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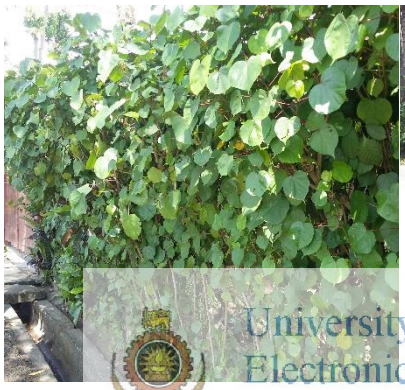
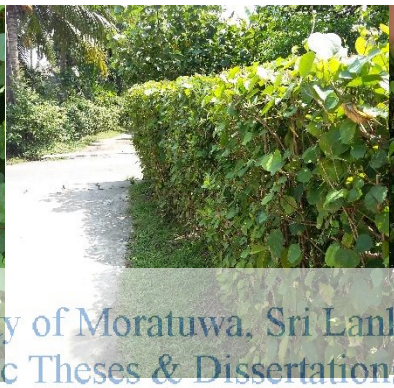
# 20.APPENDICES

# APPENDIX A.

## Pictures of few tested natural barriers











# APPENDIX B

## Green Cover Measurement

A photographic method was used to calculate the green cover of the barrier.

**Assumption.**

Spread and distribution of foliage are constant throughout the barrier

**Method**

Following methodology was adopted to evaluate green cover

1. Photograph of the front elevation of the foliage area of the barrier surface is taken.
2. Square area of the photograph was marked and total number of pixels in the marked area is measured.
3. Pixels representing the foliage area in the selection on the photograph was classified and given a color code (color code used #00ff00), Pixels representing the color code #00ff00 now represents the number of pixels representing to foliage area of the selection.

Total number of pixels in the selection = $N_1$
Total number of pixels in classified selection for foliage area = N2
Green cover =GC %



$$GC = \left(\frac{N_2}{N_1}\right) x 100\%$$

Eq: 23

At least three photographs were analyzed to arrive at an average green cover value. This analysis was carried for all the 75 natural barriers.

Software used for classification was Adobe Photoshop CS6 (64bit).

### Eg: Barrier 53 (B53)

Table 20-1 Green Cover measurement example

| Green cover measurement B53 | | | |
|---|---|---|---|
| **Photo** | **N1** | **N2** | **GC ($N_2/N_1$)%** |
| **P1** | 312481 | 279866 | **89.56** |
| **P2** | 326041 | 299774 | **91.94** |
| **P3** | 373321 | 330471 | **88.52** |
| **Average GC** | **337281** | **303370.3** | **89.95** |

Table 20-2. Classified photo example for green cover measurement

| **Barrier** | **B53** | | |
|---|---|---|---|
| *Classified photo (color code #00ff00 )* |  |  |  |
| *Photo Number* | B53-P1 | B53-P2 | B53-P3 |

# APPENDIX C

## Sample dB reduction measurement. B53

01. Ambient Noise calculation (preparation for testing)

| Ambient noise calculation | | | | | | |
|---|---|---|---|---|---|---|
| | amb1 | | amb2 | | Average amb | |
| Hz | dB | A weight | dB | A weight | dB | A weight |
| 31.5 | 52.64 | 13.24 | 58.58 | 19.18 | 55.61 | 16.21 |
| 63 | 54.23 | 28.03 | 53.52 | 27.32 | 53.88 | 27.68 |
| 125 | 42.67 | 26.57 | 43.24 | 27.14 | 42.96 | 26.86 |
| 250 | 31.76 | 23.16 | 36.1 | 27.5 | 33.93 | 25.33 |
| 500 | 33.24 | 30.04 | 37.6 | 34.4 | 35.42 | 32.22 |
| 1000 | 38.48 | 38.48 | 39.21 | 39.21 | 38.85 | 38.85 |
| 2000 | 34.44 | 35.64 | 40.62 | 41.82 | 37.53 | 38.73 |
| 4000 | 45.05 | 46.05 | 40.37 | 41.37 | 42.71 | 43.71 |
| 8000 | 27.69 | 26.59 | 29.67 | 28.57 | 28.68 | 27.58 |
| 16000 | 24.75 | 18.15 | 25.39 | 18.79 | 25.07 | 18.47 |
| $L_{Aeq}$ | | 46.97 | | 46.08 | | 46.53 |



02. Barrier properties and environment conditions

| Location | Gampaha | Unit |
|---|---|---|
| Temp | 33 | $^{o}$C |
| Humidity | 60 | % |
| Green cover | 90 | % |
| Thickness | 1.0 | m |
| Length | 20 | m |
| Height | 1.4 | m |

03. Noise measurement with the barrier

| With the barrier | | | | | | |
|---|---|---|---|---|---|---|
| **Distance from source** | **1.5m Reading 01** | | **5.5m Reading 02** | | **ΔdB** | **ΔdB A** |
| | | **A Weighted** | | **A Weighted** | | |
| **Freq Hz** | dB | dB | dB | dB | | |
| **31.5** | 55.37 | 15.97 | 53.96 | 14.56 | 1.41 | 1.41 |
| **63** | 60.69 | 34.49 | 58.78 | 32.58 | 1.91 | 1.91 |
| **125** | 55.65 | 39.55 | 51.49 | 35.39 | 4.16 | 4.16 |
| **250** | 57.15 | 48.55 | 51.06 | 42.46 | 6.09 | 6.09 |
| **500** | 67.42 | 64.22 | 53.61 | 50.41 | 13.81 | 13.81 |
| **1000** | 58.35 | 58.35 | 55.69 | 55.69 | 2.66 | 2.66 |
| **2000** | 69.7 | 70.9 | 56.98 | 58.18 | 12.72 | 12.72 |
| **4000** | 74.79 | 75.79 | 58.35 | 59.35 | 16.44 | 16.44 |
| **8000** | 64.83 | 63.73 | 48.24 | 47.14 | 16.59 | 16.59 |
| **16000** | 60.8 | 54.2 | 34.02 | 27.42 | 26.78 | 26.78 |
| **$L_{Aeq}$** | | 77.17 | | 64.95 | | **12.22** |

04. Noise measurements without the barrier.



| Without the barrier | | | | | | |
|---|---|---|---|---|---|---|
| **Distance from source** | **1.5m Reading 03** | | **5.5m Reading 04** | | **ΔdB** | **ΔdB A** |
| | | **A Weighted** | | **A Weighted** | | |
| **Freq Hz** | dB | dB | dB | dB | | |
| **31.5** | 53.76 | 14.36 | 53.7 | 14.3 | 0.06 | 0.06 |
| **63** | 55.08 | 28.88 | 58.95 | 32.75 | -3.87 | -3.87 |
| **125** | 50.55 | 34.45 | 54.03 | 37.93 | -3.48 | -3.48 |
| **250** | 55.71 | 47.11 | 50.38 | 41.78 | 5.33 | 5.33 |
| **500** | 66.41 | 63.21 | 56.96 | 53.76 | 9.45 | 9.45 |
| **1000** | 62.1 | 62.1 | 52.21 | 52.21 | 9.89 | 9.89 |
| **2000** | 68.03 | 69.23 | 57.78 | 58.98 | 10.25 | 10.25 |
| **4000** | 72.5 | 73.5 | 61.03 | 62.03 | 11.47 | 11.47 |
| **8000** | 66.6 | 65.5 | 55.88 | 54.78 | 10.72 | 10.72 |
| **16000** | 64.04 | 57.44 | 50.41 | 43.81 | 13.63 | 13.63 |
| **$L_{Aeq}$** | | 75.54 | | 65.4 | | **10.14** |

Noise reduction as an effect of the barrier =12.22-10.14 = 2.08 dB $L_{Aeq}$

# APPENDIX D

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