, architectural, artistic, historical, scientific or traditional interest. The Environment Department has responsibility for the designation of those sites of special zoological, botanical, ecological and geological interest².

To date, 10 ecological Sites of Special Interest (SSIs) and 12 geological SSIs have been added to the List. A further three ecological sites and 10 geological sites are scheduled to be designated by the end of the year.

In addition, four sites around the coast and open seas of Jersey have been designated as Ramsar sites under the Convention on Wetlands 1971.

These Ramsar sites are listed below:

- South East Coast of Jersey;
- Les Écréhous & Les Dirouilles;
- Les Minquiers; and
- Les Pierres de Lecq (the Paternosters)³.

¹ States of Jersey (January 2009). Biodiversity – Protected Plants in Jersey. Available at: <http://www.gov.je/NR/rdonlyres/BB5BC59F-8548-4981-A318-824F23FEC6A3/0/ProtectedPlants.pdf>

² States of Jersey website (accessed 18.11.2009).

<http://www.gov.je/PlanningEnvironment/Environment/Countryside/Designation+of+Ecological+sites+of+Special+Interest.htm>.

³ States of Jersey – Ramsar sites (website accessed 19.11.2009)

<http://www.gov.je/PlanningEnvironment/Environment/Marine+Management/Ramsar+Sites.htm>

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2.2 Policy Framework

2.2.1 International Policy

The States of Jersey has ratified a number of international multi-lateral environmental agreements including the following⁴:

- Convention on Biological Diversity (CBD);
- Bonn Convention on the conservation of migratory species of wild Animals (CMS);
- African-Eurasian Waterbird Agreement (AEWA);
- Agreement on the Conservation of Populations of European Bats (EUROBATS);
- Convention on the conservation of European wildlife and natural habitats (Bern Convention); and
- Convention of International Trade in Endangered Species of Wild Flora and Fauna (CITES).

2.2.2 National Policy

The Island Plan⁵ (approved in 2002) is the principal document in land-use planning in Jersey and the first consideration when making decisions on development proposals. Policies contained in the Island Plan 2002 relevant to this study include:

Policy G11 - Sites of Special Interest (SSI)

Sites of Special Interest are designated for protection in recognition of the importance of their: special zoological, ecological, botanical or geological interest; or special architectural, archaeological, artistic, historical, scientific, or traditional interest that attaches to a building or place.

There will be a presumption against development that would have an adverse impact on the special character of a Site of Special Interest.

Policy G14 – Protection of Trees

Proposals which would result in the loss of or damage to protected and other significant trees will not normally be permitted.

The Planning and Environment Committee will seek to protect trees where they make a significant contribution to amenity by maintaining a List of Protected Trees. Trees worthy of preservation and threatened by felling or harm will be placed under immediate protection orders.

Policy C3 – Biodiversity

In the interests of sustaining and enhancing biodiversity, the Planning and Environment Committee will integrate the aims of the Biodiversity Strategy with the aims of enhancing landscape character and stewardship set out in the countryside and agricultural policies.

Policy C9 – Trees and Woodlands

The Planning and Environment Committee will seek to retain and enhance the contribution of trees and woodland areas to the landscape character and biodiversity of the Island by:

- developing and maintaining a list of protected trees;
- initiating and supporting the preparation of local 'Trees and Woodland Conservation and Management Plans';
- encouraging woodland management and participation in tree and hedgerow planting schemes by landowners, farmers and others;
- a sympathetic approach to enterprises that help sustain and manage woodland areas; and
- requiring landscape schemes to be carried out in connection with new developments.

Development proposals that would result in the significant loss of trees and woodland areas will not normally be permitted.

Policy C10 – Walls, Fosses, Banques and Hedgerows

The Planning and Environment Committee will assist where possible in the retention, repair and restoration of historic field boundary walls, fosses, banques and hedgerows. Where a development site contains, or is bounded by historic field boundary walls, fosses, banques or hedgerows, whatever their condition, every effort should be made to retain and restore them as part of the development proposal. Development proposals which seek to remove these features will not normally be permitted.

A new Draft Island Plan (2009) is currently in its consultation phase. Once published, this document will set the framework for development in Jersey to 2019.

2.3 Biodiversity

Despite its relatively small size, Jersey is highly prized for its rich and diverse habitats. The variety of the Island's landscape supports a myriad of wildlife and the particular mix of wildlife is unique. Jersey's geographical position and favourable climate

⁴ States of Jersey website (accessed 18.11.2009) <http://www.gov.je/PlanningEnvironment/Environment/From+global+to+local+policy/Nature+Conservation>

⁵ States of Jersey. Island Plan 2002 (website accessed 19.11.2009) <http://www.gov.je/PlanningEnvironment/IslandPlan2002>

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allows many species normally restricted to either Britain or the European continent to extend their range, resulting in an overlapping mixture of animals and plants found only in the Channel Islands.

Jersey's responsibilities are a requirement of its own ratification, through the UK, of the Convention on Biological Diversity agreed at the Earth Summit. These responsibilities were recognised by the States of Jersey when in September 1993 various objectives of the Strategic Policy Review were agreed which confirmed the States' commitment to the Convention of Biological Diversity (2000 and Beyond). A draft Biodiversity Strategy was produced in 1993. This has been refined, taking into account international experience in implementing such strategies.

Biodiversity Action Plans have been prepared for the species in Table 1 (below)⁶:

Table 1: Species Action Plans

Common Name	Scientific Name
Mammals	
Red Squirrel	<i>Sciurus vulgaris</i>
Bat species	<i>Chiroptera</i>
Stoat	<i>Mustela ermina</i>
Jersey Bank Vole	<i>Clethrionomys glareolus caesarius</i>
Lesser White-toothed Shrew	<i>Crocidura suaveolens</i>
French or Millet's Shrew	<i>Sorex coronatus</i>
Birds	
Cirl Bunting	<i>Emberiza cirlus</i>
Skylark	<i>Alauda arvensis</i>
Stonechat	<i>Saxicola torquata</i>
Yellowhammer	<i>Emberiza citrinella</i>
Dartford Warbler	<i>Sylvia undata</i>
Atlantic Puffin	<i>Fratercula arctica</i>
Brent Goose	<i>Branta bernicla</i>
Reptiles	
Green Lizard	<i>Lacerta bilineata</i>
Wall Lizard	<i>Podarcis muralis</i>
Grass Snake	<i>Natrix natrix</i>
Amphibians	
Agile Frog	<i>Rana dalmatina</i>
Common Toad	<i>Bufo bufo</i>
Fish	
Basking Shark	<i>Cetorhinus maximus</i>
Ormer	<i>Haliotis tuberculata</i>
Insects	
Beautiful Demoiselle	<i>Calopteryx virgo</i>
Heath Grasshopper	<i>Chorthippus vagans</i>
Jersey Grasshopper	<i>Euchorthippus pulvinatus elegantulus</i>
Ant-lion	<i>Euroleon nostras</i>
Field Cricket	<i>Gryllus campestris</i>
Southern Emerald Damselfly	<i>Lestes barbarus</i>
Blue-winged Grasshopper	<i>Oedipoda caerulescens</i>
Plants	
Brown Galingale	<i>Cyperus fuscus</i>
Ivy-leaved Crowfoot	<i>Ranunculus hederaceus</i>
Pale Flax	<i>Linum bienne</i>
Marsh St John's-wort	<i>Hypericum elodes</i>
Lesser Skullcap	<i>Scutellaria minor</i>
Common Toadflax	<i>Linaria vulgaris</i>
Wild Strawberry	<i>Fragaria vesca</i>
Yellow Horned-poppy	<i>Glaucium flavum</i>

⁶ States of Jersey. Planning and Environment Committee. Biodiversity – A Strategy for Jersey. Available at: <http://www.gov.je/NR/rdonlyres/8405372D-F18A-4AA2-952F-FB32B29E628E/0/biodiversityv1432270602.pdf>

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Common Name	Scientific Name
Six-stamened Waterwort	<i>Elatine hexandra</i>
Lesser Water-plantain	<i>Baldellia ranunculoides</i>
Jersey Fern	<i>Anogramma leptophylla</i>
Wild Asparagus	<i>Asparagus officinalis prostratus</i>
Jersey Pink	<i>Dianthus gallicus</i>
Round-leaved Sundew	<i>Drosera rotundifolia</i>
Jersey Cudweed	<i>Gnaphalium luteoalbum</i>
Lizard Orchid	<i>Himantoglossum hircinum</i>
Toadflax-leaved St John's-wort	<i>Hypericum linariifolium</i>
Shore Dock	<i>Rumex rupestris</i>
Eelgrass beds	<i>Zostera spp.</i>
Jersey Forget-me-not	<i>Myosotis sicula Guss</i>

A Phase I Habitat survey completed in September 1999 provided a comprehensive list of habitats in Jersey. An Urban Habitat Statement has been produced which outlines the importance of wildlife habitats in Jersey's urban environment. We understand that Habitat Action Plans will be prepared for the following identified key habitats⁶:

Table 2: Key Habitat Types in Jersey

Habitat Type	Habitat Type
Mixed woodland	Coastal sand dune (including fixed dunes with herbaceous vegetation, dune heath, dune scrub and strandline vegetation)
Ancient and / or species rich hedgerows	
Wet meadows	Intertidal habitats
Maritime heath (north and south-west)	Shallow water sandbanks covered by seawater at all times
Maritime cliff and slope	Mudflats and sandflats not covered by seawater at low tide
Coastal vegetated shingle	Rocky reefs

3 Methodology

3.1 Introduction

This chapter outlines the methodology adopted for the Extended Phase 1 Survey, including:

- Desktop Study;
- Phase 1 Habitat Survey; and
- Protected Species Assessment.

3.2 Extended Phase 1 Survey

The Extended Phase 1 Survey is the standard ecological survey method for the collection of baseline data. The methodology is defined in the 'Guidelines for Baseline Ecological Assessment' (Institute of Environmental Assessment 1995, now IEMA, the internationally renowned Institute of Environmental Management and Assessment), which recommends the use of the Phase 1 Habitat Survey (JNCC 1993)⁷, together with a Desk Study and a Protected Species (site) Walkover survey.

3.2.1 Desktop Study

In order to determine the existing knowledge of the ecological interest of the site and the surrounding area and then to identify the existence of any key ecological issues a desktop study was carried out. The study comprises data collection using searches via the internet, as well as conducting consultation.

The following organisations were contacted for records of protected/notable species data and habitats in the vicinity of the site:

- States of Jersey Environment Department ;
- Jersey Amphibian and Reptile Group (JARG);
- Jersey Bat Group;
- National Trust for Jersey; and
- La Societe Jersiaise.

The information received from these organisations would help to: (1) identify which protected species are likely to be using the site; and (2) inform the Phase 1 Habitat Survey and protected species site walkover survey.

In addition a number of sources have been consulted in order to obtain further information on protected species, designated sites and local wildlife legislation, including:

- States of Jersey website: www.gov.je
- Action for Wildlife Jersey: <http://actionforwildlifejersey.wordpress.com>
- States of Jersey Advice Note: Birds, Buildings and the Law
- States of Jersey Advice Note: Bats and the Law
- States of Jersey Advice Note: Grass Snakes in Jersey
- Jersey Bat Survey (October 2003)
- States of Jersey: Jersey's Red Squirrels, The Future

3.2.2 Phase 1 Habitat Survey

A Phase 1 Habitat Survey was undertaken on 20th November by two AECOM ecologists. The purpose of the Phase 1 Habitat Survey was to map the major vegetative habitats present and to identify any features that would require further or specialist investigation in relation to protected habitats or plants. Habitats were mapped using the standard colours and codes detailed in the Handbook for Phase 1 Habitat Survey (JNCC 1993)⁷. The Phase 1 Habitat Survey Map for the site can be found in the Figures section at the end of this document.

Target notes were used to record locations where features of nature conservation interest or other points of interest were identified and these can be found in Appendix A.

A selection of photographs taken on site are included in Appendix B.

3.2.3 Protected Species Assessment

The protected species site walkover survey was carried out together with the Phase 1 Habitat Survey. The suitability for different habitat types to support protected species was assessed and signs of any protected species were identified and recorded. This included: assessing the suitability of the site's habitats for reptiles and amphibians, the suitability of the trees and buildings / structures to host roosting bats and an assessment of the site's use by birds and mammals.

⁷ JNCC (1993). Handbook for Phase 1 Habitat Survey. JNCC, Peterborough.

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3.3 Limitations

Ecological work, due to its very nature, may be subject to some limitations such as seasonality. Identifying the ecological value of the site and its context within the surrounding area was based on a desk study, consultation and a field survey. The study results are interpreted based on the findings and professional judgement of the team.

For this study the identified constraints include:

Desktop Study limitations:

- The quality of the ecological data received from the different sources is highly variable; and
- Not all the organisations that have been contacted have responded to our information requests, as shown in Table 3, Section 4 –Results below.

3.3.1 Survey limitations:

- The optimal season for undertaking Phase 1 Habitat Surveys is to start late April / early May and ends in early October. Surveys which take place outside of this time are considered as being sub-optimal as some fauna or vegetation will not be present, or if vegetation is present, it may be at a stage of growth which causes difficulty in identification of plants to species level and a complete description of the habitats. The survey for this project was undertaken during November which is thus outside the optimal survey time. The majority of the floral species present were not in flower, and which can make identification of some species difficult and the species list is not exhaustive; the Phase 1 Habitat Survey provides a snapshot of the broad habitats present at the site at the time of survey.
- Animal species are mobile and will move into and out of areas; also in the autumn and winter certain species migrate or hibernate and would not be present on site during that time.
- The wider area surrounding the site was not surveyed in detail as this was not part of the commission.

4 Results

4.1 Desktop Study Results

Table 3 below summarises the responses received at the time of writing the report from those organisations from which ecological data was requested.

Table 3: Responses to Ecological Data Request

Organisations	Response Summary
States of Jersey – Environment Department	<p>Provided protected and invasive species records within 1km of the site.</p> <p>Provided location plan and boundary information for Sites of Special Interest (SSI).</p> <p>Information has been included in the report.</p>
Jersey Amphibian and Reptile Group (JARG)	<p>Information is included in what was provided by States of Jersey – Environment Department as shown above. Information has been included in the report.</p>
Jersey Bat Group	<p>Provided bat roosts records in the vicinity of the site.</p> <p>Information has been included in the report.</p>
National Trust of Jersey	No response received.
La Societe Jersiaise	No response received.

4.1.1 Designated Sites

The desk study has identified three designated sites for nature conservation within 2km of the Samares Nurseries site, as follows:

4.1.1.1 South East Coast of Jersey Ramsar Site

South East Coast of Jersey Ramsar site is located approximately 350m south-west from the study site (refer to Figure 1, Appendix C).

The site is amongst the largest intertidal reef sites in Europe and comprises various habitats including: reefs, boulder fields, mud, sandy and shingle shores not covered by water at low tide, combined with shallow tidal lagoons, seagrass beds and a large number of outlying reefs.

The site provides important winter habitat for waders and wildfowl and produces a rich and diverse range of biotopes and some uncommon species assemblages. The flora and fauna is characterised by limit-of-range species at the northern and southern margins of their distributions that are not present on shores either to the north or south respectively.

4.1.1.2 Rue des Pres Site of Special Interest (SSI)

Rue des Pres SSI (also known as Les Pres Dormants) is a wetland area situated approximately 500m north of the Samares Nurseries site (refer to Figure 2, Appendix C). The wetland is a fine example of low-lying coastal meadows and it is situated on the coastal plain where the water table is high and the soils range from being peaty to sandy.

The site consists of a number of wetland meadows, which are maintained by grazing with Jersey Cattle, and a large reed bed and pond which provides an important habitat for migrant and resident birds.

The reed beds and wet meadows found within Rue des Pres SSI are one of the most important areas for passage migrants and over wintering birds in the Island. The eastern part of the site contains the Island's largest heron and egret roost, and several species of bird, including the marsh harrier regularly breed in the area. The flora associated with the seasonally flooded meadows is exceptional and part of the site forms one of only two remaining orchid rich meadows in the Island.

Les Pres Dormants has been identified as being very rich in wet meadow species, Jersey rarities and British rarities and has been listed as one of the most important meadow areas in the Island for its ecological and social value.

4.1.1.3 La Motte (Green Island) Le Croc and Le Nez Site of Special Interest (SSI)

This site is located approximately 1.2km south of the Samares Nurseries site (refer to Figure 3, Appendix C). The site has been designated as Site of Special Interest (SSI) because of its geological (diorites, dykes and loess), archaeological and historical interest.

4.1.2 Existing Species Records

The desktop study has identified a number of protected species records in the vicinity of the site (refer to Figure 4, Appendix C); these are discussed below. The following section also includes details of any legal protection afforded to these species.