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36 Years

Burnett Lands
3370 Greenbank Road

Noise Impact Feasibility Report

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BURNETT LANDS

3370 GREENBANK ROAD

NOISE IMPACT FEASIBILITY REPORT

Prepared for:

Claridge Homes

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

December 9, 2016
Revised: March 3, 2017
Revised: January 26, 2018
Revised: May 23, 2018

Novatech File: 111117
Ref: R-2016-174

NOVATECH
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May 23, 2018

City of Ottawa
Planning, Infrastructure and Economic Development Department
Planning Services Branch
110 Laurier Ave. West, 4th Floor
Ottawa, Ontario
K1P 1J1

Attention: **Mr. Don Herweyer, Manager of Development Review South**

Reference: **Burnett Lands - 3370 Greenbank Road**
Noise Impact Feasibility Report
Novatech File No.: 111117

Enclosed herein are three (3) revised copies of the "Noise Impact Feasibility Report" for the proposed development of the Burnett Lands located at 3370 Greenbank Road, Ottawa. The report is submitted in support of applications for Official Plan Amendment, Zoning By-Law Amendment and Draft Plan of Subdivision. It will address the environmental impact of noise from traffic on the outdoor living areas, and assess the feasibility of mitigation measures to attenuate noise to acceptable levels.

Should you have any questions or comments, please do not hesitate to contact us.

Sincerely,

NOVATECH

Marc St. Pierre
Senior Project Manager

Encl.

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

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1.0 INTRODUCTION

Novatech has been retained by Claridge Homes (South Nepean) LP to prepare a Noise Impact Feasibility Report in support of an Official Plan Amendment (OPA), a Draft Plan of Subdivision, and a Zoning By-Law Amendment (ZBLA) to allow for the development of the lands at 3370 Greenbank Road, Ottawa. The site is planned to be developed with a mix of 2-storey public street orientated townhomes (169 units), private street oriented townhomes (26 units), three 4-storey residential blocks (195 units), and a 4-storey retirement home (130 units) as shown on **Figure 1**. The proposed development provides access to the future district park- Half Moon Bay Park (along the Jock River), various trails, and to the multi-use path identified in the *Official Plan*, *South Nepean Secondary Plan*, and *South Nepean Community Design Plan*.

The study will assess the environmental impact of noise from traffic on the outdoor living areas, indoor living areas and review mitigation methods and their feasibility. Mitigation of in-door noise levels (AIF calculations) will not be discussed in this report since floor areas, window/door areas and building sections are not yet available. These components will be reviewed as part of the detailed subdivision design.

1.1 SITE LOCATION AND CONTEXT

The subject site is located within the South Nepean Town Centre limits and is approximately 15.5 hectares in area. Specifically, the site is located immediately north of the Jock River, south of Strandherd Drive and between the Kennedy Burnett Stormwater Management Facility and the existing Greenbank Road as shown on **Figure 2**. The Burnett Municipal Drain is a tributary to the Jock River and travels through the subject site. The subject site currently has farm and accessory structures located near its southern boundary with an existing gravel access on to Greenbank Road. The remainder of the site is currently used for passive agriculture activities. The site is generally flat with a gentle slope from the northeastern corner to the southwestern corner.

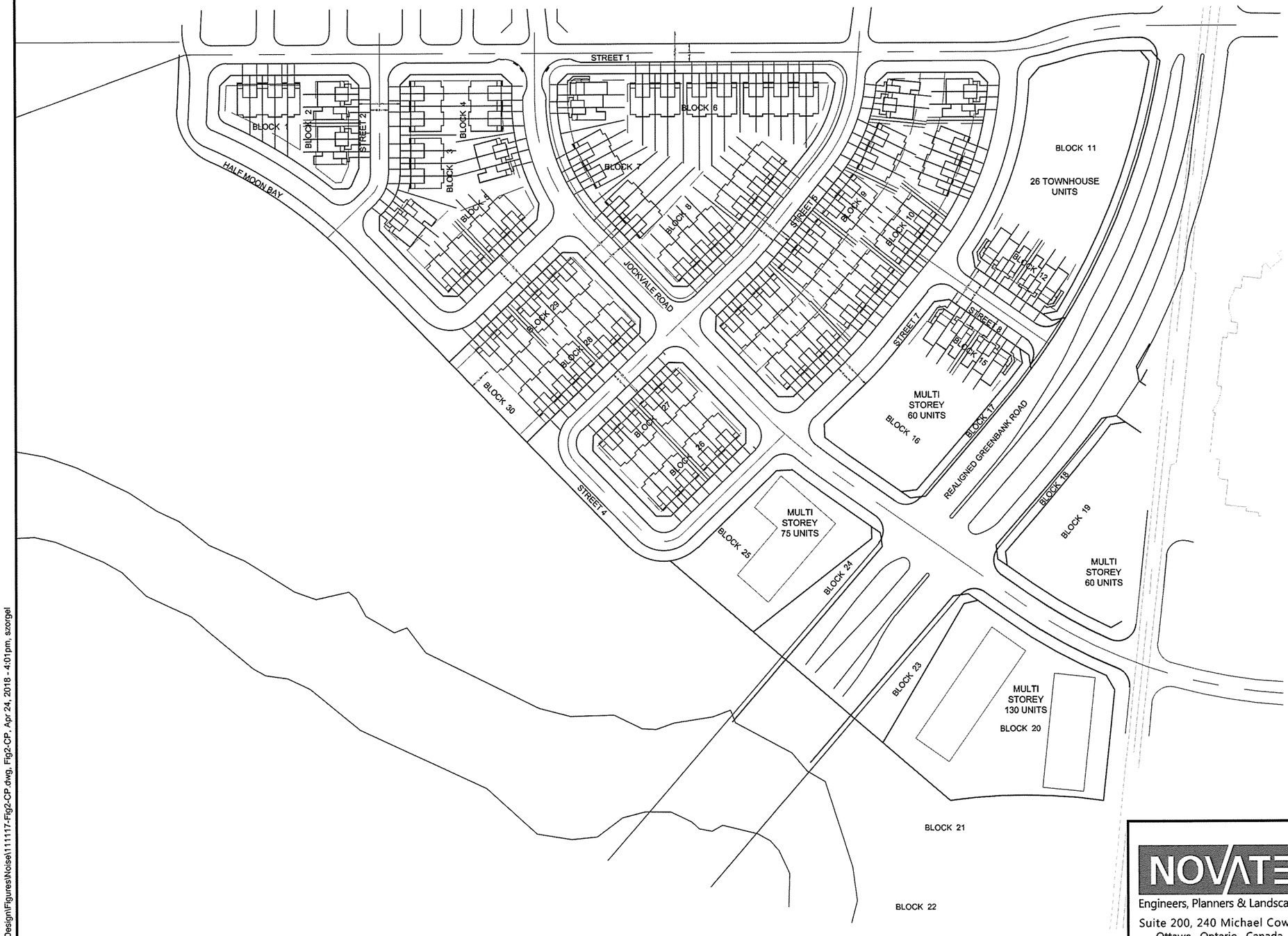
Figure 2: Site Location (Base Map Source: GeoOttawa)

The following describes the existing and planned land uses adjacent to the subject site:

North: Lands to the north, owned by Caivan Communities, are currently under the development approval process and have recently obtained OPA and ZBLA approval (Amendment #144) from the City to permit High Rise and Mid Rise Mixed-Use Residential developments, Mid Rise Residential Dwellings, and a Neighbourhood Park as per *Schedule 1- Land Use Plan, South Nepean Secondary Plan (Area 7)*. Further north of the Caivan Communities' development is the planned Barrhaven Town Centre which will include a variety of retail uses to service the surrounding existing and planned residential developments.

East: Lands east of the subject site contain a mixture of low density residential dwellings (single detached houses), a secondary school (St. Joseph Catholic High School), and an existing vegetated area. Greenbank Road currently forms the eastern boundary of the site. The realigned Greenbank Road will bisect the site as per the design by the City.

South: The Jock River runs west – east along the majority of the southern boundary of the property until it turns south near the southeastern corner of the site. The lands south of Jock River are within the *Barrhaven South Community Design Plan* and are intended for a future district park and residential uses as shown on *Figure 17* of the *Barrhaven South Community Design Plan.*



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3370 GREENBANK RD. BURNETT LANDS

CONCEPT PLAN

SCALE 1 : 2000 (0, 20, 40, 60, 80)

DATE APR 2018 | JOB 111117 | FIGURE FIGURE 2

M:\2011\111117\CADDesign\Figures\Noise\111117-Fig2-CP.dwg, Fig2-CP, Apr 24, 2018 - 4:01pm, szorgel

West: The Kennedy Burnett stormwater management facility is located north west of the subject site and drains into the Jock River. Lands immediately west are currently vacant and intended for mostly conservation and residential uses as identified in Schedule B of the Official Plan.

2.0 BACKGROUND AND REPORT ASSUMPTIONS AND LIMITATIONS

The City of Ottawa's Official Plan (OP) and Environmental Noise Control Guidelines (ENCG) stipulates that a noise study shall be prepared when a residential development is located within close proximity to surface transportation, stationary sources and aircraft noise sources. This report considers noise from traffic on the future Jockvale Road, future Street 1 and Greenbank Road as all other sources of noise are located beyond the limits of consideration as outlined in Section 2.1 of the ENCG. Jockvale Road and Street 1 are classified as future collector and Greenbank Road is classified as an arterial road, respectively, on Schedule E - Urban Road Network in the OP as well as the South Nepean Town Centre Community Design Plan (SNTCCDP). Refer to **Appendix A** for excerpts. Jockvale Road and Street 1 will be classified as a 2-lane urban collector and Greenbank Road will be classified as a 4-lane urban arterial divided road. This report also takes into consideration the future bus route on Greenbank Road.

The checklist of required information for a Noise Control Feasibility Study includes an evaluation of alternative site designs and recommendations for alternative site plan design. However, unlike other greenfield subdivisions where the street pattern is not yet established, the South Nepean Town Centre has a fixed street pattern that does not permit significant modifications. The street pattern was deliberately designed through the Secondary Plan process to provide connections between the Town Centre and surrounding communities, provide a pattern of regular development blocks, and integrate different neighbourhoods within the Town Centre. The street pattern is a hierarchical grid of arterial streets, collector streets, and local streets as shown on the Demonstration Plan and accompanying Schedules in the Secondary Plan. No rear lanes exist due to their restricted access by emergency vehicles, solid waste vehicles and snow removal equipment. The Secondary Plan states that the streets establish the basic form and pattern of development in the Town Centre, therefore policies in the Secondary Plan require that plans of subdivision adhere to the grid pattern as shown on the Schedules and Demonstration Plan from the outset in order to achieve the CDP's design objectives. Minor modifications to the street pattern may be made at the discretion of the Director of Planning and Infrastructure Approvals but more significant changes would require a Secondary Plan Amendment. The majority of townhouse blocks on site have been oriented to provide significant shielding for Outdoor Living Areas from Greenbank Road, Jockvale Road and Street 1 throughout the site.

3.0 CITY OF OTTAWA NOISE CONTROL GUIDELINES

3.1 Sound Level Criteria

The City of Ottawa is concerned with noise from aircraft, roads, transitways, and railways, as expressed in Tables 2.2a: Sound Level Limit for Outdoor Living Areas – Road and Rail, Table 2.2b: Sound Level Limit for Indoor Living Areas Road and Rail, and Table 2.2c: Supplementary Sound Level Limits for Indoor Spaces – Road and Rail of the ENCG. The maximum suggested sound levels for outdoor and indoor living areas between 7am and 11pm are 55 dBA and 45 dBA, respectively. The maximum suggested sound level for indoor bedrooms is 40dBA between

11pm and 7am. For reference, Tables 2.2a, 2.2b and 2.2c of the ENCG are included in **Appendix A**.

Outdoor Living Area and Plane of Window receivers are defined as:

- **Outdoor Living Area (OLA):** The outdoor amenity area provided for quiet enjoyment of the outdoor environment during the daytime period (i.e., backyards, terraces and patios). OLA noise levels are considered 3.0m from the building façade, 1.5m above grade.

- **Plane of Window (POW):** The indoor living space where the sound levels will affect the living room area during daytime hours and bedrooms during nighttime hours. POW noise levels are considered inside the building, 1.5m above the ground for the daytime and 4.5m above the ground for nighttime.

3.2 Alternative Methods for Noise Attenuation

When OLA sound levels are predicted to be approximately equal to or less than 55 dBA attenuation measures are not required. If the predicted noise levels are found to exceed 55 dBA, physical forms of mitigation is suggested and which may also include the provision of warning clauses to inform purchasers of the expected noise levels and specific mitigation measures.

These attenuation measures may include any or all of the following:

- Distance setback with soft ground;
- Insertion of noise insensitive land uses between the source and sensitive receptor;
- Orientation of building to provide sheltered zones;
- Construction of sound or acoustic barriers;
- Installation of air conditioning and ventilation; and
- Enhanced construction techniques and construction quality.

3.3 Noise Barrier

When the noise attenuation measures listed above do not reduce noise levels below 55 dBA in the Outdoor Living Area, control measures (barriers) are required to reduce the Leq below or as close to 55 dBA as technically, economically and administratively feasible.

The noise barriers are to be compliant with the City standard for noise barriers and have the following characteristics:

- Minimum height of 2.2m;
- Situated 0.30m inside the private property line;
- A surface mass density not less than 20kg/sq.m; and
- No holes or gaps.

3.4 Ventilation Requirements

A forced air heating system with provision for a central air conditioning system is required if the plane of window daytime noise levels are between 55 dBA and 65 dBA and/or the nighttime noise levels are between 50 dBA and 60 dBA.

The installation of a central air conditioning system is required when the daytime noise level exceeds 65 dBA and/or the nighttime noise level exceeds 60 dBA.

3.5 Building Component Assessment

When plane of window noise levels exceeds 65 dBA (daytime) or 60 dBA (nighttime) the exterior cladding system of the building envelope must be acoustically assessed to ensure indoor sound criteria are achieved. This includes analysis of the exterior wall, door, and/or glazing system specifications as appropriate.

The NRC research *Acoustic Insulation Factor: A Rating for the Insulation of Buildings against Noise* (June 1980, JD Quirt) is used to assess the building components and the required acoustic insulation factor (AIF). This method is recognized by the City of Ottawa.

The required AIF is based on the Outside L_{eq}, Indoor L_{eq} required, and the number of exterior façade components.

Minimum Required AIF = Outside L_{eq} – Indoor L_{eq} + 10 $\log_{10}$ (Number of Components) + 2dB

Where, N = Number of components (walls, windows and roof);

L = Sound Level expressed on a common decibel scale.

3.6 Warning Clauses

When predicted noise levels exceed the specified criteria, the City of Ottawa and the MOE recommend warning clauses be registered as a notice on title and incorporated into the lease/rental/sale agreements to warn potential purchaser/buyers/tenants of the possible elevated noise levels.

Typical warning clauses should be as per Section 4.3 of this report. Warning clauses are extracted from Part 4, **Appendix A** the City of Ottawa ENCG and excerpts of have been provided in **Appendix A** of this report. As stated in the City of Ottawa ENCG, due to the variation of noise impact for any given site, it may be necessary to amend the example warning clauses to recognize the site conditions in each development.

3.7 Summary of Noise Attenuation Requirements

Table 1 summarizes the required noise attenuation measures and warning clauses should sound criteria be exceeded. Excerpts from the MOE NPC-300 and City of Ottawa ENCG documents are included in **Appendix C** for reference.

Table 1: Noise Attenuation Measure Requirements

Assessment Location	L_{eq} (dBA)	Outdoor Control Measures	Indoor Control Measures		Warning Clause
			Ventilation Requirements	Building Components	
Outdoor Living Area (OLA)	Less than 55	None required	N/A	N/A	None required
	Between 55 and 60	Control measures (barriers) may not be required but should be considered	N/A	N/A	Required if resultant L_{eq} exceeds 55 dBA Type 1* or Type 2**
	More than 60	Barriers required	N/A	N/A	Required if resultant L_{eq} exceeds 55 dBA Type 1* or Type 2*
Plane of Living Room Window (POW)	Less than 55	N/A	None Required	None Required	None Required
	Between 55 and 65	N/A	Forced air heating with provision for central air conditioning	None Required	Required Type 3
	More Than 65	N/A	Central Air Conditioning	Acoustical performance of the windows and walls should be specified	Required Type 4
Plane of Bedroom Window (POW)	Less than 50	N/A	None Required	None Required	None Required
	Between 50 and 60	N/A	Forced air heating with provision for central air conditioning	None Required	Required Type 3
	More than 60	N/A	Central Air Conditioning	Acoustical performance of the windows and walls should be specified	Required Type 4

*Type 1 warning clause refers to units requiring a noise barrier that mitigates noise below 55dBA.
**Type 2 warning clause refers to units requiring a noise barrier, but is technically or economically not feasible to reduce levels below 55dBA and a tolerance of up to 5dBA can be granted by the City.

4.0 PREDICTION AND MITIGATION OF NOISE LEVELS

4.1 Road Traffic

Table 2 outlines the traffic parameters used to predict the noise levels for the site.

Table 2: Traffic Parameters

Road	Implied Roadway Class	AADT	Traffic Split (%)		
			Day Night	Medium Trucks	Heavy Trucks
Jockvale	2 Lane Urban Collector	8,000	92/8	7	5
Street 1	2 Lane Urban Collector	8,000	92/8	7	5
Greenbank	4 Lane Urban Arterial Divided	35,000	92/8	7	5

In addition to the traffic volumes listed in Table 2, Greenbank Road will serve as a transit corridor for 144 bus trips per day. For reference, excerpts from the ENCG confirming the Jockvale Road and Greenbank Road AADT are included in **Appendix A** and an email an confirming the Greenbank Road future bus traffic volumes are included in **Appendix B**.

4.2 Noise Level Analysis

The noise levels for the site were analyzed using version 5.03 of the STAMSON computer noise modelling program. For the most part, due to the planned orientation of the outdoor living areas, noise levels will be below the new OLA guideline of 55 dBA. There are localized areas in which townhomes fronting local streets are exposed to Greenbank Road, Jockvale Road and Street 1 that require physical mitigation. For townhomes on Street 7 (close proximity to Greenbank Road), it is proposed to install a maximum 3.3 meter barrier (combination of noise wall, berm and/or retaining wall) along these back yards which will reduce the noise level from a maximum of 70.18 dBA to just below 60 dBA. For other OLAs exposed to Jockvale Road it is proposed to install a 2.2m noise wall along the side yards which will reduce the noise levels to below 60 dBA. There is a significant reduction in noise levels throughout the site, however, this is still above the new OLA guideline of 55 dBA (the previous guideline as of January 2016 was 60 dBA). To further reduce the noise level to the new criteria would result in a noise wall higher than 6.0 meters along Greenbank Road and above 3.0m along Jockvale Road. A 6.0m barrier is well in excess of the ENCG and a 3.0 m high barrier would be aesthetically unappealing to the local residents and its advantages (further reducing noise) would be minimal along Jockvale Road and therefore not feasible. As per section 3.4 of the ENCG, if there's no technically or economically feasible way to achieve the City's criteria, a tolerance up to 5 dBA may be granted at the City's discretion. **Tables 3, 4, 5, and 6** show predicted noise levels, mitigated noise levels and the relationship between the height of wall and noise levels at various locations. These locations will also require an additional warning clause for the 5dBA tolerance. For other OLAs exposed to Street 1 it is proposed to install a 2.5m noise wall along the side yards which will reduce the noise levels to below 55 dBA. **Table 7** shows predicted Plane of Window noise levels and mitigation methods.

The Noise Control Plan (Drawing Number 111117-NC) in **Appendix C** shows the receiver locations, receiver elevations, receiver distances to noise sources and units requiring mitigation for indoor and outdoor noise levels. Figures in **Appendix C** show angles used in the detailed modeling calculations. The noise levels for all receiver locations generated from STAMSON are listed in **Table 3** and **Table 7** with detailed modeling results in **Appendix C.**

Table 3: Predicted Noise Levels - OLA

Receiver Name	File	Calculated Noise Level (dBa), 7:00-23:00		Mitigation Method
		Un-attenuated	Attenuated	
OLA1	OLA1.te	69.59	59.89	-3.1m Noise Barrier* -Warning Clause as per Section 4.3 Type 2
OLA2	OLA2.te	66.52	58.55	-3.1m Noise Barrier* (primarily for OLA1) -Warning Clause as per Section 4.3 Type 2
OLA3	OLA3.te	70.18	59.94	-3.3m Noise Barrier* -Warning Clause as per Section 4.3 Type 2
OLA4	OLA4.te	66.88	58.72	-3.3m Noise Barrier* (primarily for OLA3) -Warning Clause as per Section 4.3 Type 2
OLA5	OLA5.te	61.86	54.94	-2.5m Noise Wall --Warning Clause as per Section 4.3 Type 1
OLA6	OLA6.te	64.88	58.78	-2.2m Noise Wall -Warning Clause as per Section 4.3 Type 2
OLA7	OLA7.te	54.82	-	N/A
OLA8	OLA8.te	63.86	57.01	-2.2m Noise Wall -Warning Clause as per Section 4.3 Type 2
OLA9	OLA9.te	59.26	53.72	-2.2m Noise Wall -Warning Clause as per Section 4.3 Type 1
OLA10	OLA10.te	54.00	49.66	-2.2m Noise Wall (for OLA9)
OLA11	OLA11.te	60.51	54.76	-3.1m Noise Barrier at OLA1, 2.2m Wall at OLA11 -Warning Clause as per Section 4.3 Type 2 (based on OLA1122)
OLA1122**	OLA1122.te	60.51	56.34	-3.1m Noise Barrier at OLA1, 2.2m Wall at OLA11 -Warning Clause as per Section 4.3 Type 2
OLA1125**	OLA1125.te	60.51	55.83	-3.1m Noise Barrier at OLA1, 2.2m Wall at OLA11 -Warning Clause as per Section 4.3 Type 2
OLA12	OLA12.te	62.70	54.54	-2.5m Noise Wall --Warning Clause as per Section 4.3 Type 1
OLA13	OLA13.te	47.74		N/A
OLA14	OLA14.te	50.71		N/A

*Noise Barrier refers to any combination of noise wall, berm and/or retaining wall.
**Demonstrates increasing wall height has minimal effect on decibel levels.

Table 4: Predicted Noise Levels at Various Wall Heights, OLA 3

OLA 3		
Height of Wall (m)	**Noise Level Day (dBA)**	**Noise Level Night (dBA)**
3.3	59.94	62.75
3.5	59.34	60.14
4.0	58.07	59.49
4.5	57.06	55.87
5.0	56.24	54.24
5.5	55.62	52.96
6.0	55.17	51.87
6.5	54.88	51.03

Table 5: Predicted Noise Levels at Various Wall Heights, OLA 6

OLA 6		
Height of Wall (m)	**Noise Level Day (dBA)**	**Noise Level Night (dBA)**
2.2	58.78	57.69
2.5	57.76	57.69
3.0	56.18	57.69
3.5	54.95	54.91

Table 6: Predicted Noise Levels at Various Wall Heights, OLA 8

OLA 8		
Height of Wall (m)	**Noise Level Day (dBA)**	**Noise Level Night (dBA)**
2.2	57.01	56.49
2.5	55.64	56.49
3.0	53.54	56.49

Receiver POW1 is located under 15.0m to the centreline of southbound lane and POW4 and POW11 are located under 15.0m to the centreline of Street 1. The STAMSON computer program has a minimum distance of 15.0m to be used in the model calculations. The actual Leq noise level at these receiver locations will be adjusted using the following equation taken from the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) Technical Document.

$L_{eq} = L_{ref} + A_d$
Where,
L_{ref} is the Reference Sound Level
A_d is the Distance Adjustment.
$A_d = 10(1 + \alpha)\log(D_{ref}/D)$
$\alpha = 0$ (For Reflective Surface)
$\alpha = 0.66$ (For Soft Surface, receiver height <3.0m) (daytime)
$\alpha = 0.75 * [1- (h_{eff}/25)]$ (For Soft Surface, receiver height 3.0m<h_{eff}>25) (nighttime)
h_{eff} = Height of receiver

$D_{ref} = 15.0m$
$D_{ROW1} = 13.6m$
$D_{ROW4} = 13.4m$
$D_{POW11} = 14.6m$

Example POW1 Adjustment
$\alpha_{day} = 0.66$
$\alpha_{night} = 0.75 * [1- (4.5/25)] = 0.62$
$A_{d\,day} = 10(1 + 0.66)\log(15/13.6) = 0.71$

$A_{d\ night}$ = 10(1 + 0.62)log(15/13.6) = 0.69

The actual Leq for receiver POW1 is calculated as follows:

$L_{eq\ POW1} = L_{ref} + A_d$
$L_{ref\ POW1}$ = 70.88 dBA (Day-Time, as calculated in Appendix A) + 0.71 dBA = 71.59 (Day-Time)
$L_{ref\ POW1}$ = 63.47 dBA (Night-Time, as calculated in Appendix A) + 0.69 dBA = 64.16 (Night-Time)

Results for POW1, POW4 and POW11:
Actual $POW1_{leq}$ = 71.59 (day), 64.16 (night)
Actual $POW4_{leq}$ = 67.02 (day), 59.64 (night)
Actual $POW11_{leq}$ = 66.92 (day), 59.47 (night)

Daytime and nighttime noise levels are shown in **Table 7**.

Table 7: Predicted Noise Levels - POW

Receiver Name	File	Calculated Noise Level (dBa), 7:00-23:00 Un-attenuated	Calculated Noise Level (dBa), 23:00-7:00 Un-attenuated	Mitigation Method
POW1	POW1UNAT.te	70.88*	64.16*	-Installation of Air Conditioning -Warning Clauses as per Section 4.3– Type 4 -AIF Calculations during Detailed Design
POW2	POW2UNAT.te	61.80	55.37	-Provide Forced Air Ventilation with Provision of Air Conditioning - Warning Clauses as per Section 4.3 – Type 3
POW3	POW3UNAT.te	56.14	52.67	-Provide Forced Air Ventilation with Provision of Air Conditioning - Warning Clauses as per Section 4.3 – Type 3
POW4	POW4UNAT.te	67.02*	59.64*	-Installation of Air Conditioning -Warning Clauses as per Section 4.3– Type 4 -AIF Calculations during Detailed Design
POW5	POW5UNAT.te	65.94	58.58	-Installation of Air Conditioning -Warning Clauses as per Section 4.3– Type 4 -AIF Calculations during Detailed Design
POW6	POW6UNAT.te	58.10	51.94	-Provide Forced Air Ventilation with Provision of Air Conditioning - Warning Clauses as per Section 4.3 – Type 3
POW7	POW7UNAT.te	65.81	58.37	-Installation of Air Conditioning -Warning Clauses as per Section 4.3– Type 4

				-AIF Calculations during Detailed Design
POW8	POW8UNAT.te	54.27	47.72	N/A
POW9	POW9UNAT.te	64.20	56.76	-Provide Forced Air Ventilation with Provision of Air Conditioning - Warning Clauses as per Section 4.3 – Type 3
POW10	POW10UNA.te	51.05	45.41	N/A
POW11	POW11UNA.te	66.92*	59.47*	-Installation of Air Conditioning -Warning Clauses as per Section 4.3 – Type 4 -AIF Calculations during Detailed Design

*Calculations adjusted for receiver distances less than 15.0m to noise source.

The maximum predicted indoor noise levels for the development is located at the front of the units facing Greenbank Road and is 63.47dBA (night) and 70.88dBA (day). The maximum predicted un-attenuated outdoor amenity area noise level for the development is located along Greenbank Road and is 70.18 dBA. When attenuated, the maximum predicted outdoor amenity area noise level is reduced to 60.0 dBA. Refer to the attached **Figure 3** for confirmation of the predicted un-attenuated daytime noise levels and **Figure 4** for confirmation of the predicted un-attenuated nighttime noise levels.

During detailed design, when the floor layouts are finalized, the AIF valves can be verified to ensure the appropriate window and wall type assemblies are installed to mitigate the predicted noise levels. However, based on past experience, the minimum window and wall type assemblies required by the Ontario Building Code (OBC) will be sufficient to mitigate the indoor noise levels below the City's criteria for the majority of the site except for units adjacent to Greenbank Road, Jockvale Road and Street 1. It is also anticipated the highest indoor sound levels can be mitigated with window type assemblies constructed beyond the OBC minimum standards but still readily available for purchase on the open market.

4.3 Warning Clauses

It is recommended that the following noise clauses be registered on title and incorporated into the agreement of purchase and sales as noted in **Tables 3 and 7**:

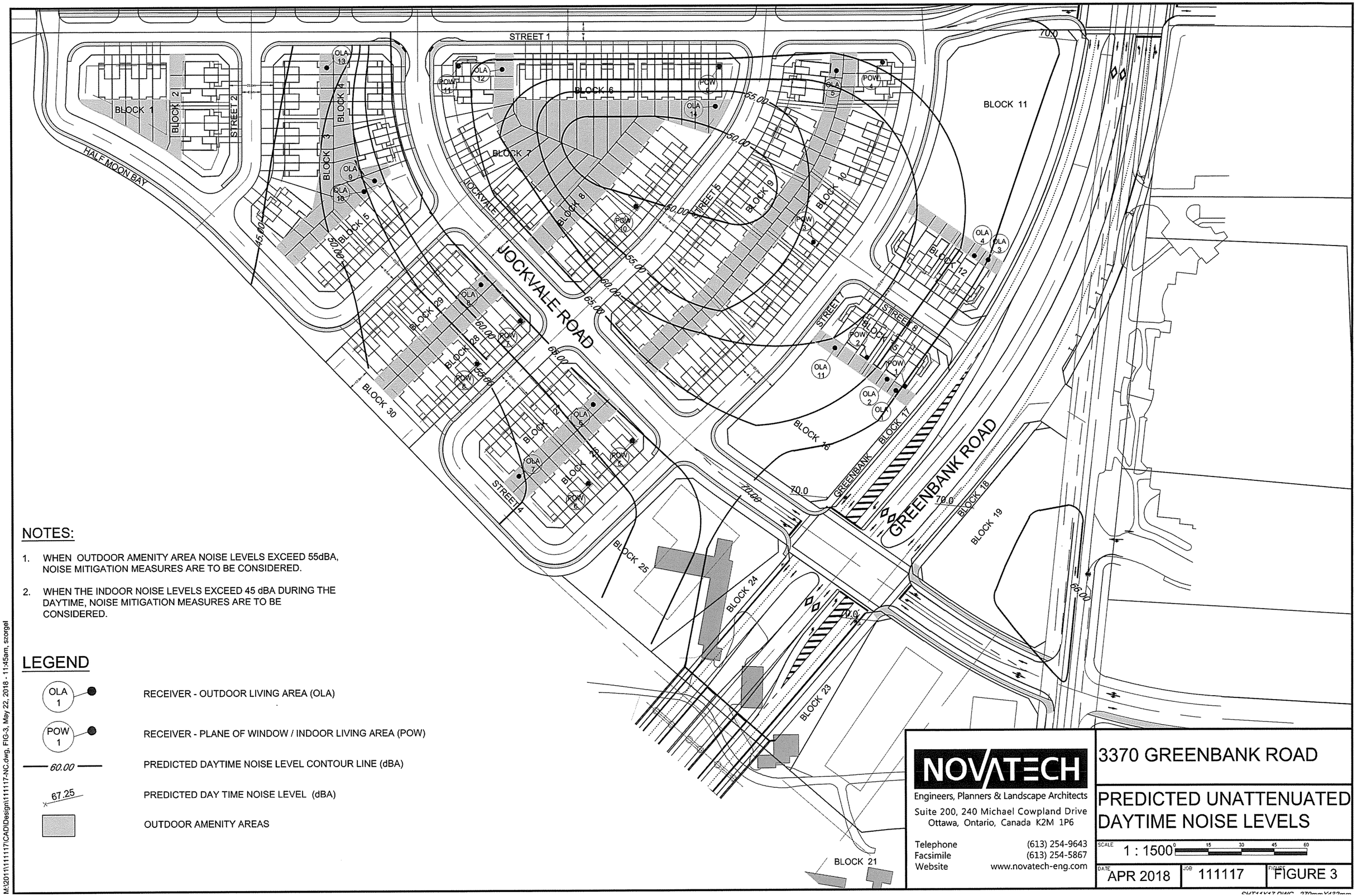
Type 1

"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and Ministry of the Environment."

"To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. Measures for sound attenuation include:

- An acoustic barrier"

"To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features."



NOTES:

1. WHEN OUTDOOR AMENITY AREA NOISE LEVELS EXCEED 55dBA, NOISE MITIGATION MEASURES ARE TO BE CONSIDERED.
2. WHEN THE INDOOR NOISE LEVELS EXCEED 45 dBA DURING THE DAYTIME, NOISE MITIGATION MEASURES ARE TO BE CONSIDERED.

LEGEND

- OLA 1 — RECEIVER - OUTDOOR LIVING AREA (OLA)
- POW 1 — RECEIVER - PLANE OF WINDOW / INDOOR LIVING AREA (POW)
- 60.00 — PREDICTED DAYTIME NOISE LEVEL CONTOUR LINE (dBA)
- 67.25 — PREDICTED DAY TIME NOISE LEVEL (dBA)
- OUTDOOR AMENITY AREAS

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3370 GREENBANK ROAD

PREDICTED UNATTENUATED DAYTIME NOISE LEVELS

SCALE 1 : 1500 (0, 15, 30, 45, 60)
DATE APR 2018 | JOB 111117 | FIGURE FIGURE 3

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NOTES:

1. WHEN OUTDOOR AMENITY AREA NOISE LEVELS EXCEED 55dBA, NOISE MITIGATION MEASURES ARE TO BE CONSIDERED.
2. WHEN THE INDOOR NOISE LEVELS EXCEED 40 dBA DURING THE NIGHT TIME, NOISE MITIGATION MEASURES ARE TO BE CONSIDERED.

LEGEND

- OLA 1 — RECEIVER - OUTDOOR LIVING AREA (OLA)
- POW 1 — RECEIVER - PLANE OF WINDOW / INDOOR LIVING AREA (POW)
- 60.00 — PREDICTED NIGHT TIME NOISE LEVEL CONTOUR LINE (dBA)
- 67.25 — PREDICTED NIGHT TIME NOISE LEVEL (dBA)
- OUTDOOR AMENITY AREAS

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

3370 GREENBANK ROAD

PREDICTED UNATTENUATED NIGHTTIME NOISE LEVELS

SCALE 1 : 1500 (0, 15, 30, 45, 60)
DATE APR 2018 | JOB 111117 | FIGURE FIGURE 4

"The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original."

Additionally, with the tolerance of 5 dBA in some areas, it is recommended that several units within Blocks 8-10, 12, 15, 26-29 have an additional noise clause registered on title and incorporated into the agreement of purchase and sales. Specific units are found on drawing 111117-NC.

Type 2

"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road/rail/Light Rail/transitway traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment by up to 5 dBA."

"To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. Measures for sound attenuation include:

- An acoustic barrier"

"To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features."

"The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original."

Type 3

"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and Ministry of the Environment."

"To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. Measures for sound attenuation may include:

- Multi-pane glass
- Double brick veneer"

"To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features."

"This dwelling unit has also been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment"

Type 4

"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and Ministry of the Environment."

"To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. Measures for sound attenuation may include:

- Multi-pane glass
- Double brick veneer
- High sound transmission class walls"

"To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features."

"This dwelling unit has also been supplied with a central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment"

For units with multiple types of warning clauses, similar/identical wording can be combined as to not duplicate wording/information. Refer to drawing 111117-NC for details.

5.0 CONCLUSIONS

This report confirms the predicted indoor and outdoor noise levels for the proposed residential development from the adjacent Jockvale Road, Street 1 and Greenbank Road are in excess of the City of Ottawa's and Ministry of the Environment guidelines. To mitigate the noise levels and inform potential buyers/tenants, the following noise attenuation measures are proposed:

- The installation of an acoustic noise wall, 2.2 meters in height along the side yards of Blocks 8-10 and 26-29 along Jockvale Road as indicated on the Noise Control Plan (111117-NC).
- The installation of an acoustic noise wall, 2.5 meters in height along the side yards of Blocks 6-7 and 9-10 along Street 1 as indicated on the Noise Control Plan (111117-NC).
- The installation of an acoustic noise barrier (combination of noise wall, berm and/or retaining wall), 3.1-3.3 meters in height along the side and rear yards of Block 12 and 15 as indicated on the Noise Control Plan (111117-NC).
- The inclusion of a noise warning clause registered on title and incorporated into the purchase and sale agreements of the units requiring outdoor noise attenuation as specified in Section 4.3. Refer to Noise Control Plan (111117-NC) for detailed locations.
- Indoor noise mitigation methods and additional warning clauses to be registered on title and into the sales/rental agreements of the units requiring indoor noise attenuation as specified in Section 4.3. Refer to Noise Control Plan (111117-NC) for detailed locations for mitigation methods and warning clauses.

This report is respectfully submitted for City of Ottawa approval.

NOVATECH

Prepared by:

Steve Zorgel, P.Eng.
Project Coordinator | Engineering

Reviewed by:

Drew Blair, P.Eng.
Project Manager | Land Development Engineering

Appendix A
Environmental Noise Control Guidelines Excerpts

PLANNING AND GROWTH MANAGEMENT
URBANISME ET GESTION DE LA CROISSANCE

ENVIRONMENTAL NOISE CONTROL GUIDELINES: Introduction and Glossary

January 2016

Table 2.2a: Sound Level Limit for Outdoor Living Areas - Road and Rail
(from NPC-300, 2013 Table C-1)

Time Period	Required L_{eq} (16) (dBA)
16-hour, 07:00 – 23:00	55

Table 2.2b: Sound Level Limit for Indoor Living Areas Road and Rail
(from NPC-300, 2013 Table C-2)

Type of Space	Time Period	Required L_{eq} (dBA) Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00 – 23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00 – 07:00	45	40
Sleeping quarters	07:00 – 23:00	45	40
	23:00 – 07:00	40	35

The Province also provides for supplementary indoor sound level limits for land uses not generally considered noise sensitive (see Table 2.2c below). These good practice design objectives should be addressed in any noise study prepared for the City. These supplementary sound level limits are based on the windows and doors to an indoor space being closed.

Table 2.2c: Supplementary Sound Level Limits for Indoor Spaces - Road and Rail (adapted from NPC-300 Table C-9)

Type of Space	Time Period	Required L_{eq} (dBA) Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Theatres, places of worship, libraries, individual or semi- private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

Appendix B: Table of Traffic and Road Parameters To Be Used For Sound Level Predictions

Table B1 Traffic And Road Parameters To Be Used For Sound Level Predictions

Row Width (m)	Implied Roadway Class	AADT Vehicles/Day	Posted Speed Km/Hr	Day/Night Split %	Medium Trucks %	Heavy Trucks % [1]
NA [2]	Freeway, Queensway, Highway	18,333 per lane	100	92/8	7	5
37.5-44.5	6-Lane Urban Arterial-Divided (6 UAD)	50,000	50-80	92/8	7	5
34-37.5	4-Lane Urban Arterial-Divided (4-UAD)	35,000	50-80	92/8	7	5
23-34	4-Lane Urban Arterial-Undivided (4-UAU)	30,000	50-80	92/8	7	5
23-34	4-Lane Major Collector (4-UMCU)	24,000	40-60	92/8	7	5
30-35.5	2-Lane Rural Arterial (2-RAU)	15,000	50-80	92/8	7	5
20-30	2-Lane Urban Arterial (2-UAU)	15,000	50-80	92/8	7	5
20-30	2-Lane Major Collector (2-UMCU)	12,000	40-60	92/8	7	5
30-35.5	2-Lane Outer Rural Arterial (near the extremities of the City) (2-RAU)	10,000	50-80	92/8	7	5
20-30	2-Lane Urban Collector (2-UCU)	8,000	40-50	92/8	7	5

[1] The MOE Vehicle Classification definitions should be used to estimate automobiles, medium trucks and heavy trucks.

[2] The number of lanes is determined by the future mature state of the roadway.

Environmental Noise Guideline

Stationary and Transportation Sources – Approval and Planning

Publication NPC-300

Ontario

Table C-10
Supplementary Indoor Aircraft Noise Limits
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values listed in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

C7 Noise Control Measures

The following sections provide MOE guidance for appropriate noise control measures. These sections constitute requirements that are applied to MOE approvals for stationary sources. This information is also provided as guidance which land use planning authorities may consider adopting.

The definition in Part A describes the various types and application of noise control measures. All the noise control measures described in the definition are appropriate to address the impact of noise of transportation sources (road, rail and aircraft) on planned sensitive land uses. Only some of the noise control measures described in the definition are appropriate to address the noise impact of stationary sources on planned sensitive land uses.

C7.1 Road Noise Control Measures

C7.1.1 Outdoor Living Areas

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 55 dBA and less than or equal to 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA. If measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause Type A.

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 60 dBA, noise control measures should be implemented to reduce the level to 55 dBA. Only in cases where the required noise control measures are not feasible for technical, economic or administrative reasons would an excess above the limit (55 dBA) be acceptable with a warning clause Type B. In the above situations, any excess above the limit will not be acceptable if it exceeds 5 dBA.

C7.1.2 Plane of a Window – Ventilation Requirements

C7.1.2.1 Daytime Period, 07:00 – 23:00 Hours

Noise control measures may not be required if the L_{eq} (16) daytime sound level in the plane of a bedroom or living/dining room window is less than or equal to 55 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 55 dBA and less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the daytime sound level in the plane of a bedroom or living/dining room window is greater than 65 dBA, installation of central air conditioning should be implemented with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.2.2 Nighttime Period, 23:00 – 07:00 Hours

Noise control measures may not be required if the L_{eq} (8) nighttime sound level in the plane of a bedroom or living/dining room window is less than or equal to 50 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 50 dBA and less than or equal to 60 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the nighttime sound level in the plane of a bedroom or living/dining room window is greater than 60 dBA, installation of central air conditioning should be implemented, with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.3 Indoor Living Areas – Building Components

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 60 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 65 dBA, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the

sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) should be specified.

C7.2 Rail Noise Control Measures

C7.2.1 Outdoor Living Areas

Whistle noise is not included in the determination of the outdoor daytime sound level due to railway trains. All the provisions of Section C7.1.1 apply also to noise control requirements for rail noise.

C7.2.2 Plane of a Window – Ventilation Requirements

Whistle noise is not included in the determination of the sound level in the plane of a window. All the provisions of Section C7.1.2 apply also to noise control requirements for rail noise.

C7.2.3 Indoor Living Areas – Building Components

The sound level, L_{eq}, during the daytime (16-hour) and nighttime (8-hour) periods is determined using the prediction method STEAM, Reference [34], immediately outside the dwelling envelope. Whistle noise is included in the determination of the sound level.

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 55 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 60 dBA, building components including windows, walls and doors, where applicable, need to be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) needs to be specified.

In addition, the exterior walls of the first row of dwellings next to railway tracks are to be built to a minimum of brick veneer or masonry equivalent construction, from the foundation to the rafters when the rail traffic L_{eq} (24-hour), estimated at a location of a nighttime receptor, is greater than 60 dBA, and when the first row of dwellings is within 100 metres of the tracks.

C7.3 Combination of Road and Rail Noise

The noise impact in the OLA and in the plane of a window, and the requirements for outdoor measures, ventilation measures and warning clauses, should be determined by combining road and rail traffic sound levels.

The assessment of the indoor sound levels and the resultant requirement for the acoustical descriptors of the building components should be done separately for road

In Class 4 areas, where windows for noise sensitive spaces are assumed to be closed, the use of central air conditioning may be acceptable if it forms an essential part of the overall building designs.

C7.9 Verification of Noise Control Measures

It is recommended that the implementation of noise control measures be verified by qualified individuals with experience in environmental acoustics.

C8 Warning Clauses

The use of warning clauses or easements in respect of noise are recommended when circumstances warrant. Noise warning clauses may be used to warn of potential annoyance due to an existing source of noise and/or to warn of excesses above the sound level limits. Direction on the use of warning clauses should be included in agreements that are registered on title to the lands in question. The warning clauses would be included in agreements of Offers of Purchase and Sale, lease/rental agreements and condominium declarations. Alternatively, the use of easements in respect of noise may be appropriate in some circumstances. Additional guidance on the use of noise warning clauses is provided in Section C7.1.1, Section C7.1.2.1, Section C7.1.2.2, Section C7.3 and Section C7.4.

C8.1 Transportation Sources

The following warning clauses may be used individually or in combination:

TYPE A: (see Section C7.1.1)

> "Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

TYPE B: (see Section C7.1.1 and Section C7.4)

> "Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic (rail traffic) (air traffic) may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

TYPE C: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

> "This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of

central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

TYPE D: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

C8.2 Stationary Sources

It is not acceptable to use warning clauses in place of physical noise control measures to identify an excess over the MOE sound level limits. Warning clause (Type E) for stationary sources may identify a potential concern due to the proximity of the facility but it is not acceptable to justify exceeding the sound level limits.

TYPE E: (see Section C7.6)

"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times be audible."

C8.3 Class 4 Area Notification

TYPE F: (see Section B9.2 and Section C4.4.2)

"Purchasers/tenants are advised that sound levels due to the adjacent industry (facility) (utility) are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."

Appendix A: Warning Clauses

Under the Official Plan and this guideline warning clauses may be required to be incorporated into development through development agreements, registration on title and inclusion in Agreements of Purchase and Sale. This requirement may be included in any development, regardless of whether it is considered a noise sensitive land use.

A warning clause provides recognition for the City, Province landowner or tenants that noise may be a concern, that noise may be audible at times or even quite loud, and, depending on the type of development, provincial guidelines for noise may be exceeded. Warning clauses also recognize that environmental noise is a potential health hazard that does impact people and neighbourhoods. It is for this reason that, unless a non-noise sensitive land use is established, a warning clause should also include noise mitigation.

A warning clause is not considered a form of noise mitigation. It is not acceptable therefore to use warning clauses in place of physical noise control measures to identify an excess over the MOE or City noise limits. The reason for a warning clause on all development is twofold. Firstly, it is important to note that a land use that although the development may not be considered noise sensitive it may include employees or tenants that are personally sensitive to noise. A warning clause provides protection against complaints to the ministry of Environment should provincial guidelines be exceeded. Secondly, a warning clause on title could obviate the need for a new noise study in the future. In a redevelopment scenario the warning clause would provide recognition of the extent noise conditions.

Given the variation in potential intensity and impact of noise it will often be necessary to amend warning clauses to recognize the site specific conditions in each development. Final wording of any warning clause is to be approved by the City.

The following subsections provide example text to be adapted into warning clauses.

Surface Transportation Warning Clauses

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
Generic	*Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and the Ministry of the Environment.* *To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area that is within provincial guidelines. Measures for sound attenuation include:* • *A setback of buildings from the noise source and* • *An acoustic barrier.* *To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features.* *The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.* *Additionally this development includes trees and shrubs to screen the source of noise from occupants.*	The generic warning clause outlines that MOE sound levels may be exceeded but the indoor environment and outdoor amenity areas are within guidelines. Mitigation measures are described including urban design features. Mention is also made of landscaping to screen the development visually from the source of noise.
Extensive mitigation of indoor and	*"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units,*	The warning clause makes reference to MOE sound levels

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
outdoor amenity area	*sound levels due to increasing road/rail/Light Rail/transitway traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.* *To help address the need for sound attenuation this development includes:* • *multi-pane glass;* • *double brick veneer;* • *an earth berm; and* • *an acoustic barrier.* *To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.* *The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.* *This dwelling unit has also been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment.*	being exceeded from time to time and that there are sound attenuation features and landscaping within the development that should be maintained. An option for air conditioning is noted as well as landscaping to screen the source of noise.

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
	Additionally this development includes trees and shrubs to screen the source of noise from occupants.	
No outdoor amenity area	*Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic will interfere with outdoor activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.* *To help address the need for sound attenuation this development includes:* • *multi-pane glass;* • *double brick veneer;* • *high sound transmission class walls.* *To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.* *This dwelling unit has been supplied with a central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment*	This warning clause notes that only an indoor environment is being provided for.

Stationary Source Warning Clauses

The Province notes that it is not acceptable to use warning clauses in place of physical noise control measures to identify an excess over the MOE sound level limits for stationary sources. The generic warning clause for stationary sources (called Type E in NPC-300) may identify a potential concern due to the proximity of the facility but it is not possible to justify exceeding the sound level limits.
The wording of the generic stationary noise warning clause may also be used as the basis for new development adjacent to areas licensed for mineral aggregate extraction.

Note:
1) This schedule forms part of the Official Plan of the City of Ottawa and must be read in conjunction with the text.
2) This schedule is intended as a framework for planning and design;consequently alignments of proposed roads are approximate and subject to detailed study.
3) An unidentified new facility from Highway 416 to Highway 417 East is not shown.

Note:
1) La présente annexe fait partie du Plan officiel de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente annexe doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) Une nouvelle installation non identifiée et située entre l'autoroute 416 et l'autoroute 417E n'apparaît pas.

E

SEE SCHEDULE F
VOIR ANNEXE F

City of Ottawa Official Plan Consolidation and Amendments

Ville d'Ottawa Plan officiel Amendement au plan directeur approuvé

# 14 (09/2004)	# 96 (03/2012)	# 192 (08/2017)
# 44 (06/2006)	# 97 (03/2012)	
# 50 (06/2006)	#113 (11/2012)	
# 77 (06/2009)	#123 (09/2019)	
# 76	#173 (01/2017)	

OMB decision/Décision de la CAMO - N° 1787; 2711;PL#160875

Official Plan - Schedule E
Urban Road Network

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit

Plan officiel - Annexe E
Routes Arterial - Urbain

Preparé par : Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques

Provincial Highway — **Route provinciale**
City Freeway — **Autoroute de ville**

Federally Owned Road — **Chemins de propriété fédéral**
Existing — Établie
Proposed (Alignment defined) — Proposé (Alignement déterminée)

Arterials — **Artère**
Existing — Établie
Proposed (Alignment Defined) — Proposé (Alignement déterminée)
Conceptual (Alignment Undefined) — Conceptuelle (Alignement à déterminée)

Major Collectors — **Grande collectrice**
Existing — Établie
Proposed — Proposé

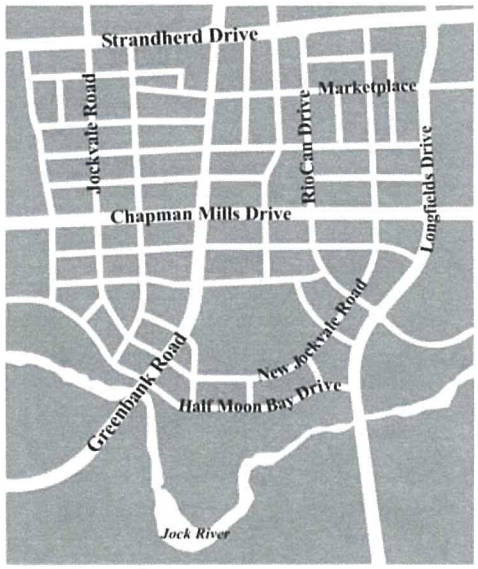
Collectors — **Collectrice**
Existing — Établie
Proposed — Proposé

Ottawa

Scale / Échelle
2km 1 0 1 2 3 4km

Schedule 2 - Street Network Plan

- Arterial Street
- Major Collector Street
- Collector Street
- Local Street
- Lane
- Access to Community Park



Appendix B
Correspondence

Steve Zorgel

From: Armstrong, Jennifer (Transportation) <jenniferm.armstrong@ottawa.ca>
Sent: September-19-16 11:56 AM
To: Mark Bowen
Cc: McKinney, Frank
Subject: FW: Greenbank Rd/SW Transitway Extension

Hi Mark,

Here is the input from Transit Services regarding the future bus volumes.

Best Regards,
Jennifer

Jennifer Armstrong, Ph.D., P.Eng.
Senior Project Manager, Transportation Modelling
Transportation Planning Branch
City of Ottawa | Ville d'Ottawa
613.580.2424 ext. 22899
JenniferM.Armstrong@ottawa.ca

From: Washnuk, Derek
Sent: Monday, September 19, 2016 11:51 AM
To: Armstrong, Jennifer (Transportation)
Cc: McKinney, Frank
Subject: Re: Greenbank Rd/SW Transitway Extension

Hi Jennifer,

Sorry for the delay. Below is the response from our route planning team:

In our current plan, we would extend the 95. However, The volume would really depend of the demand. I don't think we would extend every trip on day 1.

It is fair to say that when the extension of the Transitway opens, we will have a 15 minutes service from 6:00 to 24:00 in both directions = 4x18=72 per direction.

Again, this number will increase over time and it will depend on density and what developer will built.

Derek

Sent from my iPhone

On Sep 19, 2016, at 11:44 AM, Armstrong, Jennifer (Transportation) <jenniferm.armstrong@ottawa.ca> wrote:

Hi Derek,

Do you have any timelines for when this information might be available? The consultant is wondering if it might be ready today.

Note that I'll be away for just over two weeks beginning Thursday, so if the data won't be ready until after I'm gone, it would be greatly appreciated if you could cc Frank on your response.

Thanks,
Jennifer

From: Washnuk, Derek
Sent: Wednesday, September 14, 2016 1:03 PM
To: Armstrong, Jennifer (Transportation)
Subject: RE: Greenbank Rd/SW Transitway Extension

Hi Jennifer,

I've sent this to our route planning group for input, and will get back to you as soon as possible,

Derek

From: Armstrong, Jennifer (Transportation)
Sent: Wednesday, September 14, 2016 12:48 PM
To: Washnuk, Derek
Cc: McKinney, Frank; Mucsi, Kornel
Subject: FW: Greenbank Rd/SW Transitway Extension

Hi Derek,

Would you be able to respond to the question below? We can estimate the AM and PM bus volumes from the TRANS model, but the number won't include any out-of-service buses, and I have no basis for estimating daily volumes.

Regards,
Jennifer

From: McKinney, Frank
Sent: Wednesday, September 14, 2016 11:14 AM
To: Armstrong, Jennifer (Transportation)
Cc: Mucsi, Kornel
Subject: Fw: Greenbank Rd/SW Transitway Extension

Hi Jennifer, can you help with this answer?

Sent from my BlackBerry 10 smartphone on the TELUS network.

From: Jennifer Luong <j.luong@novatech-eng.com>

Sent: Wednesday, September 14, 2016 10:55 AM
To: McKinney, Frank
Cc: Brad Byvelds; Mark Bowen; Renaud, Jean-Charles; Greg MacDonald
Subject: Greenbank Rd/SW Transitway Extension

Good morning Frank,
We're preparing a noise study in support of a Draft Plan application for the Burnett Lands at 3370 Greenbank Road to confirm the noise impact of the future Greenbank Road and SW Transitway on the proposed residential development.

Would you be able to assist with estimating daily bus volumes for the SW Transitway that will be in the median of Greenbank Rd from Chapman Mill Drive (south of Strandherd) to Cambrian? For noise assessments we typically consider capacity versus projected volumes, so I'm not sure if there's a theoretical capacity for the transitway or if projected volumes would suffice? I seem to remember projected volumes of 40-50 buses/day for the North South Arterial but I could be off on that.

Also would you be able to provide an update on timing of the Greenbank Road/SW Transitway project?

Thank you,

Jennifer Luong, P.Eng.
Project Manager
****
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Appendix C
STAMPSON Noise Modelling Results and Noise Control Plan

STAMSON 5.0 SUMMARY REPORT Date: 14-12-2017 19:23:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola1.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	1 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	74.00 / 77.00 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : 90.00 deg
Barrier height	:	3.10 m
Barrier receiver distance	:	3.00 / 6.00 m
Source elevation	:	94.16 m
Receiver elevation	:	93.90 m
Barrier elevation	:	93.75 m
Reference angle	:	0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod	
Medium truck volume	:	1127/98 veh/TimePeriod	
Heavy truck volume	:	805/70 veh/TimePeriod	
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

```
Data for Segment # 2: GREENBANK S (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  16.40 / 16.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -49.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.75 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
----------------------------------------------
Angle1   Angle2           : -49.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  16.40 / 16.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -49.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.10 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :  93.75 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.90 m
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
```

```
Road gradient         :     1 %
Road pavement         :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.10 / 51.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -49.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.80 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -49.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.10 / 51.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -49.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.10 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :  93.80 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.90 m
Reference angle           :   0.00
```

Result summary (day)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	45.64	45.64	
2.GREENBANK S	1.50	47.31	47.31	
3.GREENBANK S	1.50	57.25	57.25	
4.GREENBANK N	1.50	44.90	44.90	
5.GREENBANK N	1.50	54.93	54.93	
Total			59.84	dBA

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	47.22	47.22	*
2.GREENBANK S	1.50	43.88	43.88	
3.GREENBANK S	1.50	55.65	55.65	
4.GREENBANK N	1.50	41.99	41.99	
5.GREENBANK N	1.50	56.62	56.62	*
Total			59.64	dBA

* Bright Zone !

RT/Custom data, segment # 1: GBANK (day/night)
---
1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg -49.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 33.90 / 33.90 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -49.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 4.00 / 4.00 m

```
Source elevation          :  94.22 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


RT/Custom data, segment # 2: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: GBANK (day/night)
---------------------------------------
Angle1   Angle2           : -49.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  33.90 / 33.90  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -49.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.10 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :  94.22 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.90 m
Reference angle           :   0.00


Result summary (day)
--------------------

                     !  source  !   Gen    !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
---------------------+---------+---------+---------
 1.GBANK             !     0.50 !    30.41 !    30.41
 2.GBANK             !     0.50 !    39.99 !    39.99
---------------------+---------+---------+---------
                       Total                  40.44 dBA


Result summary (night)
----------------------

                     !  source  !   Gen    !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
---------------------+---------+---------+---------
 1.GBANK             !     0.50 !    28.77 !    28.77
 2.GBANK             !     0.50 !    44.01 !    44.01 *
```

	Total		44.14 dBA

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 59.89
(NIGHT): 59.76

STAMSON 5.0 SUMMARY REPORT Date: 10-01-2018 15:26:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola2.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	1 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	76.00 / 79.00 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : 90.00 deg
Barrier height	:	3.10 m
Barrier receiver distance	:	5.00 / 8.00 m
Source elevation	:	94.16 m
Receiver elevation	:	93.90 m
Barrier elevation	:	93.75 m
Reference angle	:	0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod
Medium truck volume	:	1127/98 veh/TimePeriod
Heavy truck volume	:	805/70 veh/TimePeriod
Posted speed limit	:	60 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2	: -90.00 deg	-12.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 22.90 / 22.90	m
Receiver height	: 1.50 / 4.50	m
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: -90.00 deg	Angle2 : -12.00 deg
Barrier height	: 6.00	m
Barrier receiver distance	: 4.50 / 4.50	m
Source elevation	: 93.75	m
Receiver elevation	: 93.90	m
Barrier elevation	: 94.05	m
Reference angle	: 0.00	

Road data, segment # 3: GREENBANK S (day/night)

Car traffic volume	: 14168/1232	veh/TimePeriod
Medium truck volume	: 1127/98	veh/TimePeriod
Heavy truck volume	: 805/70	veh/TimePeriod
Posted speed limit	: 60	km/h
Road gradient	: 1	%
Road pavement	: 1	(Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)

Angle1 Angle2	: -12.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 22.90 / 22.90	m
Receiver height	: 1.50 / 4.50	m
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: -12.00 deg	Angle2 : 90.00 deg
Barrier height	: 3.10	m
Barrier receiver distance	: 14.50 / 14.50	m
Source elevation	: 93.75	m
Receiver elevation	: 93.90	m
Barrier elevation	: 93.90	m
Reference angle	: 0.00	

Road data, segment # 4: GREENBANK N (day/night)

Car traffic volume	: 14168/1232	veh/TimePeriod
Medium truck volume	: 1127/98	veh/TimePeriod
Heavy truck volume	: 805/70	veh/TimePeriod
Posted speed limit	: 60	km/h

```
Road gradient         :     1 %
Road pavement         :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -12.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  57.60 / 57.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -12.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :  93.80 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -12.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  57.60 / 57.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -12.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.10 m
Barrier receiver distance :  14.50 / 14.50  m
Source elevation          :  93.80 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.90 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	46.68	46.68
2.GREENBANK S	1.50	47.59	47.59
3.GREENBANK S	1.50	54.65	54.65
4.GREENBANK N	1.50	45.50	45.50
5.GREENBANK N	1.50	54.41	54.41
Total			58.50 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	47.04	47.04 *
2.GREENBANK S	1.50	44.54	44.54
3.GREENBANK S	1.50	51.20	51.20
4.GREENBANK N	1.50	43.04	43.04
5.GREENBANK N	1.50	54.76	54.76 *
Total			57.24 dBA

* Bright Zone !

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

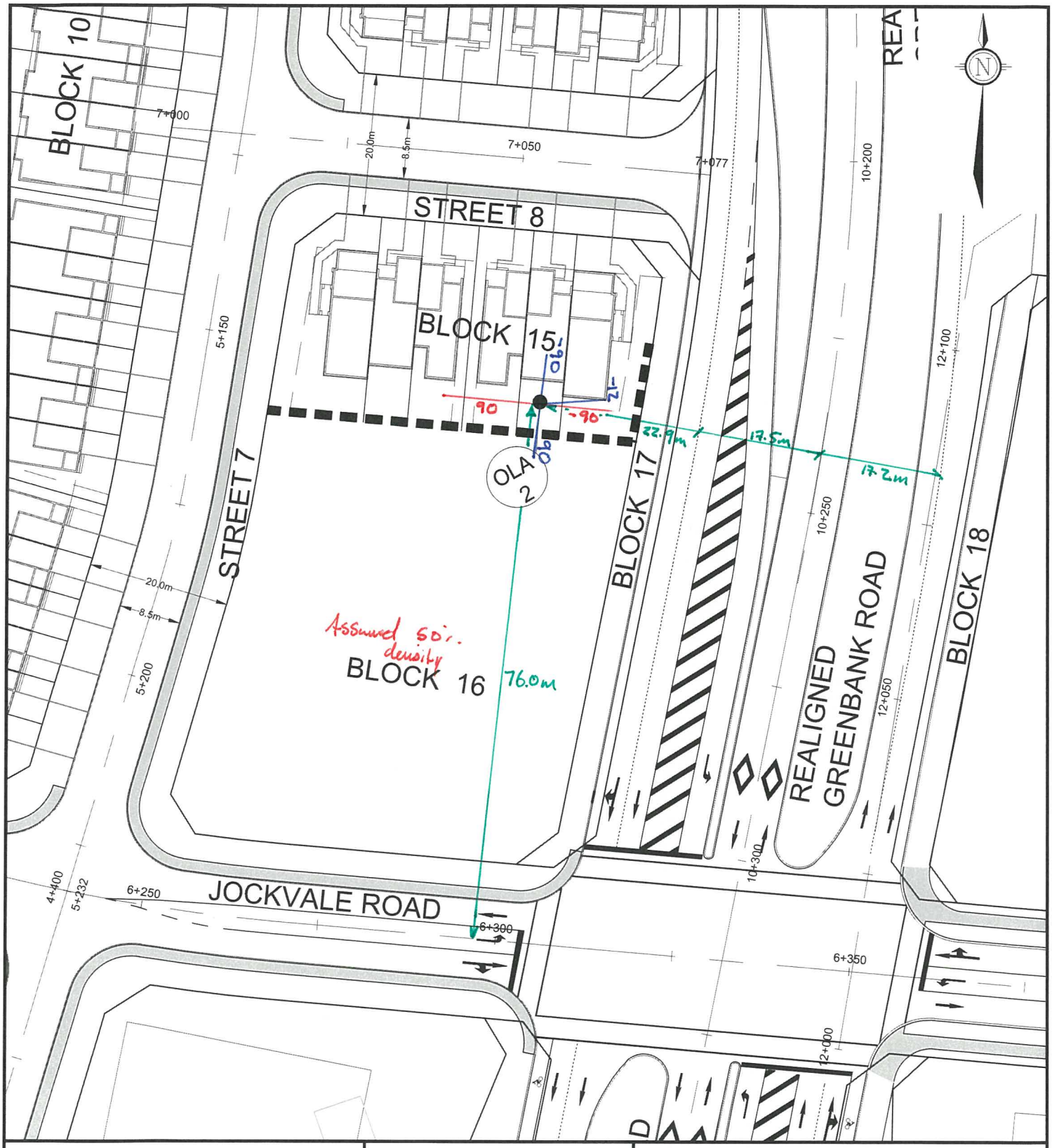
Angle1 Angle2 : -90.00 deg -12.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.40 / 40.40 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -12.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 4.50 / 4.50 m

```
Source elevation          :  94.22 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


RT/Custom data, segment # 2: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: GBANK (day/night)
---------------------------------------
Angle1   Angle2           : -12.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.40 / 40.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -12.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.10 m
Barrier receiver distance :  14.50 / 14.50  m
Source elevation          :  94.22 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.90 m
Reference angle           :   0.00

Result summary (day)
--------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    30.85 !    30.85
 2.GBANK            !     0.50 !    39.06 !    39.06
--------------------+---------+---------+---------
                      Total                 39.67 dBA


Result summary (night)
----------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    29.58 !    29.58
 2.GBANK            !     0.50 !    41.90 !    41.90 *
--------------------+---------+---------+---------
```

Total	42.15 dBA

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 58.55
(NIGHT): 57.38



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BURNETT LANDS
3370 GREENBANK ROAD

OUTDOOR LIVING AREA
RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-OLA2

STAMSON 5.0 SUMMARY REPORT Date: 14-12-2017 22:52:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola3.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -48.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	2 (Reflective ground surface)
Receiver source distance	:	146.10 / 146.10 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -48.00 deg
Barrier height	:	3.30 m
Barrier receiver distance	:	7.50 / 7.50 m
Source elevation	:	94.16 m
Receiver elevation	:	93.90 m
Barrier elevation	:	93.90 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	8000
Percentage of Annual Growth	0.00
Number of Years of Growth	0.00
Medium Truck % of Total Volume	7.00
Heavy Truck % of Total Volume	5.00
Day (16 hrs) % of Total Volume	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	-48.00 deg 90.00 deg
Wood depth	0 (No woods.)
No of house rows	1 / 0
Surface	1 (Absorptive ground surface)
Receiver source distance	146.10 / 146.10 m
Receiver height	1.50 / 4.50 m
Topography	2 (Flat/gentle slope; with barrier)
Barrier angle1	-48.00 deg Angle2 : 90.00 deg
Barrier height	6.00 m
Barrier receiver distance	3.00 / 3.00 m
Source elevation	94.16 m
Receiver elevation	93.90 m
Barrier elevation	94.05 m
Reference angle	0.00

Road data, segment # 3: GREENBANK S (day/night)

Car traffic volume	14168/1232 veh/TimePeriod
Medium truck volume	1127/98 veh/TimePeriod
Heavy truck volume	805/70 veh/TimePeriod
Posted speed limit	60 km/h
Road gradient	1 %
Road pavement	1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)

Angle1 Angle2	-90.00 deg 50.00 deg
Wood depth	0 (No woods.)
No of house rows	0 / 0
Surface	1 (Absorptive ground surface)
Receiver source distance	15.00 / 15.00 m
Receiver height	1.50 / 4.50 m
Topography	2 (Flat/gentle slope; with barrier)
Barrier angle1	-90.00 deg Angle2 : 50.00 deg
Barrier height	3.30 m
Barrier receiver distance	6.40 / 6.40 m
Source elevation	94.25 m
Receiver elevation	93.90 m
Barrier elevation	93.90 m

```
Reference angle          :   0.00


Road data, segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK S (day/night)
---------------------------------------------
Angle1   Angle2          :  50.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance :  15.00 / 15.00  m
Receiver height          :   1.50 / 4.50   m
Topography               :      2       (Flat/gentle slope; with
barrier)
Barrier angle1           :  50.00 deg   Angle2 : 90.00 deg
Barrier height           :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation         :  94.25 m
Receiver elevation       :  93.90 m
Barrier elevation        :  94.05 m
Reference angle          :   0.00


Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2          : -90.00 deg   50.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      2       (Reflective ground surface)
Receiver source distance :  46.00 / 46.00  m
Receiver height          :   1.50 / 4.50   m
Topography               :      2       (Flat/gentle slope; with
barrier)
Barrier angle1           : -90.00 deg   Angle2 : 50.00 deg
Barrier height           :   3.30 m
Barrier receiver distance :   6.40 / 6.40   m
```

```
Source elevation          :  94.28 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.90 m
Reference angle           :   0.00


Road data, segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           :  50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  46.00 / 46.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  94.28 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Result summary (day)
--------------------

                   !  source  !   Road   !  Total
                   !  height  !   Leq    !   Leq
                   !    (m)   !  (dBA)   !  (dBA)
-------------------+---------+---------+---------
 1.JOCKVALE        !     1.50 !    43.34 !    43.34
 2.JOCKVALE        !     1.50 !    35.27 !    35.27
 3.GREENBANK S     !     1.50 !    57.62 !    57.62
 4.GREENBANK S     !     1.50 !    47.85 !    47.85
 5.GREENBANK N     !     1.50 !    54.44 !    54.44
 6.GREENBANK N     !     1.50 !    45.36 !    45.36
-------------------+---------+---------+---------
                     Total                 59.90 dBA
```

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	43.47	43.47	*
2.JOCKVALE	1.50	34.24	34.24	
3.GREENBANK S	1.50	61.05	61.05	*
4.GREENBANK S	1.50	44.35	44.35	
5.GREENBANK N	1.50	57.11	57.11	*
6.GREENBANK N	1.50	42.42	42.42	
Total			62.69 dBA	

RT/Custom data, segment # 1: GBANK (day/night)
---
1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg 50.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 31.20 / 31.20 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 50.00 deg
Barrier height : 3.30 m
Barrier receiver distance : 6.40 / 6.40 m
Source elevation : 94.65 m
Receiver elevation : 93.90 m
Barrier elevation : 93.90 m
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)
---
1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 2: GBANK (day/night)

Angle1 Angle2 : 50.00 deg 90.00 deg
Wood depth : 0 (No woods.)

```
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  31.20 / 31.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  94.65 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	39.56	39.56
2.GBANK	0.50	30.77	30.77
Total			40.10 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	44.40	44.40 *
2.GBANK	0.50	29.10	29.10
Total			44.53 dBA

```
TOTAL Leq FROM ALL SOURCES (DAY): 59.94
                           (NIGHT): 62.75
```

STAMSON 5.0 SUMMARY REPORT Date: 10-01-2018 15:30:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola4.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60	km/h
Road gradient	:	1	%
Road pavement	:	1	(Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -84.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	1 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	144.30 / 144.30 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -84.00 deg
Barrier height	:	3.30 m
Barrier receiver distance	:	12.80 / 12.80 m
Source elevation	:	94.10 m
Receiver elevation	:	93.90 m
Barrier elevation	:	93.90 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60	km/h
Road gradient	:	1	%
Road pavement	:	1	(Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	: -84.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 1 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 144.30 / 144.30 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: -84.00 deg	Angle2 : 90.00 deg
Barrier height	: 6.00 m	
Barrier receiver distance	: 3.00 / 3.00 m	
Source elevation	: 94.10 m	
Receiver elevation	: 93.90 m	
Barrier elevation	: 94.05 m	
Reference angle	: 0.00	

Road data, segment # 3: GREENBANK S (day/night)

Car traffic volume	: 14168/1232	veh/TimePeriod
Medium truck volume	: 1127/98	veh/TimePeriod
Heavy truck volume	: 805/70	veh/TimePeriod
Posted speed limit	: 60 km/h	
Road gradient	: 1 %	
Road pavement	: 1 (Typical asphalt or concrete)	

Data for Segment # 3: GREENBANK S (day/night)

Angle1 Angle2	: -90.00 deg	14.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 21.30 / 21.30 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: -90.00 deg	Angle2 : 14.00 deg
Barrier height	: 3.30 m	
Barrier receiver distance	: 12.70 / 12.70 m	
Source elevation	: 94.25 m	
Receiver elevation	: 93.90 m	
Barrier elevation	: 93.90 m	

```
Reference angle          :   0.00


Road data, segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2          :  14.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance  :  21.30 / 21.30  m
Receiver height          :   1.50 / 4.50   m
Topography               :      2       (Flat/gentle slope; with
barrier)
Barrier angle1           :  14.00 deg   Angle2 : 90.00 deg
Barrier height           :   6.00 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation         :  94.25 m
Receiver elevation       :  93.90 m
Barrier elevation        :  94.05 m
Reference angle          :   0.00


Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2          : -90.00 deg   14.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      2       (Reflective ground surface)
Receiver source distance  :  52.30 / 52.30  m
Receiver height          :   1.50 / 4.50   m
Topography               :      2       (Flat/gentle slope; with
barrier)
Barrier angle1           : -90.00 deg   Angle2 : 14.00 deg
Barrier height           :   3.30 m
Barrier receiver distance :  12.80 / 12.80  m
```

```
Source elevation          :  94.28 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.90 m
Reference angle           :   0.00


Road data, segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           :  14.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  52.30 / 52.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  14.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :  94.28 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Result summary (day)
--------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.JOCKVALE         !     1.50 !    24.92 !    24.92
 2.JOCKVALE         !     1.50 !    36.34 !    36.34
 3.GREENBANK S      !     1.50 !    55.46 !    55.46
 4.GREENBANK S      !     1.50 !    48.01 !    48.01
 5.GREENBANK N      !     1.50 !    54.43 !    54.43
 6.GREENBANK N      !     1.50 !    45.91 !    45.91
--------------------+---------+---------+---------
                      Total                 58.67 dBA
```

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	21.92	21.92 *
2.JOCKVALE	1.50	35.60	35.60
3.GREENBANK S	1.50	52.33	52.33
4.GREENBANK S	1.50	44.96	44.96
5.GREENBANK N	1.50	55.26	55.26 *
6.GREENBANK N	1.50	43.43	43.43
Total			57.51 dBA

RT/Custom data, segment # 1: GBANK (day/night)
---

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg 14.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 37.60 / 37.60 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 14.00 deg
Barrier height : 3.30 m
Barrier receiver distance : 12.80 / 12.80 m
Source elevation : 94.65 m
Receiver elevation : 93.90 m
Barrier elevation : 93.90 m
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)
---

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 2: GBANK (day/night)

Angle1 Angle2 : 14.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

```
Surface                    :      2       (Reflective ground surface)
Receiver source distance   :  37.60 / 37.60  m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             :  14.00 deg   Angle2 : 90.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :   4.50 / 4.50   m
Source elevation           :  94.65 m
Receiver elevation         :  93.90 m
Barrier elevation          :  94.05 m
Reference angle            :   0.00
```

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	39.08	39.08
2.GBANK	0.50	31.15	31.15
Total			39.73 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	42.30	42.30 *
2.GBANK	0.50	29.88	29.88
Total			42.54 dBA

```
TOTAL Leq FROM ALL SOURCES (DAY): 58.72
                           (NIGHT): 57.65
```

STAMSON 5.0 SUMMARY REPORT Date: 24-04-2018 09:24:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola5.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: GREENBANK S (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod
Medium truck volume : 1127/98 veh/TimePeriod
Heavy truck volume : 805/70 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: GREENBANK S (day/night)

Angle1 Angle2 : -90.00 deg -36.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 111.20 / 111.20 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -36.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 95.00 m
Receiver elevation : 93.80 m
Barrier elevation : 93.71 m
Reference angle : 0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod
Medium truck volume : 1127/98 veh/TimePeriod
Heavy truck volume : 805/70 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2 : -36.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 111.20 / 111.20 m
Receiver height : 1.50 / 4.50 m

```
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -36.00 deg   Angle2 : 90.00 deg
Barrier height             :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation           :  95.00 m
Receiver elevation         :  93.80 m
Barrier elevation          :  93.98 m
Reference angle            :   0.00


Road data, segment # 3: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2            : -90.00 deg   -36.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      1       (Absorptive ground surface)
Receiver source distance   : 138.20 / 138.20 m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -90.00 deg   Angle2 : -36.00 deg
Barrier height             :   2.50 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation           :  95.00 m
Receiver elevation         :  93.80 m
Barrier elevation          :  93.71 m
Reference angle            :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2            : -36.00 deg   90.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
```

```
Surface                    :      1       (Absorptive ground surface)
Receiver source distance   : 138.20 / 138.20 m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -36.00 deg   Angle2 : 90.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :  10.00 / 10.00  m
Source elevation           :  95.00 m
Receiver elevation         :  93.80 m
Barrier elevation          :  93.98 m
Reference angle            :   0.00


Road data, segment # 5: STREET 1 (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: STREET 1 (day/night)
-----------------------------------------
Angle1   Angle2            : -90.00 deg   -37.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      1       (Absorptive ground surface)
Receiver source distance   :  18.20 / 18.20  m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -90.00 deg   Angle2 : -37.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :   4.00 / 4.00   m
Source elevation           :  93.65 m
Receiver elevation         :  93.78 m
Barrier elevation          :  93.98 m
Reference angle            :   0.00
```

```
Road data, segment # 6: STREET 1 (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: STREET 1 (day/night)
-------------------------------------------
Angle1   Angle2           : -37.00 deg   62.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  18.20 / 18.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -37.00 deg   Angle2 : 62.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   8.20 / 8.20   m
Source elevation          :  93.65 m
Receiver elevation        :  93.78 m
Barrier elevation         :  93.71 m
Reference angle           :   0.00


Road data, segment # 7: STREET 1 (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 7: STREET 1 (day/night)
-------------------------------------------
Angle1   Angle2           :  62.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  18.20 / 18.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  62.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   5.20 / 5.20   m
Source elevation          :  93.65 m
Receiver elevation        :  93.78 m
```

Barrier elevation : 93.98 m
Reference angle : 0.00

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.GREENBANK S	1.50	44.50	44.50
2.GREENBANK S	1.50	42.58	42.58
3.GREENBANK N	1.50	43.05	43.05
4.GREENBANK N	1.50	41.39	41.39
5.STREET 1	1.50	42.54	42.54
6.STREET 1	1.50	52.98	52.98
7.STREET 1	1.50	41.27	41.27
Total			54.92 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.GREENBANK S	1.50	41.91	41.91	*
2.GREENBANK S	1.50	41.43	41.43	
3.GREENBANK N	1.50	40.43	40.43	*
4.GREENBANK N	1.50	40.43	40.43	
5.STREET 1	1.50	39.19	39.19	
6.STREET 1	1.50	53.85	53.85	*
7.STREET 1	1.50	37.61	37.61	
Total			54.89 dBA	

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

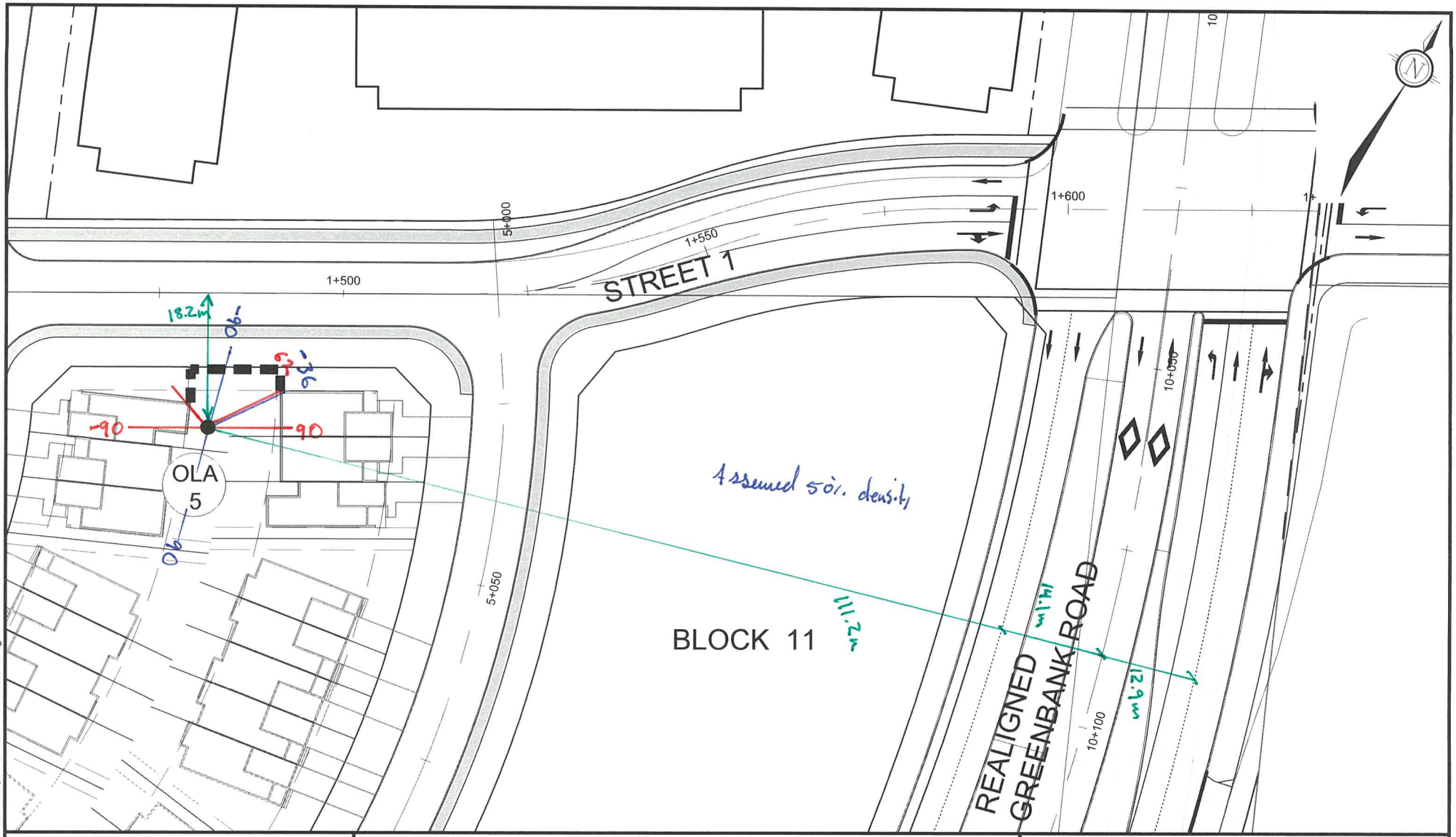
Angle1 Angle2 : -90.00 deg -36.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 125.30 / 125.30 m

```
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -36.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  95.00 m
Receiver elevation        :  93.80 m
Barrier elevation         :  93.71 m
Reference angle           :   0.00


RT/Custom data, segment # 2: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: GBANK (day/night)
----------------------------------------
Angle1   Angle2           : -36.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 125.30 / 125.30 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -36.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  95.00 m
Receiver elevation        :  93.80 m
Barrier elevation         :  93.98 m
Reference angle           :   0.00


Result summary (day)
--------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    27.21 !    27.21
 2.GBANK            !     0.50 !    25.50 !    25.50
--------------------+---------+---------+---------
                      Total                  29.45 dBA
```

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)	
1.GBANK	0.50	26.32	26.32	*
2.GBANK	0.50	25.93	25.93	
Total			29.14	dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.93
(NIGHT): 54.90



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BURNETT LANDS
3370 GREENBANK ROAD

OUTDOOR LIVING AREA RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-OLA5

SHT8X11.DWG - 216mmx279mm

C:\Temp\AcPublish_5684\111117-Angles.dwg, FIG OLA5, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 03-01-2018 23:40:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola6.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -52.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	18.40 / 18.40 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -52.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	4.00 / 4.00 m
Source elevation	:	93.51 m
Receiver elevation	:	93.60 m
Barrier elevation	:	93.67 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	8000
Percentage of Annual Growth	0.00
Number of Years of Growth	0.00
Medium Truck % of Total Volume	7.00
Heavy Truck % of Total Volume	5.00
Day (16 hrs) % of Total Volume	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	-52.00 deg 74.00 deg
Wood depth	0 (No woods.)
No of house rows	0 / 0
Surface	1 (Absorptive ground surface)
Receiver source distance	18.40 / 18.40 m
Receiver height	1.50 / 4.50 m
Topography	2 (Flat/gentle slope; with barrier)
Barrier angle1	-52.00 deg Angle2 : 74.00 deg
Barrier height	2.20 m
Barrier receiver distance	7.20 / 7.20 m
Source elevation	93.51 m
Receiver elevation	93.60 m
Barrier elevation	93.60 m
Reference angle	0.00

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	6477/563 veh/TimePeriod
Medium truck volume	515/45 veh/TimePeriod
Heavy truck volume	368/32 veh/TimePeriod
Posted speed limit	60 km/h
Road gradient	1 %
Road pavement	1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	74.00 deg 90.00 deg
Wood depth	0 (No woods.)
No of house rows	0 / 0
Surface	1 (Absorptive ground surface)
Receiver source distance	18.40 / 18.40 m
Receiver height	1.50 / 4.50 m
Topography	2 (Flat/gentle slope; with barrier)
Barrier angle1	74.00 deg Angle2 : 90.00 deg
Barrier height	6.00 m
Barrier receiver distance	10.70 / 10.70 m
Source elevation	93.51 m
Receiver elevation	93.60 m
Barrier elevation	93.70 m

```
Reference angle          :   0.00


Road data, segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2          : -90.00 deg   -11.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 116.40 / 116.40 m
Receiver height          :   1.50 / 4.50   m
Topography               :      2       (Flat/gentle slope; with
barrier)
Barrier angle1           : -90.00 deg   Angle2 : -11.00 deg
Barrier height           :   2.20 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation         :  94.78 m
Receiver elevation       :  93.60 m
Barrier elevation        :  93.60 m
Reference angle          :   0.00


Road data, segment # 5: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2          : -11.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 116.40 / 116.40 m
Receiver height          :   1.50 / 4.50   m
Topography               :      2       (Flat/gentle slope; with
barrier)
Barrier angle1           : -11.00 deg   Angle2 : 90.00 deg
Barrier height           :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
```

```
Source elevation          :  94.78 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.70 m
Reference angle           :   0.00


Road data, segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 151.60 / 151.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -11.00 deg
Barrier height            :   2.20 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  94.68 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.60 m
Reference angle           :   0.00


Road data, segment # 7: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 7: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -11.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 151.60 / 151.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
```

```
Barrier angle1            : -11.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  94.68 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.70 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	43.31	43.31	
2.JOCKVALE	1.50	56.67	56.67	
3.JOCKVALE	1.50	41.74	41.74	
4.GREENBANK S	1.50	47.01	47.01	
5.GREENBANK S	1.50	42.45	42.45	
6.GREENBANK N	1.50	51.95	51.95	
7.GREENBANK N	1.50	44.68	44.68	
Total			58.78	dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	40.19	40.19	
2.JOCKVALE	1.50	56.13	56.13	*
3.JOCKVALE	1.50	36.77	36.77	
4.GREENBANK S	1.50	44.58	44.58	*
5.GREENBANK S	1.50	41.22	41.22	
6.GREENBANK N	1.50	50.03	50.03	*
7.GREENBANK N	1.50	42.57	42.57	
Total			57.68	dBA

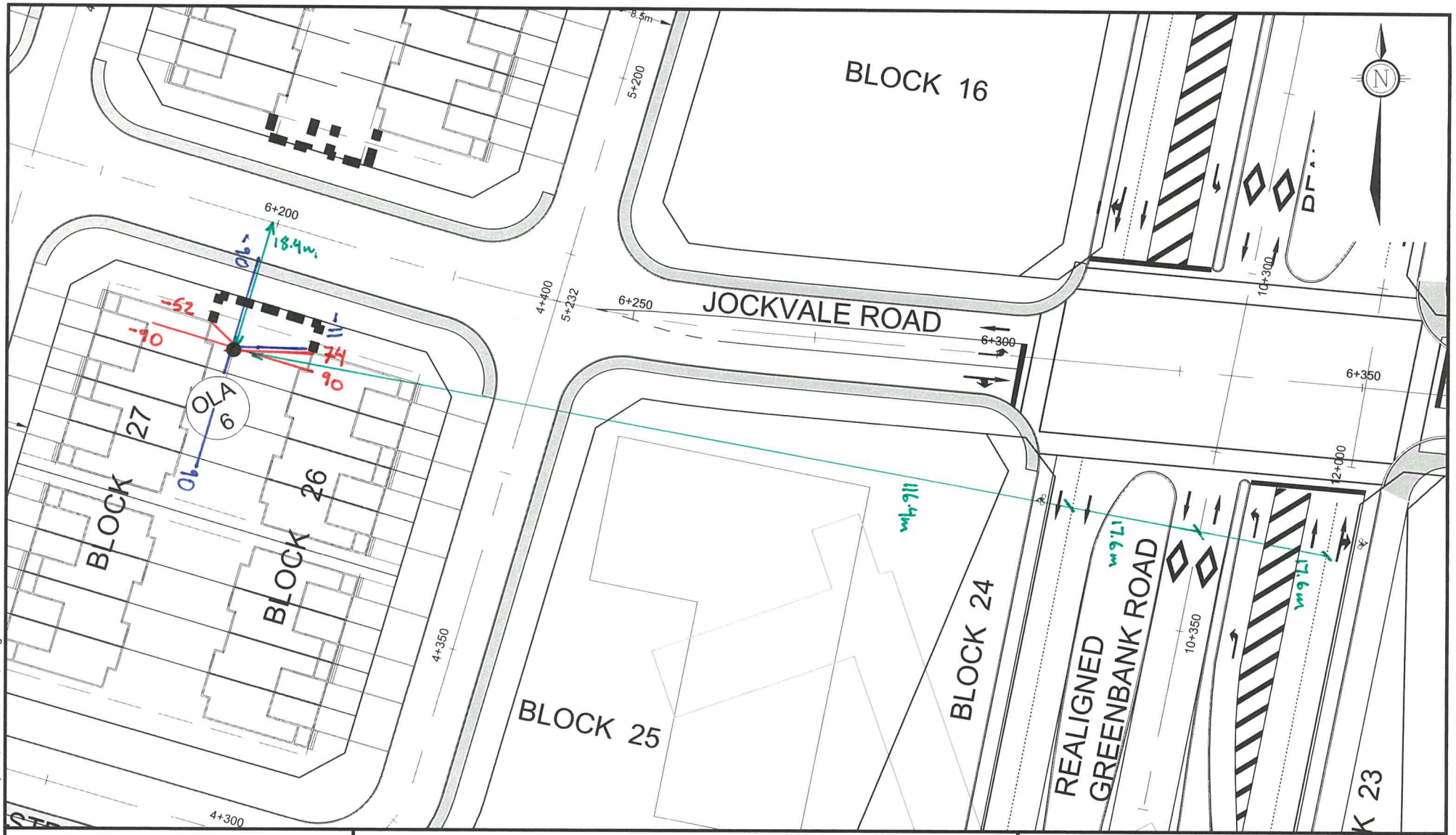
```
RT/Custom data, segment # 1: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: GBANK (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   -11.00 deg
```

```
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      1       (Absorptive ground surface)
Receiver source distance   : 134.00 / 134.00 m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -90.00 deg   Angle2 : -11.00 deg
Barrier height             :   2.20 m
Barrier receiver distance  :   9.00 / 9.00   m
Source elevation           :  95.25 m
Receiver elevation         :  93.60 m
Barrier elevation          :  93.60 m
Reference angle            :   0.00


RT/Custom data, segment # 2: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume     :   128/16    veh/TimePeriod
Speed              :    60 km/h

Data for Segment # 2: GBANK (day/night)
----------------------------------------
Angle1   Angle2            : -11.00 deg   90.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      1       (Absorptive ground surface)
Receiver source distance   : 134.00 / 134.00 m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -11.00 deg   Angle2 : 90.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :  10.00 / 10.00  m
Source elevation           :  95.25 m
Receiver elevation         :  93.60 m
Barrier elevation          :  93.70 m
Reference angle            :   0.00


Result summary (day)
--------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    29.08 !    29.08
 2.GBANK            !     0.50 !    24.72 !    24.72
--------------------+---------+---------+---------
                      Total                  30.44 dBA
```

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)	
1.GBANK	0.50	28.30	28.30	*
2.GBANK	0.50	25.14	25.14	
Total			30.01	dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.78
(NIGHT): 57.69



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BURNETT LANDS
3370 GREENBANK ROAD

OUTDOOR LIVING AREA
RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-OLA6

SHT8X11.DWG - 216mmx279mm

C:\Temp\AcPublish_5684\111117-Angles.dwg, FIG OLA6, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 24-04-2018 09:25:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola7.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -4.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	64.80 / 64.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -4.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	25.00 / 25.00 m
Source elevation	:	93.51 m
Receiver elevation	:	93.60 m
Barrier elevation	:	93.67 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	:	-4.00 deg 11.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	64.80 / 64.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-4.00 deg Angle2 : 11.00 deg
Barrier height	:	2.20 m
Barrier receiver distance	:	53.15 / 53.15 m
Source elevation	:	93.51 m
Receiver elevation	:	93.60 m
Barrier elevation	:	93.60 m
Reference angle	:	0.00

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod
Medium truck volume	:	515/45 veh/TimePeriod
Heavy truck volume	:	368/32 veh/TimePeriod
Posted speed limit	:	60 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	:	11.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	64.80 / 64.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	11.00 deg Angle2 : 90.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	25.00 / 25.00 m
Source elevation	:	93.51 m
Receiver elevation	:	93.60 m
Barrier elevation	:	95.70 m

```
Reference angle          :   0.00


Road data, segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2          : -90.00 deg   22.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 120.40 / 120.40 m
Receiver height          :   1.50 / 4.50   m
Topography               :      2       (Flat/gentle slope; with
barrier)
Barrier angle1           : -90.00 deg   Angle2 : 22.00 deg
Barrier height           :   6.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation         :  96.13 m
Receiver elevation       :  93.60 m
Barrier elevation        :  93.67 m
Reference angle          :   0.00


Road data, segment # 5: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2          :  22.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 120.40 / 120.40 m
Receiver height          :   1.50 / 4.50   m
Topography               :      3       (Elevated; no barrier)
Elevation                :   2.53 m
Reference angle          :   0.00
```

```
Road data, segment # 6: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   22.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 155.60 / 155.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : 22.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  96.11 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.67 m
Reference angle           :   0.00


Road data, segment # 7: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 7: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           :  22.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 155.60 / 155.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   2.51 m
Reference angle           :   0.00
```

Result summary (day)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	42.75	42.75
2.JOCKVALE	1.50	40.28	40.28
3.JOCKVALE	1.50	40.20	40.20
4.GREENBANK S	1.50	42.43	42.43
5.GREENBANK S	1.50	50.86	50.86
6.GREENBANK S	1.50	40.97	40.97
7.GREENBANK N	1.50	49.08	49.08
Total			54.36 dBA

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	38.85	38.85
2.JOCKVALE	1.50	34.58	34.58
3.JOCKVALE	1.50	35.49	35.49
4.GREENBANK S	1.50	41.62	41.62
5.GREENBANK S	1.50	44.31	44.31
6.GREENBANK S	1.50	40.33	40.33
7.GREENBANK N	1.50	42.64	42.64
Total			49.28 dBA

RT/Custom data, segment # 1: GBANK (day/night)
---
1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg 22.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 138.00 / 138.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)

```
Barrier angle1            : -90.00 deg   Angle2 : 22.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  96.58 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.70 m
Reference angle           :   0.00

RT/Custom data, segment # 2: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: GBANK (day/night)
---------------------------------------
Angle1   Angle2           :  22.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 138.00 / 138.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   2.88 m
Reference angle           :   0.00


Result summary (day)
--------------------

                     !  source  !   Gen    !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
---------------------+---------+---------+---------
 1.GBANK             !     0.50 !    24.66 !    24.66
 2.GBANK             !     0.50 !    33.13 !    33.13
---------------------+---------+---------+---------
                       Total                 33.71 dBA

Result summary (night)
----------------------

                     !  source  !   Gen    !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
---------------------+---------+---------+---------
 1.GBANK             !     0.50 !    25.43 !    25.43
 2.GBANK             !     0.50 !    28.21 !    28.21
---------------------+---------+---------+---------
                       Total                 30.05 dBA
```

TOTAL Leq FROM ALL SOURCES (DAY): 54.40
(NIGHT): 49.33

STAMSON 5.0 SUMMARY REPORT Date: 02-01-2018 19:29:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola8.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2 : -90.00 deg -53.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 17.80 / 17.80 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -53.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 4.00 / 4.00 m
Source elevation : 93.55 m
Receiver elevation : 93.70 m
Barrier elevation : 93.85 m
Reference angle : 0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	8000
Percentage of Annual Growth	0.00
Number of Years of Growth	0.00
Medium Truck % of Total Volume	7.00
Heavy Truck % of Total Volume	5.00
Day (16 hrs) % of Total Volume	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	-53.00 deg 72.00 deg
Wood depth	0 (No woods.)
No of house rows	0 / 0
Surface	1 (Absorptive ground surface)
Receiver source distance	17.80 / 17.80 m
Receiver height	1.50 / 4.50 m
Topography	2 (Flat/gentle slope; with barrier)
Barrier angle1	-53.00 deg Angle2 : 72.00 deg
Barrier height	2.20 m
Barrier receiver distance	6.65 / 6.65 m
Source elevation	93.55 m
Receiver elevation	93.70 m
Barrier elevation	93.70 m
Reference angle	0.00

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	6477/563 veh/TimePeriod
Medium truck volume	515/45 veh/TimePeriod
Heavy truck volume	368/32 veh/TimePeriod
Posted speed limit	60 km/h
Road gradient	1 %
Road pavement	1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	72.00 deg 90.00 deg
Wood depth	0 (No woods.)
No of house rows	0 / 0
Surface	1 (Absorptive ground surface)
Receiver source distance	17.80 / 17.80 m
Receiver height	1.50 / 4.50 m
Topography	2 (Flat/gentle slope; with barrier)
Barrier angle1	72.00 deg Angle2 : 90.00 deg
Barrier height	6.00 m
Barrier receiver distance	10.70 / 10.70 m
Source elevation	93.55 m
Receiver elevation	93.70 m
Barrier elevation	93.65 m

Reference angle : 0.00

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	43.28	43.28
2.JOCKVALE	1.50	56.67	56.67
3.JOCKVALE	1.50	42.27	42.27
Total			57.01 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	40.00	40.00
2.JOCKVALE	1.50	56.34	56.34 *
3.JOCKVALE	1.50	37.27	37.27
Total			56.49 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.01
(NIGHT): 56.49

STAMSON 5.0 SUMMARY REPORT Date: 03-01-2018 01:58:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola9.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -30.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	28.80 / 28.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -30.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	12.70 / 12.70 m
Source elevation	:	93.60 m
Receiver elevation	:	94.00 m
Barrier elevation	:	94.10 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	8000
Percentage of Annual Growth	0.00
Number of Years of Growth	0.00
Medium Truck % of Total Volume	7.00
Heavy Truck % of Total Volume	5.00
Day (16 hrs) % of Total Volume	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	-30.00 deg 58.00 deg
Wood depth	0 (No woods.)
No of house rows	0 / 0
Surface	1 (Absorptive ground surface)
Receiver source distance	28.80 / 28.80 m
Receiver height	1.50 / 4.50 m
Topography	2 (Flat/gentle slope; with barrier)
Barrier angle1	-30.00 deg Angle2 : 58.00 deg
Barrier height	2.20 m
Barrier receiver distance	8.50 / 8.50 m
Source elevation	93.60 m
Receiver elevation	94.00 m
Barrier elevation	93.85 m
Reference angle	0.00

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	6477/563 veh/TimePeriod
Medium truck volume	515/45 veh/TimePeriod
Heavy truck volume	368/32 veh/TimePeriod
Posted speed limit	60 km/h
Road gradient	1 %
Road pavement	1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	58.00 deg 90.00 deg
Wood depth	0 (No woods.)
No of house rows	0 / 0
Surface	1 (Absorptive ground surface)
Receiver source distance	28.80 / 28.80 m
Receiver height	1.50 / 4.50 m
Topography	2 (Flat/gentle slope; with barrier)
Barrier angle1	58.00 deg Angle2 : 90.00 deg
Barrier height	6.00 m
Barrier receiver distance	5.00 / 5.00 m
Source elevation	93.60 m
Receiver elevation	94.00 m
Barrier elevation	94.10 m

Reference angle : 0.00

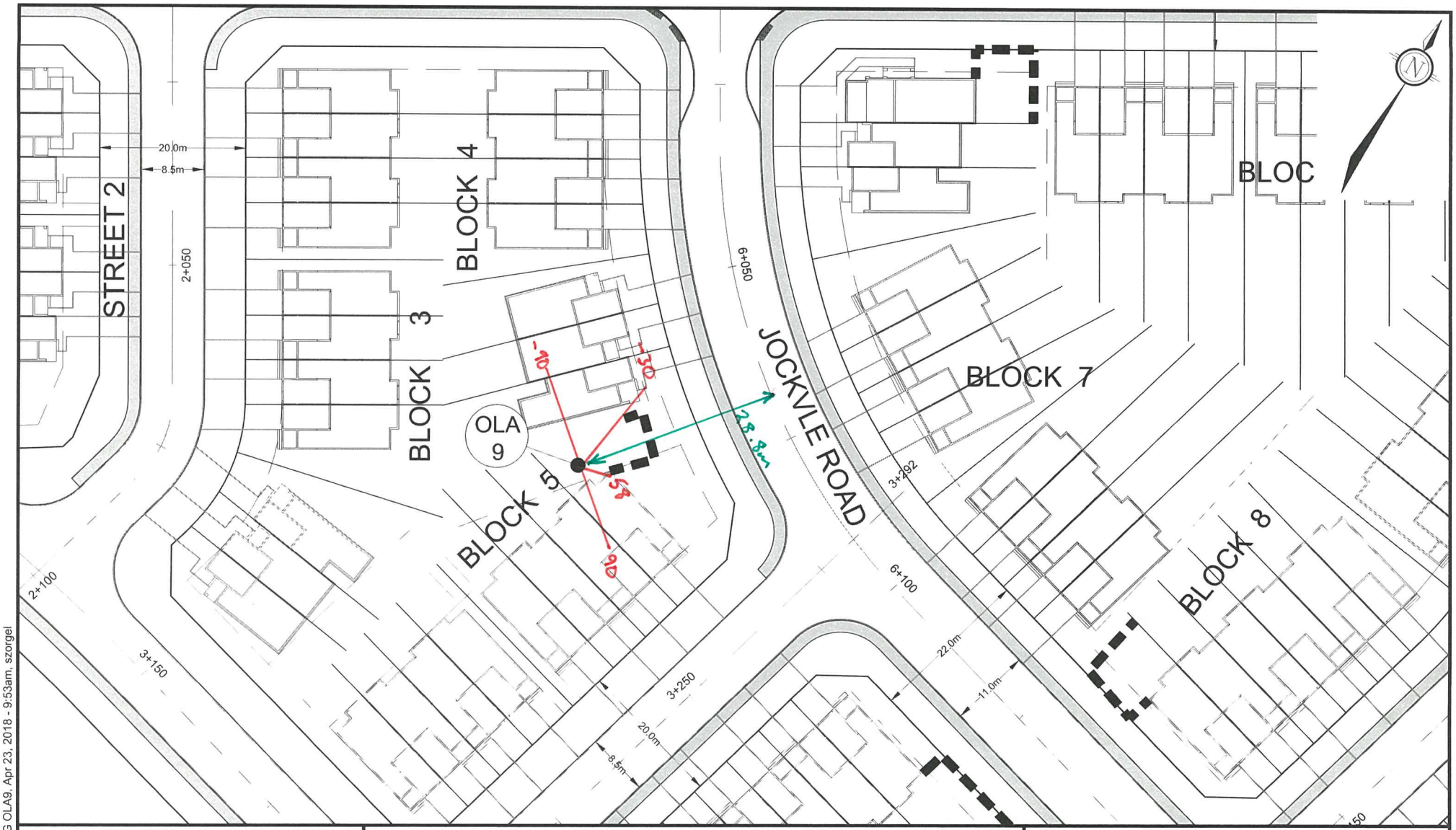
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	43.79	43.79	
2.JOCKVALE	1.50	52.99	52.99	
3.JOCKVALE	1.50	40.99	40.99	
Total			53.72	dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	39.44	39.44	
2.JOCKVALE	1.50	51.78	51.78	*
3.JOCKVALE	1.50	38.16	38.16	
Total			52.20	dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.72
(NIGHT): 52.20



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BURNETT LANDS
3370 GREENBANK ROAD

OUTDOOR LIVING AREA RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-OLA9

SHT8X11.DWG - 216mmx279mm

C:\Temp\AcPublish_5684\111117-Angles.dwg, FIG OLA9, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 03-01-2018 02:04:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola10.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2 : -90.00 deg -27.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 34.50 / 34.50 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -27.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 12.90 / 12.90 m
Source elevation : 93.61 m
Receiver elevation : 93.90 m
Barrier elevation : 94.10 m
Reference angle : 0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	:	-27.00 deg 2.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	34.50 / 34.50 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-27.00 deg Angle2 : 2.00 deg
Barrier height	:	2.20 m
Barrier receiver distance	:	14.40 / 14.40 m
Source elevation	:	93.61 m
Receiver elevation	:	93.90 m
Barrier elevation	:	93.85 m
Reference angle	:	0.00

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod
Medium truck volume	:	515/45 veh/TimePeriod
Heavy truck volume	:	368/32 veh/TimePeriod
Posted speed limit	:	60 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	:	2.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	34.50 / 34.50 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	2.00 deg Angle2 : 90.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	6.50 / 6.50 m
Source elevation	:	93.61 m
Receiver elevation	:	93.90 m
Barrier elevation	:	94.10 m

Reference angle : 0.00

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	43.25	43.25	
2.JOCKVALE	1.50	47.13	47.13	
3.JOCKVALE	1.50	42.96	42.96	
Total			49.66	dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	39.27	39.27	
2.JOCKVALE	1.50	45.98	45.98	*
3.JOCKVALE	1.50	40.26	40.26	
Total			47.69	dBA

TOTAL Leq FROM ALL SOURCES (DAY): 49.66
(NIGHT): 47.69

STAMSON 5.0 SUMMARY REPORT Date: 10-01-2018 15:34:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola11.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	1 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	74.30 / 77.00 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : 90.00 deg
Barrier height	:	3.10 m
Barrier receiver distance	:	3.00 / 6.00 m
Source elevation	:	93.75 m
Receiver elevation	:	93.75 m
Barrier elevation	:	93.60 m
Reference angle	:	0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod	
Medium truck volume	:	1127/98 veh/TimePeriod	
Heavy truck volume	:	805/70 veh/TimePeriod	
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

```
Data for Segment # 2: GREENBANK S (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.30 / 50.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.75 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
--------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.30 / 50.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.10 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  93.75 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
```

```
Road gradient         :     1 %
Road pavement         :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.60 / 85.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.80 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00


Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.60 / 85.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.10 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  93.80 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	45.57	45.57
2.GREENBANK S	1.50	43.41	43.41
3.GREENBANK S	1.50	51.76	51.76
4.GREENBANK N	1.50	40.53	40.53
5.GREENBANK N	1.50	48.87	48.87
Total			54.72 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	47.22	47.22	*
2.GREENBANK S	1.50	41.48	41.48	
3.GREENBANK S	1.50	51.11	51.11	*
4.GREENBANK N	1.50	39.10	39.10	
5.GREENBANK N	1.50	47.48	47.48	*
Total			54.15 dBA	

* Bright Zone !

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

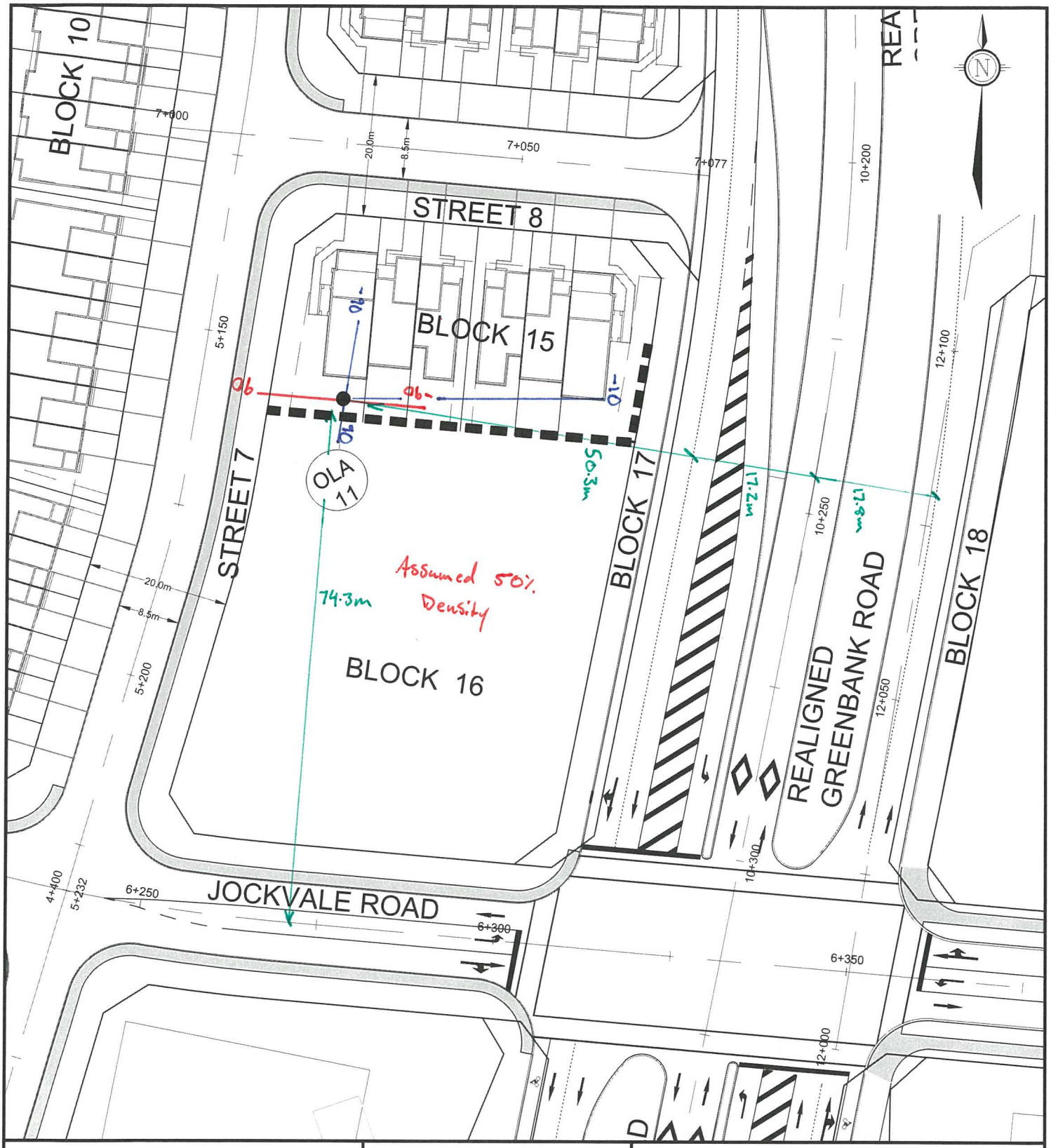
Angle1 Angle2 : -90.00 deg -10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.80 / 67.80 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -10.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 4.00 / 4.00 m

```
Source elevation          :  94.22 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00

RT/Custom data, segment # 2: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: GBANK (day/night)
---------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  67.80 / 67.80  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.10 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  94.22 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00


Result summary (day)
--------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    25.51 !    25.51
 2.GBANK            !     0.50 !    33.59 !    33.59
--------------------+---------+---------+---------
                      Total                 34.22 dBA


Result summary (night)
----------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    25.39 !    25.39
 2.GBANK            !     0.50 !    34.43 !    34.43 *
--------------------+---------+---------+---------
```

Total	34.94 dBA

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 54.76
(NIGHT): 54.20



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BURNETT LANDS
3370 GREENBANK ROAD

OUTDOOR LIVING AREA RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-OLA11

STAMSON 5.0 SUMMARY REPORT Date: 10-01-2018 15:39:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola1122.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	1 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	74.30 / 77.00 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : 90.00 deg
Barrier height	:	2.20 m
Barrier receiver distance	:	3.00 / 6.00 m
Source elevation	:	93.75 m
Receiver elevation	:	93.75 m
Barrier elevation	:	93.60 m
Reference angle	:	0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232	veh/TimePeriod
Medium truck volume	:	1127/98	veh/TimePeriod
Heavy truck volume	:	805/70	veh/TimePeriod
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

```
Data for Segment # 2: GREENBANK S (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.30 / 50.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.75 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
----------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.30 / 50.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.20 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  93.75 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
```

```
Road gradient         :     1 %
Road pavement         :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.60 / 85.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.80 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00


Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.60 / 85.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.20 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  93.80 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00
```

Result summary (day)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	48.97	48.97
2.GREENBANK S	1.50	43.41	43.41
3.GREENBANK S	1.50	53.34	53.34
4.GREENBANK N	1.50	40.53	40.53
5.GREENBANK N	1.50	49.98	49.98
Total			56.31 dBA

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	47.22	47.22	*
2.GREENBANK S	1.50	41.48	41.48	
3.GREENBANK S	1.50	51.11	51.11	*
4.GREENBANK N	1.50	39.10	39.10	
5.GREENBANK N	1.50	47.48	47.48	*
Total			54.15 dBA	

* Bright Zone !

RT/Custom data, segment # 1: GBANK (day/night)
---
1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg -10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.80 / 67.80 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -10.00 deg
Barrier height : 6.00 m

```
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  94.22 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 2: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: GBANK (day/night)
---------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  67.80 / 67.80  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.20 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  94.22 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00
```

```
Result summary (day)
--------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    25.51 !    25.51
 2.GBANK            !     0.50 !    34.97 !    34.97
--------------------+---------+---------+---------
                      Total                 35.44 dBA
```

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)	
1.GBANK	0.50	25.39	25.39	
2.GBANK	0.50	34.43	34.43	*
Total			34.94	dBA

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 56.34
(NIGHT): 54.20

STAMSON 5.0 SUMMARY REPORT Date: 10-01-2018 15:40:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola1125.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	1 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	74.30 / 77.00 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : 90.00 deg
Barrier height	:	2.50 m
Barrier receiver distance	:	3.00 / 6.00 m
Source elevation	:	93.75 m
Receiver elevation	:	93.75 m
Barrier elevation	:	93.60 m
Reference angle	:	0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod	
Medium truck volume	:	1127/98 veh/TimePeriod	
Heavy truck volume	:	805/70 veh/TimePeriod	
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

```
Data for Segment # 2: GREENBANK S (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.30 / 50.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.75 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
--------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.30 / 50.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  93.75 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
```

```
Road gradient         :     1 %
Road pavement         :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.60 / 85.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.80 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00


Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient         :     1 %
Road pavement         :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.60 / 85.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  93.80 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00
```

Result summary (day)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	47.76	47.76
2.GREENBANK S	1.50	43.41	43.41
3.GREENBANK S	1.50	52.88	52.88
4.GREENBANK N	1.50	40.53	40.53
5.GREENBANK N	1.50	49.68	49.68
Total			55.80 dBA

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.JOCKVALE	1.50	47.22	47.22	*
2.GREENBANK S	1.50	41.48	41.48	
3.GREENBANK S	1.50	51.11	51.11	*
4.GREENBANK N	1.50	39.10	39.10	
5.GREENBANK N	1.50	47.48	47.48	*
Total			54.15 dBA	

* Bright Zone !

RT/Custom data, segment # 1: GBANK (day/night)
---
1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg -10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.80 / 67.80 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -10.00 deg
Barrier height : 6.00 m

```
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  94.22 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00


RT/Custom data, segment # 2: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: GBANK (day/night)
---------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  67.80 / 67.80  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :  94.22 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.75 m
Reference angle           :   0.00


Result summary (day)
--------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    25.51 !    25.51
 2.GBANK            !     0.50 !    34.56 !    34.56
--------------------+---------+---------+---------
                      Total                 35.07 dBA
```

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)	
1.GBANK	0.50	25.39	25.39	
2.GBANK	0.50	34.43	34.43	*
Total			34.94	dBA

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 55.83
(NIGHT): 54.20

STAMSON 5.0 SUMMARY REPORT Date: 24-04-2018 09:26:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola12.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: STREET 1 (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	50 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: STREET 1 (day/night)

Angle1 Angle2	:	-90.00 deg -54.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	17.10 / 17.10 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -54.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	4.00 / 4.00 m
Source elevation	:	93.61 m
Receiver elevation	:	94.05 m
Barrier elevation	:	94.15 m
Reference angle	:	0.00

Road data, segment # 2: STREET 1 (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	50 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: STREET 1 (day/night)

Angle1 Angle2	:	-54.00 deg 75.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	17.10 / 17.10 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-54.00 deg Angle2 : 75.00 deg
Barrier height	:	2.20 m
Barrier receiver distance	:	6.80 / 6.80 m
Source elevation	:	93.55 m
Receiver elevation	:	94.00 m
Barrier elevation	:	93.85 m
Reference angle	:	0.00

Road data, segment # 3: STREET 1 (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod
Medium truck volume	:	515/45 veh/TimePeriod
Heavy truck volume	:	368/32 veh/TimePeriod
Posted speed limit	:	50 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 3: STREET 1 (day/night)

Angle1 Angle2	:	75.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	17.10 / 17.10 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	75.00 deg Angle2 : 90.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	3.00 / 3.00 m
Source elevation	:	93.61 m
Receiver elevation	:	94.05 m
Barrier elevation	:	94.15 m

Reference angle : 0.00

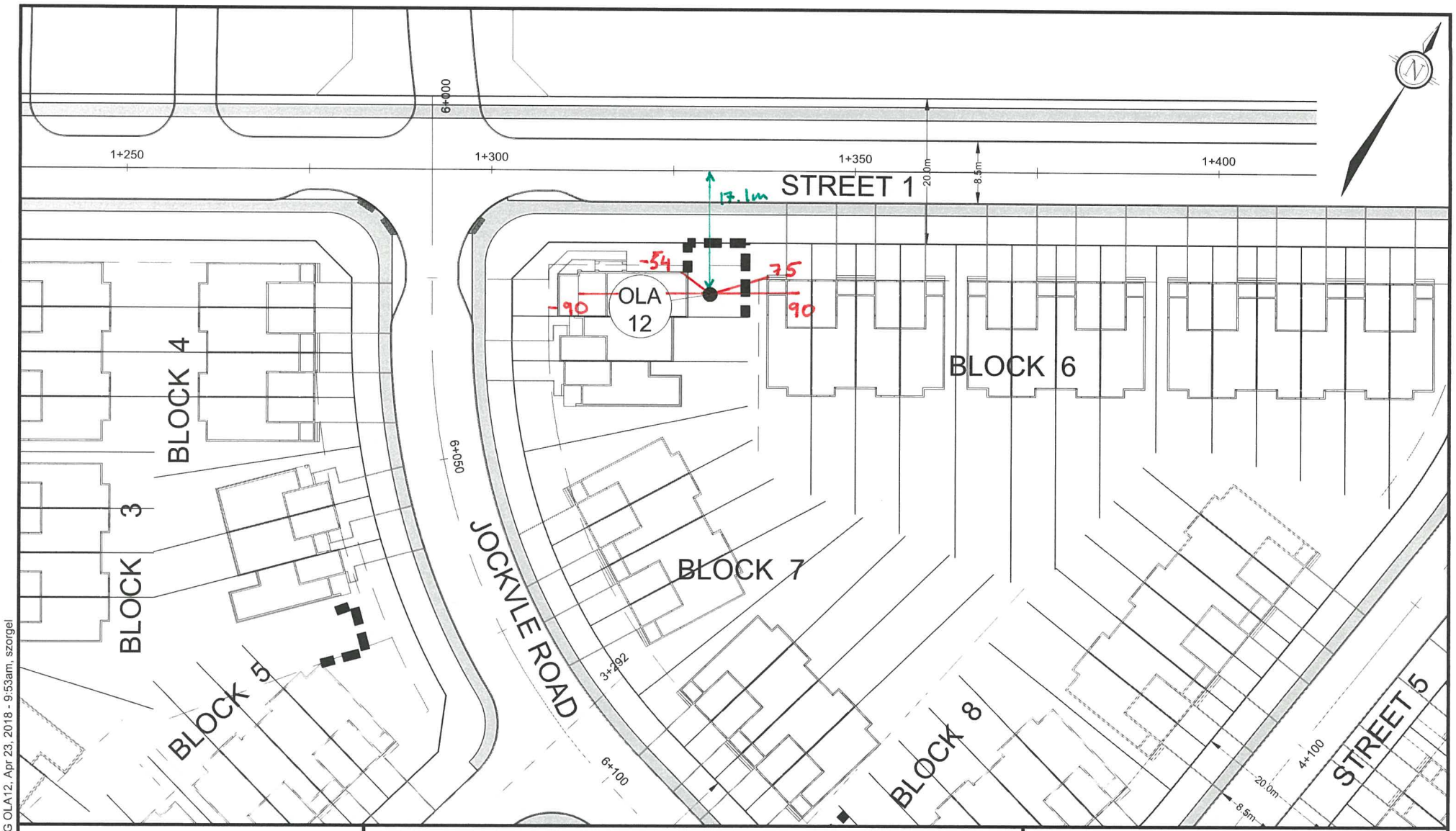
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.STREET 1	1.50	41.84	41.84	
2.STREET 1	1.50	55.65	55.65	
3.STREET 1	1.50	39.31	39.31	
Total			55.92	dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)	
1.STREET 1	1.50	38.50	38.50	
2.STREET 1	1.50	55.19	55.19	*
3.STREET 1	1.50	36.00	36.00	
Total			55.33	dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.92
(NIGHT): 55.33



NOVATECH

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BURNETT LANDS
3370 GREENBANK ROAD

OUTDOOR LIVING AREA
RECEIVER ANGLES

SCALE	DATE	JOB	FIGURE
1 : 750 (0, 10, 20, 30)	APR 2018	111117	FIG-OLA12

SHT8X11.DWG - 216mmx279mm

C:\Temp\AcPublish_5684\111117-Angles.dwg, FIG OLA12, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 14-12-2017 19:31:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: olalunat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	74.00 / 77.00	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232	veh/TimePeriod
Medium truck volume	:	1127/98	veh/TimePeriod
Heavy truck volume	:	805/70	veh/TimePeriod
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2	:	-90.00 deg	-49.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	16.40 / 16.40	m

```
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -49.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.75 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -49.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  16.40 / 16.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.10 / 51.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -49.00 deg
```

```
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.80 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00
```

```
Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 5: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           : -49.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.10 / 51.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Result summary (day)
--------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	52.30	52.30
2.GREENBANK S	1.50	47.31	47.31
3.GREENBANK S	1.50	67.86	67.86
4.GREENBANK N	1.50	44.90	44.90
5.GREENBANK N	1.50	64.22	64.22
Total			69.55 dBA

Result summary (night)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	47.22	47.22
2.GREENBANK S	1.50	43.88	43.88
3.GREENBANK S	1.50	60.41	60.41
4.GREENBANK N	1.50	41.99	41.99
5.GREENBANK N	1.50	56.62	56.62
Total			62.18 dBA

RT/Custom data, segment # 1: GBANK (day/night)
---
1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg -49.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 33.90 / 33.90 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -49.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 4.00 / 4.00 m
Source elevation : 94.22 m
Receiver elevation : 93.90 m
Barrier elevation : 94.05 m
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)
---
1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 2: GBANK (day/night)

Angle1 Angle2 : -49.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

Surface : 2 (Reflective ground surface)
Receiver source distance : 33.90 / 33.90 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	30.41	30.41
2.GBANK	0.50	50.03	50.03
Total			50.08 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	28.77	28.77
2.GBANK	0.50	44.01	44.01
Total			44.14 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.59
(NIGHT): 62.25

STAMSON 5.0 SUMMARY REPORT Date: 10-01-2018 15:27:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola2unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 76.00 / 79.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod
Medium truck volume : 1127/98 veh/TimePeriod
Heavy truck volume : 805/70 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2 : -90.00 deg -12.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.90 / 22.90 m

```
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -12.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :  93.75 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -12.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  22.90 / 22.90  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -12.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  57.60 / 57.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -12.00 deg
```

```
Barrier height            :   6.00 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :  93.80 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00
```

```
Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 5: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           : -12.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  57.60 / 57.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Result summary (day)
--------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	52.11	52.11
2.GREENBANK S	1.50	47.59	47.59
3.GREENBANK S	1.50	63.89	63.89
4.GREENBANK N	1.50	45.50	45.50
5.GREENBANK N	1.50	62.36	62.36
Total			66.46 dBA

```
Result summary (night)
----------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	47.04	47.04

2.GREENBANK S	!	1.50 !	44.54 !	44.54
3.GREENBANK S	!	1.50 !	56.59 !	56.59
4.GREENBANK N	!	1.50 !	43.04 !	43.04
5.GREENBANK N	!	1.50 !	54.76 !	54.76
	Total			59.32 dBA

RT/Custom data, segment # 1: GBANK (day/night)
---

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg -12.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.40 / 40.40 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -12.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 94.22 m
Receiver elevation : 93.90 m
Barrier elevation : 94.05 m
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)
---

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 2: GBANK (day/night)

Angle1 Angle2 : -12.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.40 / 40.40 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	30.85	30.85
2.GBANK	0.50	47.92	47.92
Total			48.00 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	29.58	29.58
2.GBANK	0.50	41.90	41.90
Total			42.15 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.52
(NIGHT): 59.40

STAMSON 5.0 SUMMARY REPORT Date: 14-12-2017 23:20:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola3unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg	-48.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	146.10 / 146.10 m	
Receiver height	:	1.50 / 4.50 m	
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00

```
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: JOCKVALE (day/night)
-------------------------------------------
Angle1   Angle2           : -48.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 146.10 / 146.10 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -48.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  94.16 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK S (day/night)
-----------------------------------------------
```

```
Angle1   Angle2           :  50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  94.25 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  46.00 / 46.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           :  50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
```

```
Receiver source distance  :  46.00 / 46.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2        (Flat/gentle slope; with
barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  94.28 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	51.06	51.06
2.JOCKVALE	1.50	35.27	35.27
3.GREENBANK S	1.50	68.53	68.53
4.GREENBANK S	1.50	47.85	47.85
5.GREENBANK N	1.50	64.71	64.71
6.GREENBANK N	1.50	45.36	45.36
Total			70.13 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	43.47	43.47
2.JOCKVALE	1.50	34.24	34.24
3.GREENBANK S	1.50	61.05	61.05
4.GREENBANK S	1.50	44.35	44.35
5.GREENBANK N	1.50	57.11	57.11
6.GREENBANK N	1.50	42.42	42.42
Total			62.69 dBA

```
RT/Custom data, segment # 1: GBANK (day/night)
-----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h
```

```
Data for Segment # 1: GBANK (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  31.20 / 31.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


RT/Custom data, segment # 2: GBANK (day/night)
----------------------------------------------
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: GBANK (day/night)
---------------------------------------
Angle1   Angle2           :  50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  31.20 / 31.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  94.65 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00


Result summary (day)
--------------------

                    !  source  !   Gen    !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.GBANK            !     0.50 !    50.42 !    50.42
 2.GBANK            !     0.50 !    30.77 !    30.77
--------------------+---------+---------+---------
                      Total                  50.47 dBA
```

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	44.40	44.40
2.GBANK	0.50	29.10	29.10
Total			44.53 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.18
(NIGHT): 62.75

STAMSON 5.0 SUMMARY REPORT Date: 10-01-2018 15:31:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola4unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	: -90.00 deg	-84.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 1 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 144.30 / 144.30 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00

```
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: JOCKVALE (day/night)
-------------------------------------------
Angle1   Angle2           : -84.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 144.30 / 144.30 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -84.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  94.10 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00

Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  21.30 / 21.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           :  14.00 deg   90.00 deg
```

```
Wood depth                 :      0        (No woods.)
No of house rows           :      0 / 0
Surface                    :      1        (Absorptive ground surface)
Receiver source distance   :  21.30 / 21.30  m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2        (Flat/gentle slope; with
barrier)
Barrier angle1             :  14.00 deg   Angle2 : 90.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :   4.50 / 4.50   m
Source elevation           :  94.25 m
Receiver elevation         :  93.90 m
Barrier elevation          :  94.05 m
Reference angle            :   0.00

Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2            : -90.00 deg   14.00 deg
Wood depth                 :      0        (No woods.)
No of house rows           :      0 / 0
Surface                    :      2        (Reflective ground surface)
Receiver source distance   :  52.30 / 52.30  m
Receiver height            :   1.50 / 4.50   m
Topography                 :      1        (Flat/gentle slope; no barrier)
Reference angle            :   0.00


Road data, segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2            :  14.00 deg   90.00 deg
Wood depth                 :      0        (No woods.)
No of house rows           :      0 / 0
Surface                    :      2        (Reflective ground surface)
Receiver source distance   :  52.30 / 52.30  m
Receiver height            :   1.50 / 4.50   m
```

Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 14.00 deg Angle2 : 90.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 94.28 m
Receiver elevation : 93.90 m
Barrier elevation : 94.05 m
Reference angle : 0.00

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	24.92	24.92
2.JOCKVALE	1.50	36.34	36.34
3.GREENBANK S	1.50	64.52	64.52
4.GREENBANK S	1.50	48.01	48.01
5.GREENBANK N	1.50	62.86	62.86
6.GREENBANK N	1.50	45.91	45.91
Total			66.88 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	21.92	21.92
2.JOCKVALE	1.50	35.60	35.60
3.GREENBANK S	1.50	57.19	57.19
4.GREENBANK S	1.50	44.96	44.96
5.GREENBANK N	1.50	55.26	55.26
6.GREENBANK N	1.50	43.43	43.43
Total			59.62 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

```
Angle1   Angle2           : -90.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.60 / 37.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

RT/Custom data, segment # 2: GBANK (day/night)

```
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h
```

Data for Segment # 2: GBANK (day/night)

```
Angle1   Angle2           :  14.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.60 / 37.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  14.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :  94.65 m
Receiver elevation        :  93.90 m
Barrier elevation         :  94.05 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	48.32	48.32
2.GBANK	0.50	31.15	31.15
Total			48.40 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	42.30	42.30
2.GBANK	0.50	29.88	29.88
Total			42.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.94
(NIGHT): 59.71

STAMSON 5.0 SUMMARY REPORT Date: 17-04-2018 09:26:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola5UNAT.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: GREENBANK S (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod
Medium truck volume : 1127/98 veh/TimePeriod
Heavy truck volume : 805/70 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: GREENBANK S (day/night)

Angle1 Angle2 : -90.00 deg -36.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 111.20 / 111.20 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod
Medium truck volume : 1127/98 veh/TimePeriod
Heavy truck volume : 805/70 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2 : -36.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 111.20 / 111.20 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -36.00 deg Angle2 : 90.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 95.00 m
Receiver elevation : 93.80 m
Barrier elevation : 93.98 m

```
Reference angle           :   0.00


Road data, segment # 3: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 138.20 / 138.20 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -36.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 138.20 / 138.20 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -36.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  95.00 m
Receiver elevation        :  93.80 m
Barrier elevation         :  93.98 m
Reference angle           :   0.00
```

```
Road data, segment # 5: STREET 1 (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: STREET 1 (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   -37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  18.20 / 18.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -37.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.65 m
Receiver elevation        :  93.78 m
Barrier elevation         :  93.98 m
Reference angle           :   0.00


Road data, segment # 6: STREET 1 (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: STREET 1 (day/night)
-------------------------------------------
Angle1   Angle2           : -37.00 deg   62.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
```

```
Receiver source distance  :  18.20 / 18.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 7: STREET 1 (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 7: STREET 1 (day/night)
-----------------------------------------
Angle1   Angle2           :  62.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  18.20 / 18.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  62.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   5.20 / 5.20   m
Source elevation          :  93.65 m
Receiver elevation        :  93.78 m
Barrier elevation         :  93.98 m
Reference angle           :   0.00
```

```
Result summary (day)
--------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.GREENBANK S	1.50	48.43	48.43
2.GREENBANK S	1.50	42.58	42.58
3.GREENBANK N	1.50	46.86	46.86
4.GREENBANK N	1.50	41.39	41.39
5.STREET 1	1.50	42.54	42.54
6.STREET 1	1.50	61.31	61.31
7.STREET 1	1.50	41.27	41.27
Total			61.86 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.GREENBANK S	1.50	41.91	41.91
2.GREENBANK S	1.50	41.43	41.43
3.GREENBANK N	1.50	40.43	40.43
4.GREENBANK N	1.50	40.43	40.43
5.STREET 1	1.50	39.19	39.19
6.STREET 1	1.50	53.85	53.85
7.STREET 1	1.50	37.61	37.61
Total			54.89 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg -36.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 125.30 / 125.30 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 2: GBANK (day/night)

Angle1 Angle2 : -36.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 125.30 / 125.30 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)

Barrier angle1 : -36.00 deg Angle2 : 90.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 95.00 m
Receiver elevation : 93.80 m
Barrier elevation : 93.98 m
Reference angle : 0.00

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	31.59	31.59
2.GBANK	0.50	25.50	25.50
Total			32.55 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	26.32	26.32
2.GBANK	0.50	25.93	25.93
Total			29.14 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.86
(NIGHT): 54.90

STAMSON 5.0 SUMMARY REPORT Date: 03-01-2018 23:38:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola6UNAT.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -52.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	18.40 / 18.40 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -52.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	4.00 / 4.00 m
Source elevation	:	93.51 m
Receiver elevation	:	93.60 m
Barrier elevation	:	93.67 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	: -52.00 deg	74.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 18.40 / 18.40	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod
Medium truck volume	: 515/45	veh/TimePeriod
Heavy truck volume	: 368/32	veh/TimePeriod
Posted speed limit	: 60 km/h	
Road gradient	: 1 %	
Road pavement	: 1 (Typical asphalt or concrete)	

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	: 74.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 18.40 / 18.40	m
Receiver height	: 1.50 / 4.50	m
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: 74.00 deg	Angle2 : 90.00 deg
Barrier height	: 6.00 m	
Barrier receiver distance	: 10.70 / 10.70	m
Source elevation	: 93.51 m	
Receiver elevation	: 93.60 m	
Barrier elevation	: 93.70 m	
Reference angle	: 0.00	

Road data, segment # 4: GREENBANK S (day/night)

Car traffic volume	: 14168/1232	veh/TimePeriod
Medium truck volume	: 1127/98	veh/TimePeriod

```
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 116.40 / 116.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   1.18 m
Reference angle           :   0.00


Road data, segment # 5: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -11.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 116.40 / 116.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -11.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  94.78 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.70 m
Reference angle           :   0.00


Road data, segment # 6: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
```

```
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 151.60 / 151.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   1.08 m
Reference angle           :   0.00


Road data, segment # 7: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 7: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           : -11.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 151.60 / 151.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -11.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  94.68 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.70 m
Reference angle           :   0.00


Result summary (day)
--------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.JOCKVALE         !     1.50 !    43.31 !    43.31
 2.JOCKVALE         !     1.50 !    63.55 !    63.55
 3.JOCKVALE         !     1.50 !    41.74 !    41.74
```

4.GREENBANK S	1.50	51.58	51.58
5.GREENBANK S	1.50	42.45	42.45
6.GREENBANK N	1.50	57.62	57.62
7.GREENBANK N	1.50	44.68	44.68
Total			64.87 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	40.19	40.19
2.JOCKVALE	1.50	56.13	56.13
3.JOCKVALE	1.50	36.77	36.77
4.GREENBANK S	1.50	44.97	44.97
5.GREENBANK S	1.50	41.22	41.22
6.GREENBANK N	1.50	50.03	50.03
7.GREENBANK N	1.50	42.57	42.57
Total			57.70 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg -11.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 134.00 / 134.00 m
Receiver height : 1.50 / 4.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.65 m
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 2: GBANK (day/night)

```
Angle1   Angle2           : -11.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 134.00 / 134.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -11.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  95.25 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.70 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	33.85	33.85
2.GBANK	0.50	24.72	24.72
Total			34.35 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	28.87	28.87
2.GBANK	0.50	25.14	25.14
Total			30.40 dBA

```
TOTAL Leq FROM ALL SOURCES (DAY): 64.88
                           (NIGHT): 57.71
```

STAMSON 5.0 SUMMARY REPORT Date: 02-01-2018 18:30:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola7unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -4.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	64.80 / 64.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -4.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	25.00 / 25.00 m
Source elevation	:	93.51 m
Receiver elevation	:	93.60 m
Barrier elevation	:	93.67 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	:	-4.00 deg 11.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	64.80 / 64.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	1 (Flat/gentle slope; no barrier)
Reference angle	:	0.00

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod
Medium truck volume	:	515/45 veh/TimePeriod
Heavy truck volume	:	368/32 veh/TimePeriod
Posted speed limit	:	60 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	:	11.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	64.80 / 64.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	11.00 deg Angle2 : 90.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	25.00 / 25.00 m
Source elevation	:	93.51 m
Receiver elevation	:	93.60 m
Barrier elevation	:	95.70 m
Reference angle	:	0.00

Road data, segment # 4: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod
Medium truck volume	:	1127/98 veh/TimePeriod

```
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   22.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 120.40 / 120.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : 22.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  96.13 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.67 m
Reference angle           :   0.00


Road data, segment # 5: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           :  22.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 120.40 / 120.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   2.53 m
Reference angle           :   0.00


Road data, segment # 6: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
```

```
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 6: GREENBANK S (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   22.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 155.60 / 155.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : 22.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  96.11 m
Receiver elevation        :  93.60 m
Barrier elevation         :  93.67 m
Reference angle           :   0.00


Road data, segment # 7: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 7: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           :  22.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 155.60 / 155.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   2.51 m
Reference angle           :   0.00


Result summary (day)
--------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.JOCKVALE         !     1.50 !    42.75 !    42.75
 2.JOCKVALE         !     1.50 !    45.91 !    45.91
 3.JOCKVALE         !     1.50 !    40.20 !    40.20
```

4.GREENBANK S	1.50	42.43	42.43
5.GREENBANK S	1.50	50.86	50.86
6.GREENBANK S	1.50	40.97	40.97
7.GREENBANK N	1.50	49.08	49.08
Total			54.79 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	38.85	38.85
2.JOCKVALE	1.50	38.89	38.89
3.JOCKVALE	1.50	35.49	35.49
4.GREENBANK S	1.50	41.62	41.62
5.GREENBANK S	1.50	44.31	44.31
6.GREENBANK S	1.50	40.33	40.33
7.GREENBANK N	1.50	42.64	42.64
Total			49.52 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg 22.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 138.00 / 138.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 22.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 9.00 / 9.00 m
Source elevation : 96.58 m
Receiver elevation : 93.60 m
Barrier elevation : 93.70 m
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 2: GBANK (day/night)

Angle1 Angle2	: 22.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 138.00 / 138.00 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 3	(Elevated; no barrier)
Elevation	: 2.88 m	
Reference angle	: 0.00	

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	24.66	24.66
2.GBANK	0.50	33.13	33.13
Total			33.71 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	25.43	25.43
2.GBANK	0.50	28.21	28.21
Total			30.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.82
(NIGHT): 49.57

STAMSON 5.0 SUMMARY REPORT Date: 02-01-2018 19:30:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola8unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -53.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	17.80 / 17.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -53.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	4.00 / 4.00 m
Source elevation	:	93.55 m
Receiver elevation	:	93.70 m
Barrier elevation	:	93.85 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	: -53.00 deg	72.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 17.80 / 17.80	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod
Medium truck volume	: 515/45	veh/TimePeriod
Heavy truck volume	: 368/32	veh/TimePeriod
Posted speed limit	: 60	km/h
Road gradient	: 1	%
Road pavement	: 1	(Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	: 72.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 17.80 / 17.80	m
Receiver height	: 1.50 / 4.50	m
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: 72.00 deg	Angle2 : 90.00 deg
Barrier height	: 6.00	m
Barrier receiver distance	: 10.70 / 10.70	m
Source elevation	: 93.55	m
Receiver elevation	: 93.70	m
Barrier elevation	: 93.65	m
Reference angle	: 0.00	

Result summary (day)

	source	Road	Total

	height (m)	Leq (dBA)	Leq (dBA)
1.JOCKVALE	1.50	43.28	43.28
2.JOCKVALE	1.50	63.79	63.79
3.JOCKVALE	1.50	42.27	42.27
Total			63.86 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	40.00	40.00
2.JOCKVALE	1.50	56.34	56.34
3.JOCKVALE	1.50	37.27	37.27
Total			56.49 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.86
(NIGHT): 56.49

STAMSON 5.0 SUMMARY REPORT Date: 03-01-2018 01:58:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola9unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -30.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	28.80 / 28.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -30.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	12.70 / 12.70 m
Source elevation	:	93.60 m
Receiver elevation	:	94.00 m
Barrier elevation	:	94.10 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	:	-30.00 deg 58.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	28.80 / 28.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	1 (Flat/gentle slope; no barrier)
Reference angle	:	0.00

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod
Medium truck volume	:	515/45 veh/TimePeriod
Heavy truck volume	:	368/32 veh/TimePeriod
Posted speed limit	:	60 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	:	58.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	28.80 / 28.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	58.00 deg Angle2 : 90.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	5.00 / 5.00 m
Source elevation	:	93.60 m
Receiver elevation	:	94.00 m
Barrier elevation	:	94.10 m
Reference angle	:	0.00

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	43.79	43.79
2.JOCKVALE	1.50	59.07	59.07
3.JOCKVALE	1.50	40.99	40.99
Total			59.26 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	39.44	39.44
2.JOCKVALE	1.50	51.78	51.78
3.JOCKVALE	1.50	38.16	38.16
Total			52.20 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.26
(NIGHT): 52.20

STAMSON 5.0 SUMMARY REPORT Date: 03-01-2018 02:05:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola10una.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg -27.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	34.50 / 34.50 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -27.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	12.90 / 12.90 m
Source elevation	:	93.61 m
Receiver elevation	:	93.90 m
Barrier elevation	:	94.10 m
Reference angle	:	0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	: -27.00 deg	2.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 34.50 / 34.50	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod
Medium truck volume	: 515/45	veh/TimePeriod
Heavy truck volume	: 368/32	veh/TimePeriod
Posted speed limit	: 60	km/h
Road gradient	: 1	%
Road pavement	: 1	(Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	: 2.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 34.50 / 34.50	m
Receiver height	: 1.50 / 4.50	m
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: 2.00 deg	Angle2 : 90.00 deg
Barrier height	: 6.00	m
Barrier receiver distance	: 6.50 / 6.50	m
Source elevation	: 93.61	m
Receiver elevation	: 93.90	m
Barrier elevation	: 94.10	m
Reference angle	: 0.00	

Result summary (day)

	source	Road	Total

	height (m)	Leq (dBA)	Leq (dBA)
1.JOCKVALE	1.50	43.25	43.25
2.JOCKVALE	1.50	53.23	53.23
3.JOCKVALE	1.50	42.96	42.96
Total			54.00 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	39.27	39.27
2.JOCKVALE	1.50	45.98	45.98
3.JOCKVALE	1.50	40.26	40.26
Total			47.69 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.00
(NIGHT): 47.69

STAMSON 5.0 SUMMARY REPORT Date: 10-01-2018 15:42:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola11una.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod *
Medium truck volume	: 515/45	veh/TimePeriod *
Heavy truck volume	: 368/32	veh/TimePeriod *
Posted speed limit	: 60	km/h
Road gradient	: 1	%
Road pavement	: 1	(Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	: 8000
Percentage of Annual Growth	: 0.00
Number of Years of Growth	: 0.00
Medium Truck % of Total Volume	: 7.00
Heavy Truck % of Total Volume	: 5.00
Day (16 hrs) % of Total Volume	: 92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 1 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 74.30 / 77.00	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	: 14168/1232	veh/TimePeriod
Medium truck volume	: 1127/98	veh/TimePeriod
Heavy truck volume	: 805/70	veh/TimePeriod
Posted speed limit	: 60	km/h
Road gradient	: 1	%
Road pavement	: 1	(Typical asphalt or concrete)

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2	: -90.00 deg	-10.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 50.30 / 50.30	m

```
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.75 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.30 / 50.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.60 / 85.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
```

```
Barrier height            :   6.00 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :  93.80 m
Receiver elevation        :  93.75 m
Barrier elevation         :  93.95 m
Reference angle           :   0.00
```

```
Road data, segment # 5: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 5: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.60 / 85.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Result summary (day)
--------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	52.27	52.27
2.GREENBANK S	1.50	43.41	43.41
3.GREENBANK S	1.50	58.10	58.10
4.GREENBANK N	1.50	40.53	40.53
5.GREENBANK N	1.50	54.27	54.27
Total			60.47 dBA

```
Result summary (night)
----------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	47.22	47.22

2.GREENBANK S	!	1.50 !	41.48 !	41.48
3.GREENBANK S	!	1.50 !	51.11 !	51.11
4.GREENBANK N	!	1.50 !	39.10 !	39.10
5.GREENBANK N	!	1.50 !	47.48 !	47.48
		Total		54.15 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg -10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.80 / 67.80 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -10.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 4.00 / 4.00 m
Source elevation : 94.22 m
Receiver elevation : 93.75 m
Barrier elevation : 93.95 m
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 2: GBANK (day/night)

Angle1 Angle2 : -10.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.80 / 67.80 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	25.51	25.51
2.GBANK	0.50	39.97	39.97
Total			40.12 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	25.39	25.39
2.GBANK	0.50	34.43	34.43
Total			34.94 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.51
(NIGHT): 54.20

STAMSON 5.0 SUMMARY REPORT Date: 18-04-2018 11:43:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola12una.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: STREET 1 (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod *
Medium truck volume	: 515/45	veh/TimePeriod *
Heavy truck volume	: 368/32	veh/TimePeriod *
Posted speed limit	: 50 km/h	
Road gradient	: 1 %	
Road pavement	: 1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	: 8000
Percentage of Annual Growth	: 0.00
Number of Years of Growth	: 0.00
Medium Truck % of Total Volume	: 7.00
Heavy Truck % of Total Volume	: 5.00
Day (16 hrs) % of Total Volume	: 92.00

Data for Segment # 1: STREET 1 (day/night)

Angle1 Angle2	: -90.00 deg	-54.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 17.10 / 17.10	m
Receiver height	: 1.50 / 4.50	m
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: -90.00 deg	Angle2 : -54.00 deg
Barrier height	: 6.00 m	
Barrier receiver distance	: 4.00 / 4.00	m
Source elevation	: 93.61 m	
Receiver elevation	: 94.05 m	
Barrier elevation	: 94.15 m	
Reference angle	: 0.00	

Road data, segment # 2: STREET 1 (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod *
Medium truck volume	: 515/45	veh/TimePeriod *
Heavy truck volume	: 368/32	veh/TimePeriod *
Posted speed limit	: 50 km/h	
Road gradient	: 1 %	
Road pavement	: 1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: STREET 1 (day/night)

Angle1 Angle2	: -54.00 deg	75.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 17.10 / 17.10	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 3: STREET 1 (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod
Medium truck volume	: 515/45	veh/TimePeriod
Heavy truck volume	: 368/32	veh/TimePeriod
Posted speed limit	: 50	km/h
Road gradient	: 1	%
Road pavement	: 1	(Typical asphalt or concrete)

Data for Segment # 3: STREET 1 (day/night)

Angle1 Angle2	: 75.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 17.10 / 17.10	m
Receiver height	: 1.50 / 4.50	m
Topography	: 2	(Flat/gentle slope; with barrier)
Barrier angle1	: 75.00 deg	Angle2 : 90.00 deg
Barrier height	: 6.00	m
Barrier receiver distance	: 3.00 / 3.00	m
Source elevation	: 93.61	m
Receiver elevation	: 94.05	m
Barrier elevation	: 94.15	m
Reference angle	: 0.00	

Result summary (day)

	source	Road	Total

	height (m)	Leq (dBA)	Leq (dBA)
1.STREET 1	1.50	41.84	41.84
2.STREET 1	1.50	62.64	62.64
3.STREET 1	1.50	39.31	39.31
Total			62.70 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	38.50	38.50
2.STREET 1	1.50	55.19	55.19
3.STREET 1	1.50	36.00	36.00
Total			55.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.70
(NIGHT): 55.33

STAMSON 5.0 SUMMARY REPORT Date: 18-04-2018 12:57:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola13una.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: STREET 1 (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	50 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: STREET 1 (day/night)

Angle1 Angle2	:	-22.00 deg	-18.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	44.20 / 44.20	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: STREET 1 (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	50 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00

```
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: STREET 1 (day/night)
-------------------------------------------
Angle1   Angle2           : -18.00 deg   1.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  44.20 / 44.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -18.00 deg   Angle2 : 1.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.20 / 10.20  m
Source elevation          :  93.82 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.99 m
Reference angle           :   0.00


Road data, segment # 3: JOCKVALE (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)
-------------------------------------------
Angle1   Angle2           : -22.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: JOCKVALE (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: JOCKVALE (day/night)
-------------------------------------------
```

```
Angle1   Angle2           : -18.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -18.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.20 / 10.20  m
Source elevation          :  93.70 m
Receiver elevation        :  93.90 m
Barrier elevation         :  93.99 m
Reference angle           :   0.00
```

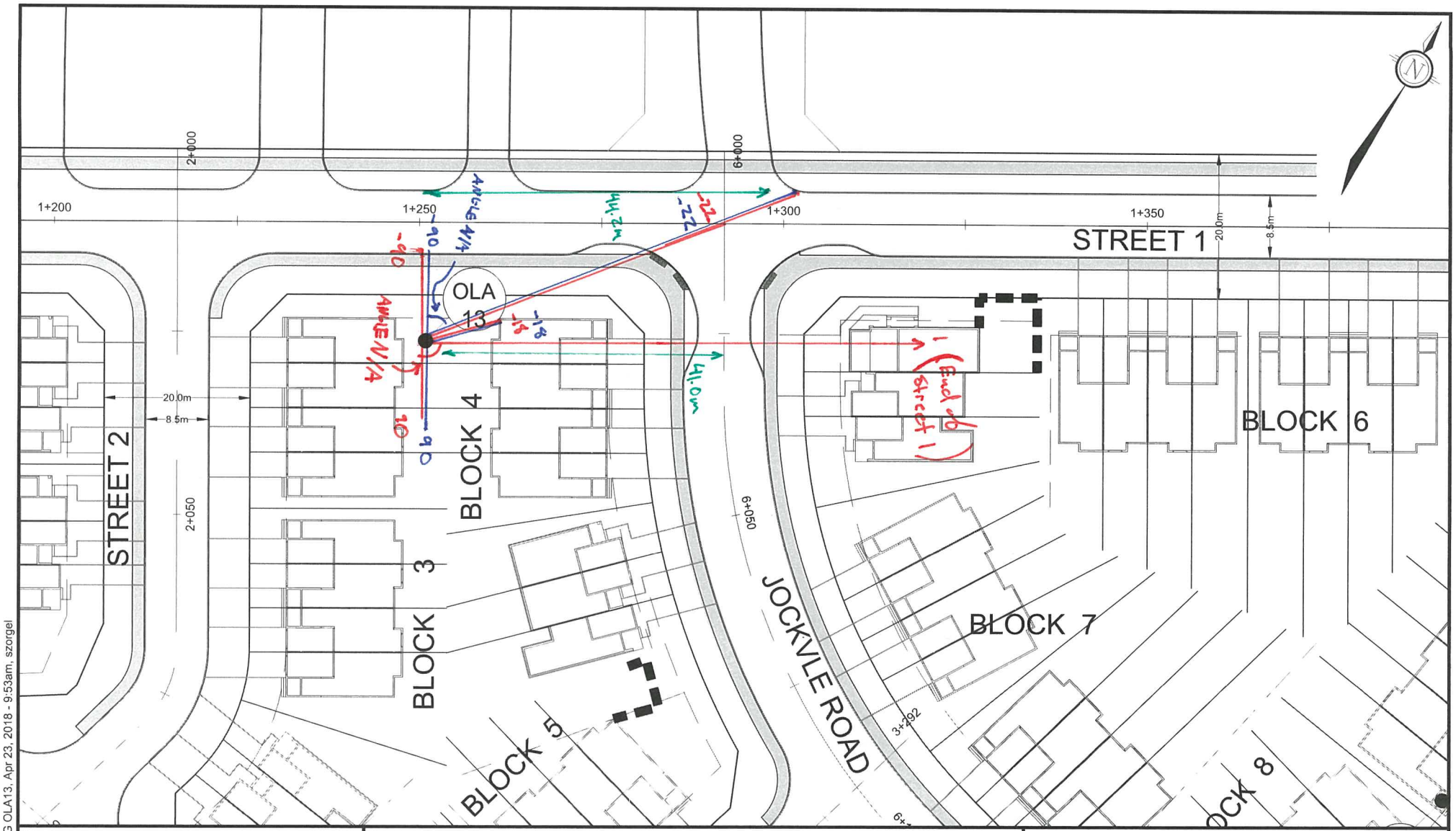
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	41.25	41.25
2.STREET 1	1.50	31.15	31.15
3.JOCKVALE	1.50	43.31	43.31
4.JOCKVALE	1.50	43.68	43.68
Total			47.74 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	34.10	34.10
2.STREET 1	1.50	29.75	29.75
3.JOCKVALE	1.50	36.13	36.13
4.JOCKVALE	1.50	40.85	40.85
Total			42.96 dBA

```
TOTAL Leq FROM ALL SOURCES (DAY): 47.74
                           (NIGHT): 42.96
```



NOVATECH

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BURNETT LANDS
3370 GREENBANK ROAD

OUTDOOR LIVING AREA RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-OLA13

SHT8X11.DWG - 216mmx279mm

C:\Temp\AcPublish_5684\111117-Angles.dwg, FIG OLA13, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 17-04-2018 11:34:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola14una.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: STREET 1 (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	50 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: STREET 1 (day/night)

Angle1 Angle2	:	-90.00 deg 37.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	34.00 / 34.00 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : 37.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	3.00 / 3.00 m
Source elevation	:	93.58 m
Receiver elevation	:	93.95 m
Barrier elevation	:	94.05 m
Reference angle	:	0.00

Road data, segment # 2: STREET 1 (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	50 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	8000
Percentage of Annual Growth	0.00
Number of Years of Growth	0.00
Medium Truck % of Total Volume	7.00
Heavy Truck % of Total Volume	5.00
Day (16 hrs) % of Total Volume	92.00

Data for Segment # 2: STREET 1 (day/night)

Angle1 Angle2	37.00 deg	60.00 deg
Wood depth	0	(No woods.)
No of house rows	0 / 0	
Surface	1	(Absorptive ground surface)
Receiver source distance	34.00 / 34.00	m
Receiver height	1.50 / 4.50	m
Topography	1	(Flat/gentle slope; no barrier)
Reference angle	0.00	

Road data, segment # 3: STREET 1 (day/night)

Car traffic volume	6477/563	veh/TimePeriod
Medium truck volume	515/45	veh/TimePeriod
Heavy truck volume	368/32	veh/TimePeriod
Posted speed limit	50	km/h
Road gradient	1	%
Road pavement	1	(Typical asphalt or concrete)

Data for Segment # 3: STREET 1 (day/night)

Angle1 Angle2	60.00 deg	90.00 deg
Wood depth	0	(No woods.)
No of house rows	0 / 0	
Surface	1	(Absorptive ground surface)
Receiver source distance	34.00 / 34.00	m
Receiver height	1.50 / 4.50	m
Topography	2	(Flat/gentle slope; with barrier)
Barrier angle1	60.00 deg	Angle2 : 90.00 deg
Barrier height	6.00	m
Barrier receiver distance	20.80 / 20.80	m
Source elevation	93.58	m
Receiver elevation	93.95	m
Barrier elevation	93.98	m
Reference angle	0.00	

Result summary (day)

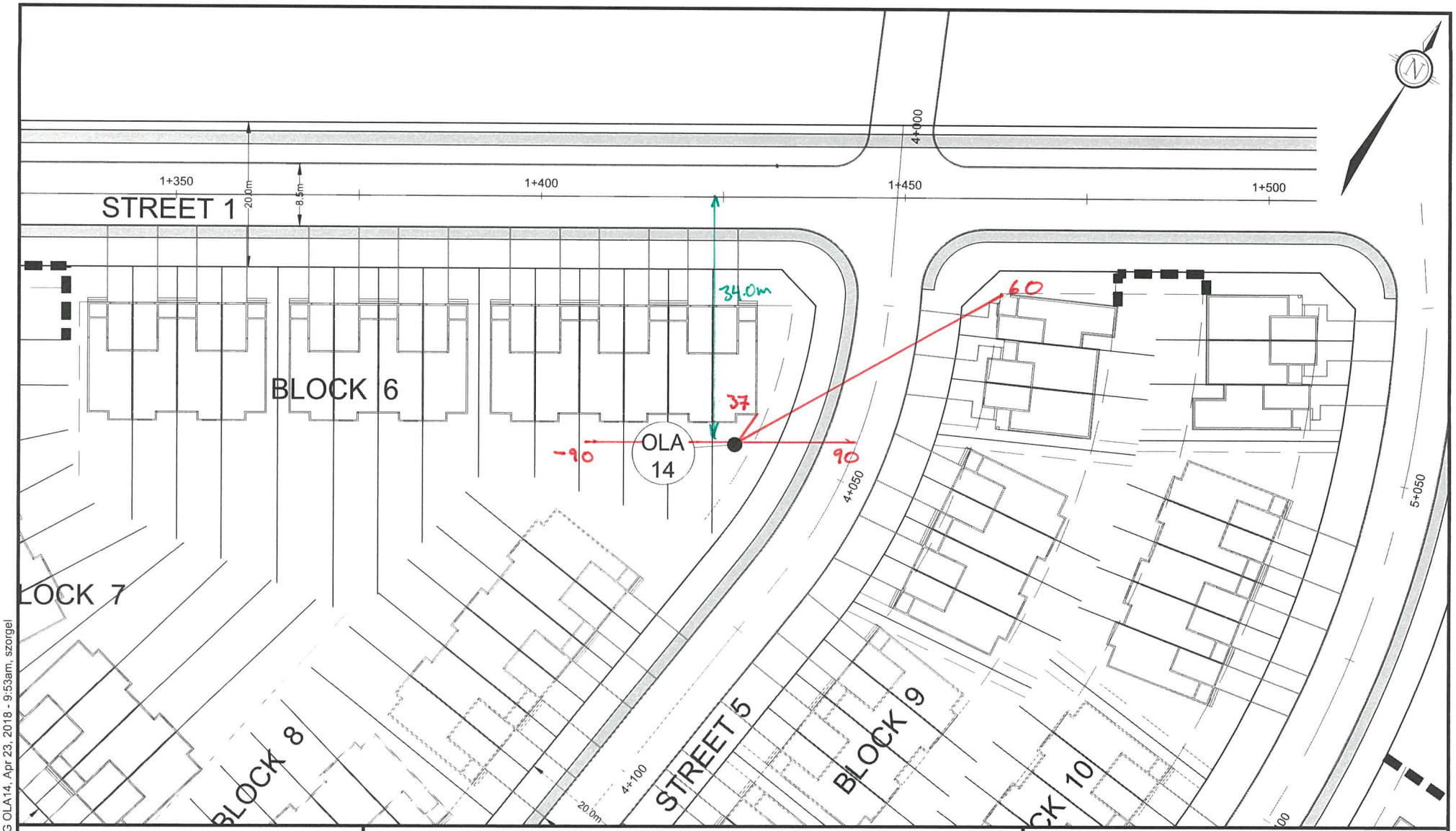
	source	Road	Total

	height (m)	Leq (dBA)	Leq (dBA)
1.STREET 1	1.50	41.56	41.56
2.STREET 1	1.50	49.71	49.71
3.STREET 1	1.50	39.96	39.96
Total			50.71 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	39.12	39.12
2.STREET 1	1.50	42.60	42.60
3.STREET 1	1.50	34.83	34.83
Total			44.68 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.71
(NIGHT): 44.68



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BURNETT LANDS
3370 GREENBANK ROAD

OUTDOOR LIVING AREA
RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-OLA14

SHT8X11.DWG - 216mmx279mm

C:\Temp\AcPublish_5684\111117-Angles.dwg, FIG OLA14, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 16-04-2018 13:02:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow1unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg	
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	77.10 / 77.10 m	
Receiver height	:	1.50 / 4.50 m	
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod	
Medium truck volume	:	1127/98 veh/TimePeriod	
Heavy truck volume	:	805/70 veh/TimePeriod	
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg	
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	15.00 / 15.00 m	

```
Receiver height           :   1.50 / 4.50   m
Topography                :      1        (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Road data, segment # 3: GREENBANK N (day/night)

```
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

Data for Segment # 3: GREENBANK N (day/night)

```
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  48.20 / 48.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	51.34	51.34
2.GREENBANK S	1.50	69.21	69.21
3.GREENBANK N	1.50	65.60	65.60
Total			70.83 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	47.21	47.21
2.GREENBANK S	1.50	61.77	61.77
3.GREENBANK N	1.50	58.00	58.00
Total			63.40 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 31.50 / 31.50	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	51.47	51.47
Total			51.47 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	45.45	45.45
Total			45.45 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.88
(NIGHT): 63.47

STAMSON 5.0 SUMMARY REPORT Date: 16-04-2018 13:36:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow2unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	78.50 / 78.50	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod	
Medium truck volume	:	1127/98 veh/TimePeriod	
Heavy truck volume	:	805/70 veh/TimePeriod	
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2	:	-90.00 deg	0.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	35.20 / 35.20	m

```
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   3.20 / 3.20   m
Source elevation          :  93.78 m
Receiver elevation        :  93.88 m
Barrier elevation         :  94.06 m
Reference angle           :   0.00


Road data, segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  35.20 / 35.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  70.20 / 70.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
```

```
Barrier height            :   6.00 m
Barrier receiver distance :   3.20 / 3.20   m
Source elevation          :  93.85 m
Receiver elevation        :  93.88 m
Barrier elevation         :  94.06 m
Reference angle           :   0.00
```

Road data, segment # 5: GREENBANK N (day/night)

```
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

Data for Segment # 5: GREENBANK N (day/night)

```
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  70.20 / 70.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	51.21	51.21
2.GREENBANK S	1.50	45.35	45.35
3.GREENBANK S	1.50	60.05	60.05
4.GREENBANK N	1.50	41.62	41.62
5.GREENBANK N	1.50	55.07	55.07
Total			61.80 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	47.09	47.09

2.GREENBANK S	!	1.50 !	42.91 !	42.91
3.GREENBANK S	!	1.50 !	52.94 !	52.94
4.GREENBANK N	!	1.50 !	39.92 !	39.92
5.GREENBANK N	!	1.50 !	48.23 !	48.23
	Total			55.36 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 53.10 / 53.10 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 3.20 / 3.20 m
Source elevation : 94.27 m
Receiver elevation : 93.88 m
Barrier elevation : 94.06 m
Reference angle : 0.00

RT/Custom data, segment # 2: GBANK (day/night)

1 - Bus:
Traffic volume : 0/0 veh/TimePeriod
Speed : 50 km/h

Data for Segment # 2: GBANK (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 53.10 / 53.10 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	26.89	26.89
2.GBANK	0.50	0.00	0.00
Total			26.89 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	26.43	26.43
2.GBANK	0.50	0.00	0.00
Total			26.43 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.80
(NIGHT): 55.37

STAMSON 5.0 SUMMARY REPORT Date: 16-04-2018 14:37:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow3unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	3 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	104.80 / 104.80 m
Receiver height	:	1.50 / 4.50 m
Topography	:	1 (Flat/gentle slope; no barrier)
Reference angle	:	0.00

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232	veh/TimePeriod
Medium truck volume	:	1127/98	veh/TimePeriod
Heavy truck volume	:	805/70	veh/TimePeriod
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	1 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	90.40 / 90.40 m

```
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Road data, segment # 3: GREENBANK N (day/night)

```
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

Data for Segment # 3: GREENBANK N (day/night)

```
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 120.20 / 120.20 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	41.27	41.27
2.GREENBANK S	1.50	53.61	53.61
3.GREENBANK N	1.50	51.61	51.61
Total			55.89 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	45.11	45.11
2.GREENBANK S	1.50	49.52	49.52
3.GREENBANK N	1.50	47.58	47.58
Total			52.53 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 1 / 1	
House density	: 50 %	
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 104.20 / 104.20 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

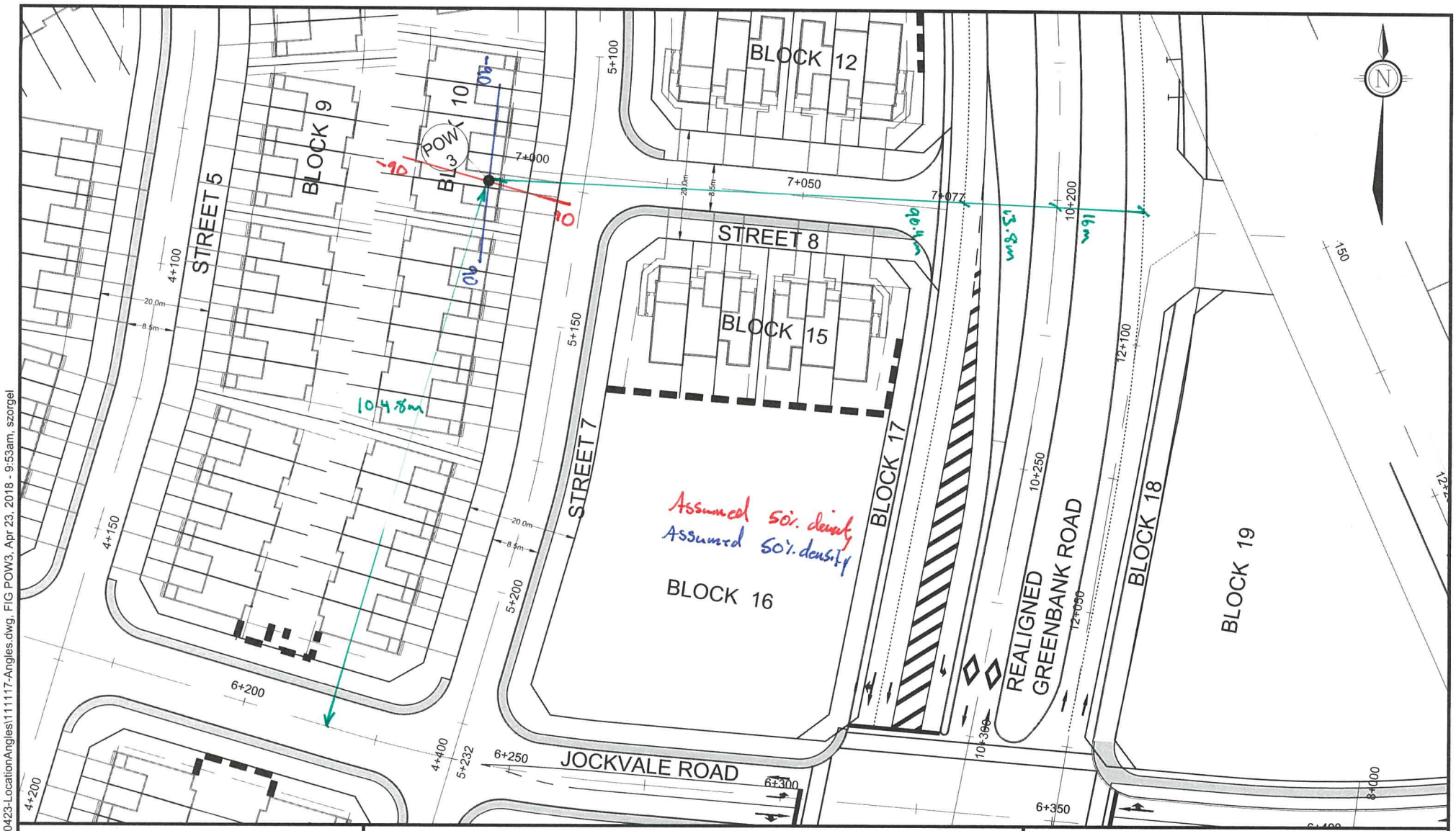
Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	43.65	43.65
Total			43.65 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	37.62	37.62
Total			37.62 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.14
(NIGHT): 52.67



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BURNETT LANDS
3370 GREENBANK ROAD

PLANE OF WINDOW RECEIVER ANGLES

SCALE 1 : 1000 (0, 10, 20, 30, 40)

DATE	JOB	FIGURE
APR 2018	111117	FIG-POW3

SHT8X11.DWG - 216mmx279mm

M:\2011\111117\CAD\Design\Figures\Noise\20180423-LocationAngles\111117-Angles.dwg, FIG POW3, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 24-04-2018 08:32:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow4unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: STREET 1 (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: STREET 1 (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	15.00 / 15.00	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232	veh/TimePeriod
Medium truck volume	:	1127/98	veh/TimePeriod
Heavy truck volume	:	805/70	veh/TimePeriod
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 1	
House density	:	50 %	
Surface	:	1	(Absorptive ground surface)

```
Receiver source distance  :  93.10 / 93.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1        (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: GREENBANK N (day/night)
-----------------------------------------------
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 3: GREENBANK N (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 118.90 / 118.90 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Result summary (day)
--------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	65.81	65.81
2.GREENBANK S	1.50	53.40	53.40
3.GREENBANK N	1.50	51.68	51.68
Total			66.21 dBA

```
Result summary (night)
----------------------
```

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	58.37	58.37
2.GREENBANK S	1.50	46.67	46.67
3.GREENBANK N	1.50	45.05	45.05

Total 58.84 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 1 / 1	
House density	: 50 %	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 106.20 / 104.20 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

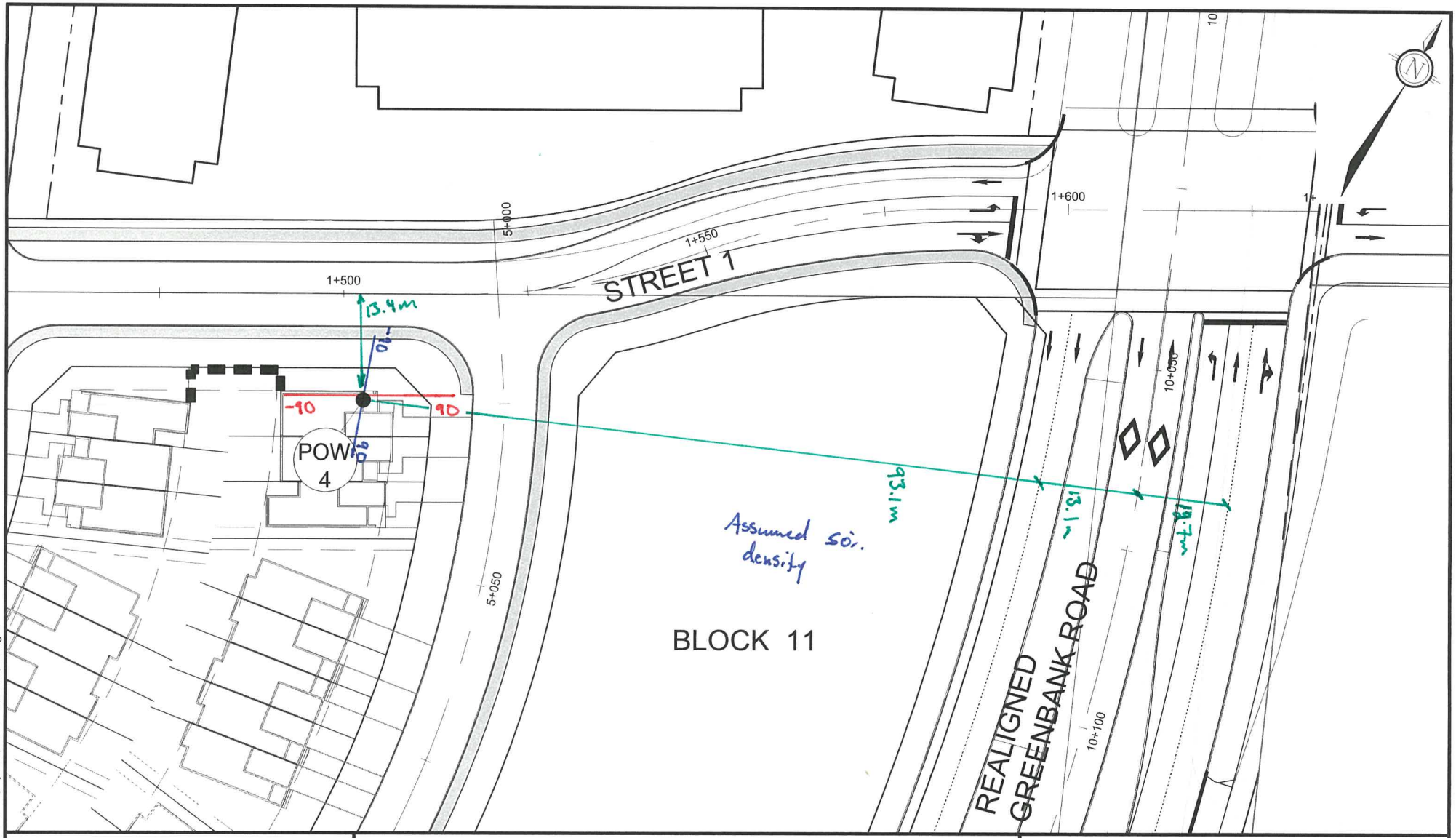
Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	36.50	36.50
Total			36.50 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	31.22	31.22
Total			31.22 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.21
(NIGHT): 58.85



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BURNETT LANDS
3370 GREENBANK ROAD

PLANE OF WINDOW RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-POW4

SHT8X11.DWG - 216mmx279mm

C:\Temp\AcPublish_5684\111117-Angles.dwg, FIG POW4, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 16-04-2018 15:42:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow5unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	15.60 / 15.60	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod	
Medium truck volume	:	1127/98 veh/TimePeriod	
Heavy truck volume	:	805/70 veh/TimePeriod	
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

Data for Segment # 2: GREENBANK S (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 1	
House density	:	50 %	
Surface	:	1	(Absorptive ground surface)

```
Receiver source distance  :  93.20 / 93.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1        (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Road data, segment # 3: GREENBANK N (day/night)

```
Car traffic volume  : 14168/1232  veh/TimePeriod
Medium truck volume :  1127/98    veh/TimePeriod
Heavy truck volume  :   805/70    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)
```

Data for Segment # 3: GREENBANK N (day/night)

```
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 128.50 / 128.50 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	65.53	65.53
2.GREENBANK S	1.50	53.40	53.40
3.GREENBANK N	1.50	51.13	51.13
Total			65.93 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	58.10	58.10
2.GREENBANK S	1.50	46.67	46.67
3.GREENBANK N	1.50	44.53	44.53
Total			58.58 dBA

RT/Custom data, segment # 1: GBANK (day/night)

1 - Bus:
Traffic volume : 128/16 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: GBANK (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 1 / 1	
House density	: 50 %	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 110.90 / 110.90 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	36.20	36.20
Total			36.20 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	30.80	30.80
Total			30.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.94
(NIGHT): 58.58

STAMSON 5.0 SUMMARY REPORT Date: 16-04-2018 15:42:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow6unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 43.40 / 43.40 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 3.20 / 3.20 m
Source elevation : 93.36 m
Receiver elevation : 93.57 m
Barrier elevation : 93.62 m
Reference angle : 0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	:	0.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	43.40 / 43.40	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 3: GREENBANK S (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod
Medium truck volume	:	1127/98 veh/TimePeriod
Heavy truck volume	:	805/70 veh/TimePeriod
Posted speed limit	:	60 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 3: GREENBANK S (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 1	
House density	:	50 %	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	94.10 / 94.10	m
Receiver height	:	1.50 / 4.50	m
Topography	:	3	(Elevated; no barrier)
Elevation	:	1.50 m	
Reference angle	:	0.00	

Road data, segment # 4: GREENBANK N (day/night)

Car traffic volume	:	14168/1232 veh/TimePeriod
Medium truck volume	:	1127/98 veh/TimePeriod
Heavy truck volume	:	805/70 veh/TimePeriod
Posted speed limit	:	60 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 4: GREENBANK N (day/night)

```
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 129.40 / 129.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   1.50 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	40.93	40.93
2.JOCKVALE	1.50	53.94	53.94
3.GREENBANK S	1.50	53.76	53.76
4.GREENBANK N	1.50	51.58	51.58
Total			58.07 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	39.03	39.03
2.JOCKVALE	1.50	48.12	48.12
3.GREENBANK S	1.50	47.04	47.04
4.GREENBANK N	1.50	44.98	44.98
Total			51.90 dBA

RT/Custom data, segment # 1: GBANK (day/night)

```
1 - Bus:
Traffic volume    :   128/16    veh/TimePeriod
Speed             :    60 km/h
```

Data for Segment # 1: GBANK (day/night)

```
Angle1   Angle2           : -90.00 deg   90.00 deg
```

Wood depth	: 0	(No woods.)
No of house rows	: 1 / 1	
House density	: 50 %	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 111.70 / 111.70 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 3	(Elevated; no barrier)
Elevation	: 1.50 m	
Reference angle	: 0.00	

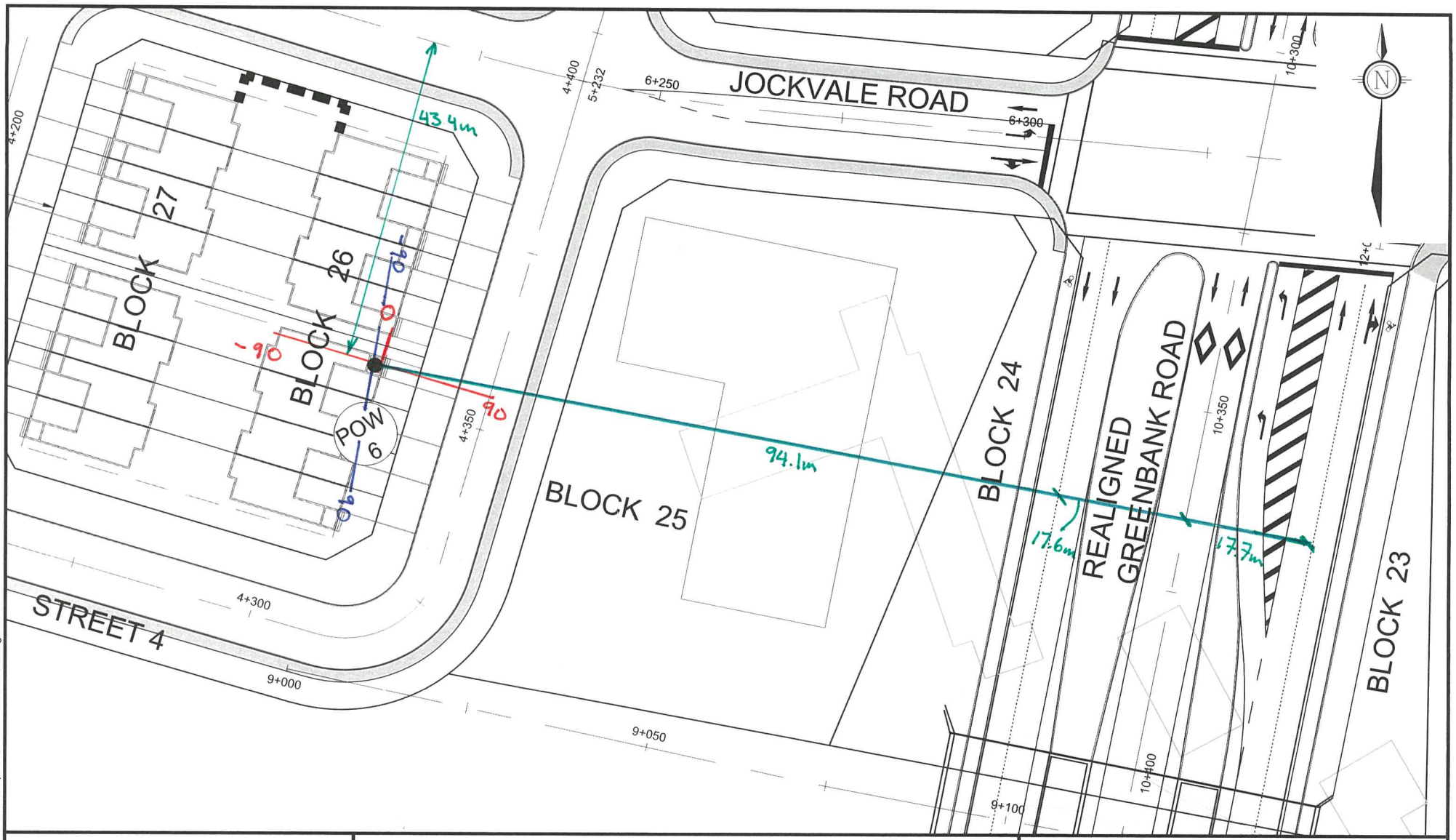
Result summary (day)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	36.30	36.30
Total			36.30 dBA

Result summary (night)

	source height (m)	Gen Leq (dBA)	Total Leq (dBA)
1.GBANK	0.50	31.22	31.22
Total			31.22 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.10
(NIGHT): 51.94



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BURNETT LANDS
3370 GREENBANK ROAD

PLANE OF WINDOW RECEIVER ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
APR 2018	111117	FIG-POW6

SHT8X11.DWG - 216mmx279mm

C:\Temp\AcPublish_5684\111117-Angles.dwg, FIG POW6, Apr 23, 2018 - 9:53am, szorgel

STAMSON 5.0 SUMMARY REPORT Date: 17-04-2018 08:45:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow7unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	60 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	15.00 / 15.00	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Result summary (day)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	65.81	65.81
Total			65.81 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	58.37	58.37
Total			58.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.81
(NIGHT): 58.37

STAMSON 5.0 SUMMARY REPORT Date: 17-04-2018 08:53:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow8unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: JOCKVALE (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.30 / 42.30 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 3.20 / 3.20 m
Source elevation : 93.50 m
Receiver elevation : 93.54 m
Barrier elevation : 93.59 m
Reference angle : 0.00

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	:	0.00 deg 49.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	42.30 / 42.30 m
Receiver height	:	1.50 / 4.50 m
Topography	:	1 (Flat/gentle slope; no barrier)
Reference angle	:	0.00

Road data, segment # 3: JOCKVALE (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod
Medium truck volume	:	515/45 veh/TimePeriod
Heavy truck volume	:	368/32 veh/TimePeriod
Posted speed limit	:	60 km/h
Road gradient	:	1 %
Road pavement	:	1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)

Angle1 Angle2	:	49.00 deg 90.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	1 (Absorptive ground surface)
Receiver source distance	:	42.30 / 42.30 m
Receiver height	:	1.50 / 4.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	49.00 deg Angle2 : 90.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	26.80 / 26.80 m
Source elevation	:	93.50 m
Receiver elevation	:	93.54 m
Barrier elevation	:	93.55 m
Reference angle	:	0.00

Result summary (day)

	source	Road	Total

	height (m)	Leq (dBA)	Leq (dBA)
1.JOCKVALE	1.50	41.08	41.08
2.JOCKVALE	1.50	53.78	53.78
3.JOCKVALE	1.50	41.92	41.92
	Total		54.27 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.JOCKVALE	1.50	39.18	39.18
2.JOCKVALE	1.50	46.64	46.64
3.JOCKVALE	1.50	36.75	36.75
	Total		47.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.27
(NIGHT): 47.72

STAMSON 5.0 SUMMARY REPORT Date: 17-04-2018 10:42:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow9unat.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: STREET 1 (day/night)

Car traffic volume	:	6477/563	veh/TimePeriod *
Medium truck volume	:	515/45	veh/TimePeriod *
Heavy truck volume	:	368/32	veh/TimePeriod *
Posted speed limit	:	50	km/h
Road gradient	:	1	%
Road pavement	:	1	(Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: STREET 1 (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	15.20 / 15.20	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Result summary (day)
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	64.20	64.20
Total			64.20 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	56.76	56.76
Total			56.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.20
(NIGHT): 56.76

STAMSON 5.0 SUMMARY REPORT Date: 17-04-2018 11:36:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow10una.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: STREET 1 (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	50 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: STREET 1 (day/night)

Angle1 Angle2	:	39.00 deg	47.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	80.50 / 80.50	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: STREET 1 (day/night)

Car traffic volume	:	6477/563 veh/TimePeriod	*
Medium truck volume	:	515/45 veh/TimePeriod	*
Heavy truck volume	:	368/32 veh/TimePeriod	*
Posted speed limit	:	50 km/h	
Road gradient	:	1 %	
Road pavement	:	1 (Typical asphalt or concrete)	

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	:	8000
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00

```
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: STREET 1 (day/night)
------------------------------------------
Angle1   Angle2           :  47.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  80.50 / 80.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  47.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  35.00 / 35.00  m
Source elevation          :  93.77 m
Receiver elevation        :  93.95 m
Barrier elevation         :  93.98 m
Reference angle           :   0.00


Road data, segment # 3: JOCKVALE (day/night)
--------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: JOCKVALE (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   -36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  56.50 / 56.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -36.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  21.40 / 21.40  m
Source elevation          :  93.47 m
Receiver elevation        :  93.95 m
Barrier elevation         :  93.87 m
Reference angle           :   0.00


Road data, segment # 4: JOCKVALE (day/night)
--------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
```

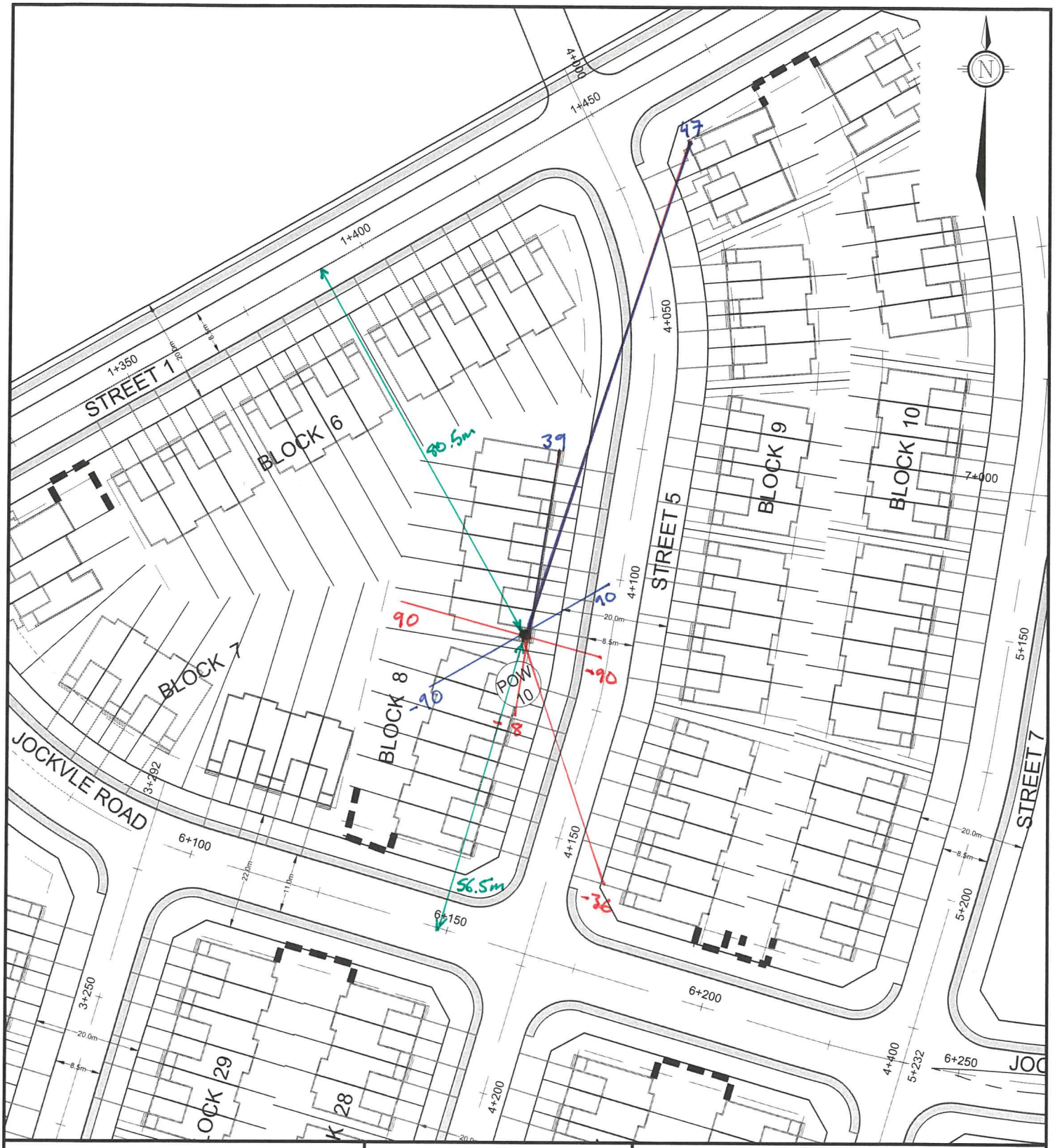
```
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: JOCKVALE (day/night)
------------------------------------------
Angle1   Angle2           : -36.00 deg   -8.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  56.50 / 56.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 5: JOCKVALE (day/night)
------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod
Medium truck volume :   515/45    veh/TimePeriod
Heavy truck volume  :   368/32    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: JOCKVALE (day/night)
------------------------------------------
Angle1   Angle2           :  -8.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  56.50 / 56.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  -8.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   3.20 / 3.20   m
Source elevation          :  93.47 m
Receiver elevation        :  93.95 m
Barrier elevation         :  93.87 m
Reference angle           :   0.00


Result summary (day)
--------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.STREET 1         !     1.50 !    39.22 !    39.22
```

2.STREET 1	1.50	38.72	38.72
3.JOCKVALE	1.50	41.83	41.83
4.JOCKVALE	1.50	49.38	49.38
5.JOCKVALE	1.50	39.83	39.83
Total			51.05 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	32.40	32.40
2.STREET 1	1.50	34.29	34.29
3.JOCKVALE	1.50	37.84	37.84
4.JOCKVALE	1.50	42.34	42.34
5.JOCKVALE	1.50	38.51	38.51
Total			45.41 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.05
(NIGHT): 45.41



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BURNETT LANDS
3370 GREENBANK ROAD

PLANE OF WINDOW RECEIVER ANGLES

SCALE 1 : 1000 (0 10 20 30 40)

DATE	JOB	FIGURE
APR 2018	111117	FIG-POW10

STAMSON 5.0 SUMMARY REPORT Date: 17-04-2018 13:41:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow11una.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: STREET 1 (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod
Medium truck volume	: 515/45	veh/TimePeriod
Heavy truck volume	: 368/32	veh/TimePeriod
Posted speed limit	: 50 km/h	
Road gradient	: 1 %	
Road pavement	: 1 (Typical asphalt or concrete)	

Data for Segment # 1: STREET 1 (day/night)

Angle1 Angle2	: -50.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 15.00 / 15.00	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 2: JOCKVALE (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod	*
Medium truck volume	: 515/45	veh/TimePeriod	*
Heavy truck volume	: 368/32	veh/TimePeriod	*
Posted speed limit	: 60 km/h		
Road gradient	: 1 %		
Road pavement	: 1 (Typical asphalt or concrete)		

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT)	: 8000
Percentage of Annual Growth	: 0.00
Number of Years of Growth	: 0.00
Medium Truck % of Total Volume	: 7.00
Heavy Truck % of Total Volume	: 5.00
Day (16 hrs) % of Total Volume	: 92.00

Data for Segment # 2: JOCKVALE (day/night)

Angle1 Angle2	: -90.00 deg	40.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 17.20 / 17.20	m

Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	63.62	63.62
2.JOCKVALE	1.50	63.82	63.82
Total			66.73 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.STREET 1	1.50	56.14	56.14
2.JOCKVALE	1.50	56.39	56.39
Total			59.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.73
(NIGHT): 59.28