Stantec Consulting Ltd.
171 Queens Avenue, 6th Floor, London ON N6A 5J7

September 25, 2014
File: 1604-00743

Attention: Mr. Jim Hall
Corporation of the City of Ottawa
Planning and Growth Management Department
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Dear Jim,

Reference: Preliminary Noise Assessment, Half Moon Bay South Subdivision Draft Plan 3, Phase 4/5

A. BACKGROUND

Stantec Consulting Ltd. (Stantec) has been retained by Mattamy Homes to develop a preliminary environmental noise assessment for a site located south of Cambrian Road and adjacent to Greenbank Road, in the City of Ottawa.

For the purpose of this preliminary noise assessment only outdoor living area (OLA) calculations were completed to determine if sound barriers are required and their respective height and location.

The main potential noise source that impacts the subject site is vehicular traffic on Greenbank (existing and future) along the east and west boundary of the subdivision. There are also two urban collector roads that run through the development; Dundonald Drive and River Mist Road. The traffic volumes for, Dundonald Drive and River Mist Road are based on the City of Ottawa Environmental Noise Control Guidelines (ENCG).

B. SUMMARY OF NOISE CALCULATIONS

Using the Ministry of the Environment (MOE) noise model, ORNAMENT, unattenuated noise levels were calculated for the OLA conditions at the point representing the anticipated building locations based on the proposed site plan prepared by J.D. Barnes Ltd., as shown on Figures 1, 2 and 3.

Reference: Preliminary Noise Assessment, Half Moon Bay South Subdivision Draft Plan 3, Phase 4/5

To assess the OLA noise levels, calculations were completed 3m from the building façade and 1.5m above the ground within the centre of the building. Based on our preliminary calculations, noise barriers would not be required but should be considered in these locations:

Table 1.0: Summary of Unattenuated & Attenuated Noise Levels

Unit	Unattenuated Noise Levels (dBA)	Barrier Height (m)	Attenuated Noise Levels (dBA)
1	57.82	2.2	50.61
21	59.76		52.13
22	55.62		52.77

All OLA noise levels fall within the ENCG where control measures (barriers) are not required but should be considered. The table above illustrates achievable noise levels by using a minimum height wall.

C. CONCLUSION

Once a grading plan has been finalized for the subdivision, it is recommended that these preliminary calculations be revisited to determine the actual heights and location of the potential noise barriers.

Reference: Preliminary Noise Assessment, Half Moon Bay South Subdivision Draft Plan 3, Phase 4/5

We trust this letter sufficiently describes the preliminary noise assessment for this site. We would be pleased to answer any questions that might arise related to the specific details of this application.

Regards,

STANTEC CONSULTING LTD.

LICENSED PROFESSIONAL ENGINEER
J. R. PAUL
PROVINCE OF ONTARIO

Jeffrey Paul, P.Eng.
Principal
Phone: (519) 675-6604
Fax: (519) 645-6575
jeff.paul@stantec.com

Attachment: Figure 1: Noise Assessment Plan – Outdoor Living Area
Figure 2: Noise Assessment Plan – Outdoor Living Area
Figure 3: Noise Assessment Plan – Outdoor Living Area
Noise Calculations – Un-attenuated and Attenuated

c.

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2014-9-26 11:04 AM by: Horvath, Brian

September, 2014
1604-00743

Stantec

600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Legend

OLA — SOURCE–RECEIVER DIMENSION

STUDY LIMIT

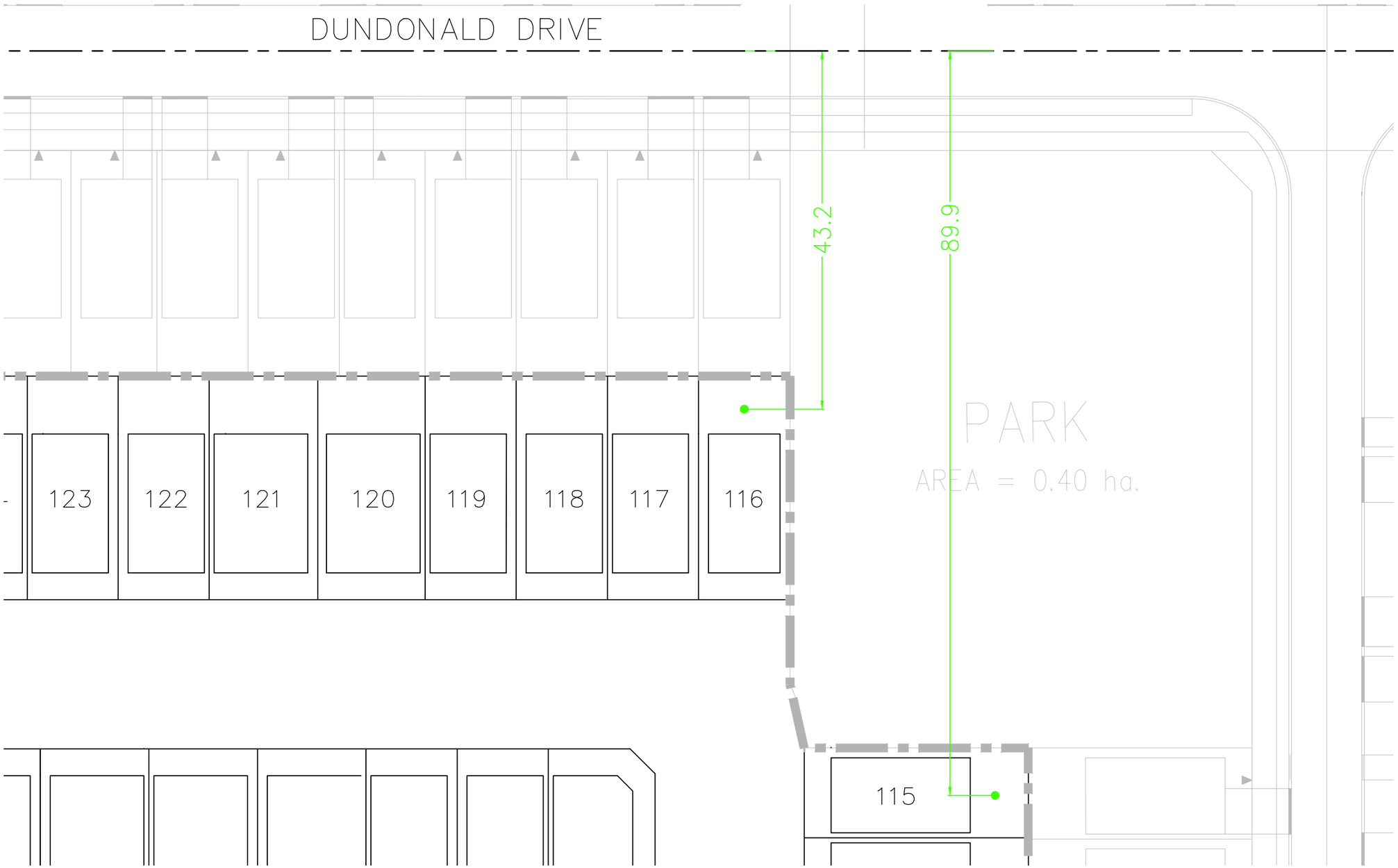
Notes

HORZ – 1 : 500
5 0 10m

Client/Project
MATTAMY HOMES
HALF MOON BAY SOUTH SUBDIVISION, PH. 4/5
DRAFT PLAN 3

Figure No.
1.0

Title
NOISE ASSESSMENT PLAN
OUTDOOR LIVING AREA



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1604-00743

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2014-9-26 11:04 AM by: Horvath, Brian

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Legend

OLA — SOURCE–RECEIVER DIMENSION

STUDY LIMIT

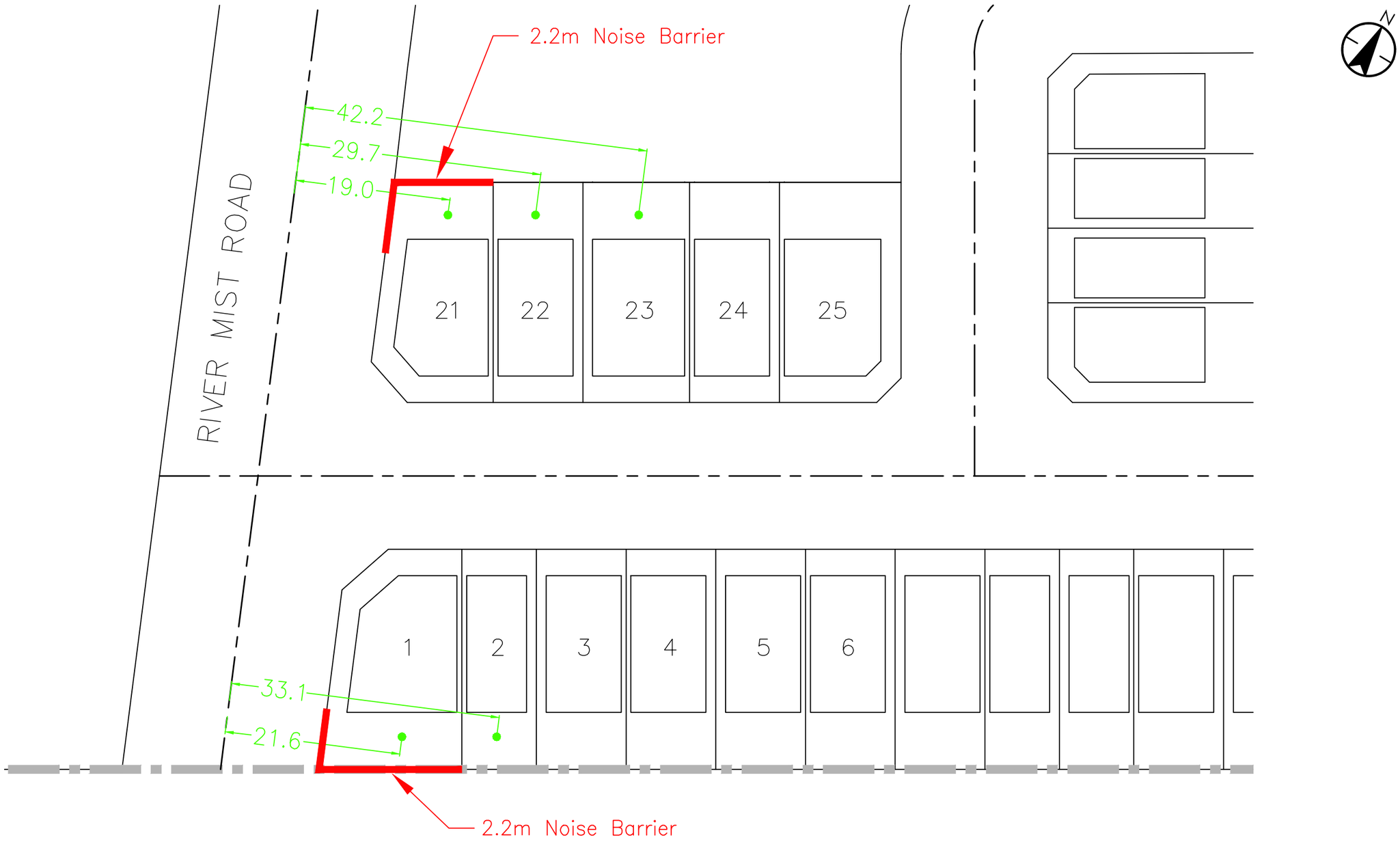
Notes

HORZ – 1 : 500
5 0 10m

Client/Project
MATTAMY HOMES
HALF MOON BAY SOUTH SUBDIVISION, PH. 4/5
DRAFT PLAN 3

Figure No.
2.0

Title
NOISE ASSESSMENT PLAN
OUTDOOR LIVING AREA



September, 2014
1604-00743

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2014-9-26 11:03 AM by: Horvath, Brian

Stantec

600-171 Queens Avenue
London ON N6A 5J7
Tel. 519-645-2007
www.stantec.com

Legend

OLA — SOURCE–RECEIVER DIMENSION

STUDY LIMIT

Notes

HORZ – 1 : 500
5 0 10m

Client/Project
MATTAMY HOMES
HALF MOON BAY SOUTH SUBDIVISION, PH. 4/5
DRAFT PLAN 3

Figure No.
3.0

Title
NOISE ASSESSMENT PLAN
OUTDOOR LIVING AREA

STAMSON 5.0 NORMAL REPORT Date: 25-09-2014 05:06:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: HMBS DP3 Time Period: 16 hours
Description: Unit 1, Daytime (OLA)

Road data, segment # 1: River Mist

Car traffic volume : 6477 veh/TimePeriod
Medium truck volume : 515 veh/TimePeriod
Heavy truck volume : 368 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: River Mist

Angle1 Angle2 : -90.00 deg 16.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 21.60 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: River Mist

Source height = 1.50 m

ROAD (0.00 + 57.82 + 0.00) = 57.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	16	0.66	63.96	0.00	-2.63	-3.51	0.00	0.00	0.00	57.82

Segment Leq : 57.82 dBA

Total Leq All Segments: 57.82 dBA

TOTAL Leq FROM ALL SOURCES: 57.82

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 05:08:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 2, Daytime (OLA)


Road data, segment # 1: River Mist
----------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: River Mist
--------------------------------
Angle1   Angle2           : -90.00 deg   2.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  33.10 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: River Mist
-------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.92 + 0.00) = 53.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
---
   -90      2   0.66  63.96   0.00  -5.71  -4.33   0.00   0.00   0.00
53.92
--------------------------------------------------------------------------
---

Segment Leq : 53.92 dBA

Total Leq All Segments: 53.92 dBA

TOTAL Leq FROM ALL SOURCES:       53.92
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 05:16:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 21, Daytime (OLA)


Road data, segment # 1: River Mist
----------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: River Mist
--------------------------------
Angle1   Angle2           : -39.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  19.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: River Mist
-------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.76 + 0.00) = 59.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
----------------------------------------------------------------------------
---
   -39     90   0.66  63.96   0.00  -1.70  -2.49   0.00   0.00   0.00
59.76
----------------------------------------------------------------------------
---

Segment Leq : 59.76 dBA

Total Leq All Segments: 59.76 dBA

TOTAL Leq FROM ALL SOURCES:       59.76
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 05:17:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 22, Daytime (OLA)


Road data, segment # 1: River Mist
----------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: River Mist
--------------------------------
Angle1   Angle2           : -18.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  29.70 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: River Mist
-------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.62 + 0.00) = 55.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
----------------------------------------------------------------------------
---
   -18     90   0.66  63.96   0.00  -4.92  -3.41   0.00   0.00   0.00
55.62
----------------------------------------------------------------------------
---

Segment Leq : 55.62 dBA

Total Leq All Segments: 55.62 dBA

TOTAL Leq FROM ALL SOURCES:       55.62
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 05:18:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 23, Daytime (OLA)


Road data, segment # 1: River Mist
----------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: River Mist
--------------------------------
Angle1   Angle2           : -13.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  42.20 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: River Mist
-------------------------------

Source height = 1.50 m

ROAD (0.00 + 52.83 + 0.00) = 52.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
---
   -13     90   0.66  63.96   0.00  -7.46  -3.67   0.00   0.00   0.00
52.83
--------------------------------------------------------------------------
---

Segment Leq : 52.83 dBA

Total Leq All Segments: 52.83 dBA

TOTAL Leq FROM ALL SOURCES:       52.83
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 04:50:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 115, Daytime (OLA)


Road data, segment # 1: Dundonald
---------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Dundonald
-------------------------------
Angle1   Angle2           : -19.00 deg   36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  89.90 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dundonald
------------------------------

Source height = 1.50 m

ROAD (0.00 + 45.75 + 0.00) = 45.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
---
   -19     36   0.66  63.96   0.00 -12.91  -5.29   0.00   0.00   0.00
45.75
---------------------------------------------------------------------------
---

Segment Leq : 45.75 dBA

Total Leq All Segments: 45.75 dBA

TOTAL Leq FROM ALL SOURCES:       45.75
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 04:44:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 116, Daytime (OLA)


Road data, segment # 1: Dundonald
---------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Dundonald
-------------------------------
Angle1   Angle2           :  21.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  43.20 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dundonald
------------------------------

Source height = 1.50 m

ROAD (0.00 + 49.65 + 0.00) = 49.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
---
    21     72   0.66  63.96   0.00  -7.63  -6.68   0.00   0.00   0.00
49.65
---------------------------------------------------------------------------
---

Segment Leq : 49.65 dBA

Total Leq All Segments: 49.65 dBA

TOTAL Leq FROM ALL SOURCES:       49.65
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 04:12:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 130, Daytime (OLA)


Road data, segment # 1: Dundonald
---------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Dundonald
-------------------------------
Angle1   Angle2           : -48.00 deg   -22.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  43.20 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dundonald
------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.33 + 0.00) = 47.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
---
   -48    -22   0.66  63.96   0.00  -7.63  -9.00   0.00   0.00   0.00
47.33
--------------------------------------------------------------------------
---

Segment Leq : 47.33 dBA

Total Leq All Segments: 47.33 dBA

TOTAL Leq FROM ALL SOURCES:       47.33
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 03:22:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 159, Daytime (OLA)


Road data, segment # 1: Dundonald
---------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Dundonald
-------------------------------
Angle1   Angle2           : -75.00 deg   -50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  35.20 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dundonald
------------------------------

Source height = 1.50 m

ROAD (0.00 + 46.96 + 0.00) = 46.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
---
   -75    -50   0.66  63.96   0.00  -6.15 -10.84   0.00   0.00   0.00
46.96
--------------------------------------------------------------------------
---

Segment Leq : 46.96 dBA

Total Leq All Segments: 46.96 dBA

TOTAL Leq FROM ALL SOURCES:       46.96
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 04:05:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                    Time Period: 16 hours
Description:  Block 160 - Unit 1, Daytime (OLA)


Road data, segment # 1: Dundonald
---------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Dundonald
-------------------------------
Angle1   Angle2           :  26.00 deg   49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  43.20 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dundonald
------------------------------

Source height = 1.50 m

ROAD (0.00 + 46.71 + 0.00) = 46.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
---
    26     49   0.66  63.96   0.00  -7.63  -9.62   0.00   0.00   0.00
46.71
---------------------------------------------------------------------------
---

Segment Leq : 46.71 dBA

Total Leq All Segments: 46.71 dBA

TOTAL Leq FROM ALL SOURCES:       46.71
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 03:26:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                    Time Period: 16 hours
Description:  Block 160 - Unit 5, Daytime (OLA)


Road data, segment # 1: Dundonald
---------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Dundonald
-------------------------------
Angle1   Angle2           : -71.00 deg   -17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  43.20 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dundonald
------------------------------

Source height = 1.50 m

ROAD (0.00 + 50.01 + 0.00) = 50.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
---
   -71    -17   0.66  63.96   0.00  -7.63  -6.32   0.00   0.00   0.00
50.01
---------------------------------------------------------------------------
---

Segment Leq : 50.01 dBA

Total Leq All Segments: 50.01 dBA

TOTAL Leq FROM ALL SOURCES:       50.01
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 05:29:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 1, Daytime (OLA) - Barrier Wall


Road data, segment # 1: River Mist
----------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: River Mist
--------------------------------
Angle1   Angle2           : -90.00 deg   16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  21.60 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : 16.00 deg
Barrier height            :   2.20 m
Barrier receiver distance :   9.57 m
Source elevation          :   0.00 m
Receiver elevation        :   0.75 m
Barrier elevation         :   0.75 m
Reference angle           :   0.00

Results segment # 1: River Mist
-------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.17 !         1.92

ROAD (0.00 + 50.61 + 0.00) = 50.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
---
   -90     16   0.53  63.96   0.00  -2.42  -3.32   0.00   0.00  -7.60
50.61
```


Segment Leq : 50.61 dBA

Total Leq All Segments: 50.61 dBA

TOTAL Leq FROM ALL SOURCES: 50.61

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 05:25:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 21, Daytime (OLA) - Barrier Wall


Road data, segment # 1: River Mist
----------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: River Mist
--------------------------------
Angle1   Angle2           : -38.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  19.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -38.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.20 m
Barrier receiver distance :   7.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.75 m
Barrier elevation         :   0.75 m
Reference angle           :   0.00

Results segment # 1: River Mist
-------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.22 !         1.97

ROAD (0.00 + 52.13 + 0.00) = 52.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
---
   -38     90   0.53  63.96   0.00  -1.57  -2.37   0.00   0.00  -7.89
52.13
```


Segment Leq : 52.13 dBA

Total Leq All Segments: 52.13 dBA

TOTAL Leq FROM ALL SOURCES: 52.13

```
STAMSON 5.0        NORMAL REPORT        Date: 25-09-2014 05:26:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename:  HMBS DP3                     Time Period: 16 hours
Description:  Unit 22, Daytime (OLA) - Barrier Wall


Road data, segment # 1: River Mist
----------------------------------
Car traffic volume  :  6477 veh/TimePeriod
Medium truck volume :   515 veh/TimePeriod
Heavy truck volume  :   368 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: River Mist
--------------------------------
Angle1   Angle2           : -18.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  29.70 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -18.00 deg   Angle2 : 30.00 deg
Barrier height            :   2.20 m
Barrier receiver distance :  17.70 m
Source elevation          :   0.00 m
Receiver elevation        :   0.75 m
Barrier elevation         :   0.75 m
Reference angle           :   0.00

Results segment # 1: River Mist
-------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.05 !         1.80

ROAD (0.00 + 45.13 + 51.95) = 52.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
---
   -18     30   0.53  63.96   0.00  -4.53  -5.82   0.00   0.00  -8.47
45.13
```

```
---------------------------------------------------------------------------
---
    30     90   0.66  63.96   0.00  -4.92  -7.08   0.00   0.00   0.00
51.95
---------------------------------------------------------------------------
---
```

Segment Leq : 52.77 dBA

Total Leq All Segments: 52.77 dBA

TOTAL Leq FROM ALL SOURCES: 52.77