

# Environmental Impact Assessment

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October 2020

## India: Bengaluru Metro Rail Project

Phase 2B (Airport Metro Line)

KR Puram to Kempegowda International Airport

Volume 9

Annex 5

## NOTES

- (i) The fiscal year (FY) of the Government of India and its agencies ends on 31 March. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2019 ends on 31 March 2019.
- (ii) In this report, "\$" refers to United States dollars.

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## KR Puram to Kempegowda International Airport

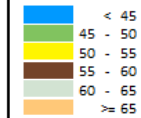
Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRC Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)

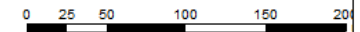


#### Signs and symbols

- Wall
- Construction Equip
- Main building
- ★ Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- + Elevation point
- Bodeneffekte
- Noise calculation area



Length scale 1:2727





## KR Puram to Kempegowda International Airport

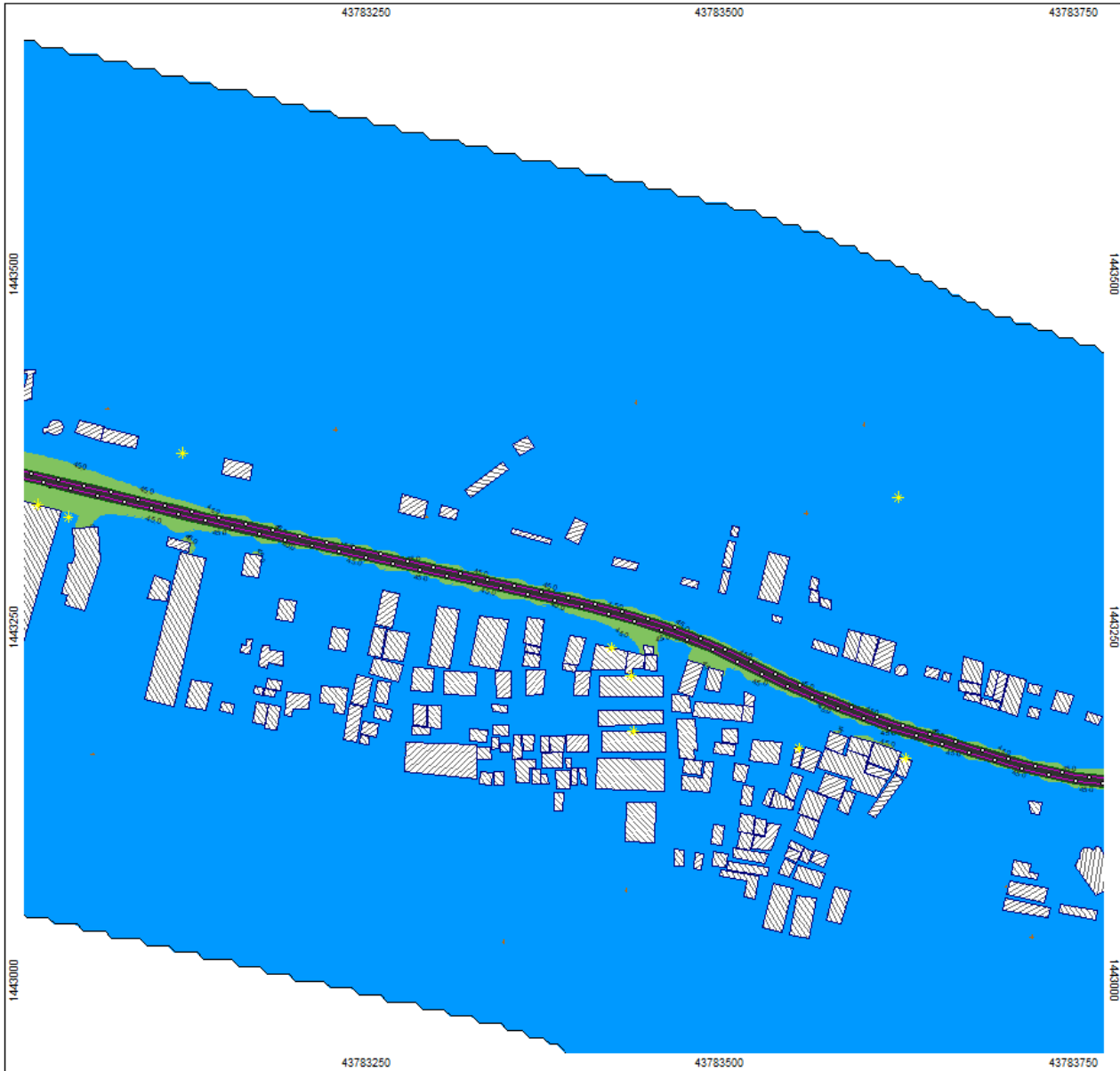
Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from BMRB SoundPLAN 8.1 Library and BMRB Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,d Calculation in: 1.5 m above ground.

Project engineer: CMR  
 Created: 9/11/2018  
 Processed with SoundPLAN 8.1, Update: 10/23/2018

<b>Levels Leq,d</b> in dB(A)	<b>Signs and symbols</b>
<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #0070C0; border: 1px solid black; margin-right: 5px;"></span> <math>\leq 45</math></li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #70AD47; border: 1px solid black; margin-right: 5px;"></span> 45 - 50</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFF00; border: 1px solid black; margin-right: 5px;"></span> 50 - 55</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; border: 1px solid black; margin-right: 5px;"></span> 55 - 60</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; border: 1px solid black; margin-right: 5px;"></span> 60 - 65</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; border: 1px solid black; margin-right: 5px;"></span> <math>\geq 65</math></li> </ul>	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid red; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid red; margin-right: 5px;"></span> Construction Site</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); margin-right: 5px;"></span> Main building</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid yellow; margin-right: 5px;"></span> Point receiver</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> +3dB(A) increase from</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid red; margin-right: 5px;"></span> Point source</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid magenta; margin-right: 5px;"></span> Line source</li> <li><b>Geometry blocks:</b></li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid green; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid green; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid red; margin-right: 5px;"></span> Elevation point</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Buffer/reflector</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Noise reduction zone</li> </ul>

**Length scale 1:2727**



**KR Puram to Kempegowda International Airport**

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,n**  
Calculation in 1.5 m above ground

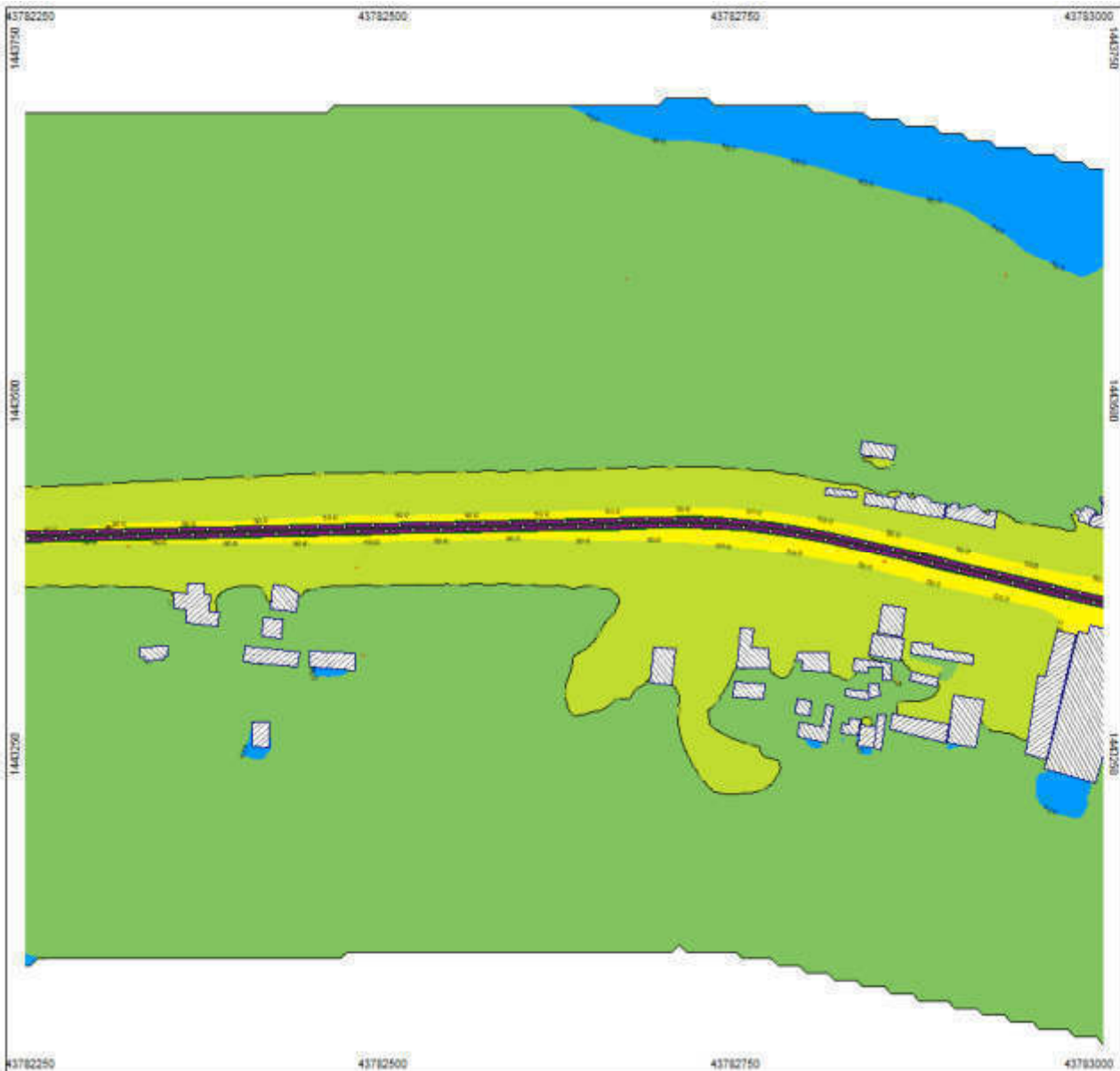
Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,n in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
≥ 65	Point Sources
	Line source
	Geometry bitmap
	Wall
	Wall
	Elevation point
	Bodeneffekte
	Noise calculation area

**Length scale 1:2727**

0 25 50 100 150 200

North arrow pointing up.



**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from DMU Soundplan 8.1 Library and  
 BMRL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

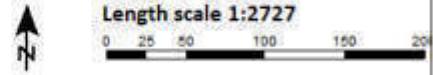
Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/3/2018

**Levels Leq,d**  
 in dB(A)

Blue	< 45
Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	≥ 65

**Signs and symbols**

Blue line	Wall
Red dot	Construction Equip
Hatched rectangle	Main building
Yellow rectangle	Point receiver
Black line	+3dB(A) increase from
Red dot	Point Source
Pink line	Line source
Green line	Geometry bitmap
Green line	Wall
Green line	Wall
Red dot	Elevation point
White rectangle	Disturbance
White rectangle	Receiver calculation area





## KR Puram to Kempegowda International Airport

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)

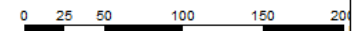
- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- ≥ 65

#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area



Length scale 1:2727





**KR Puram to Kempegowda International Airport**

**Operational Noise:**  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BM&CL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/03/2018

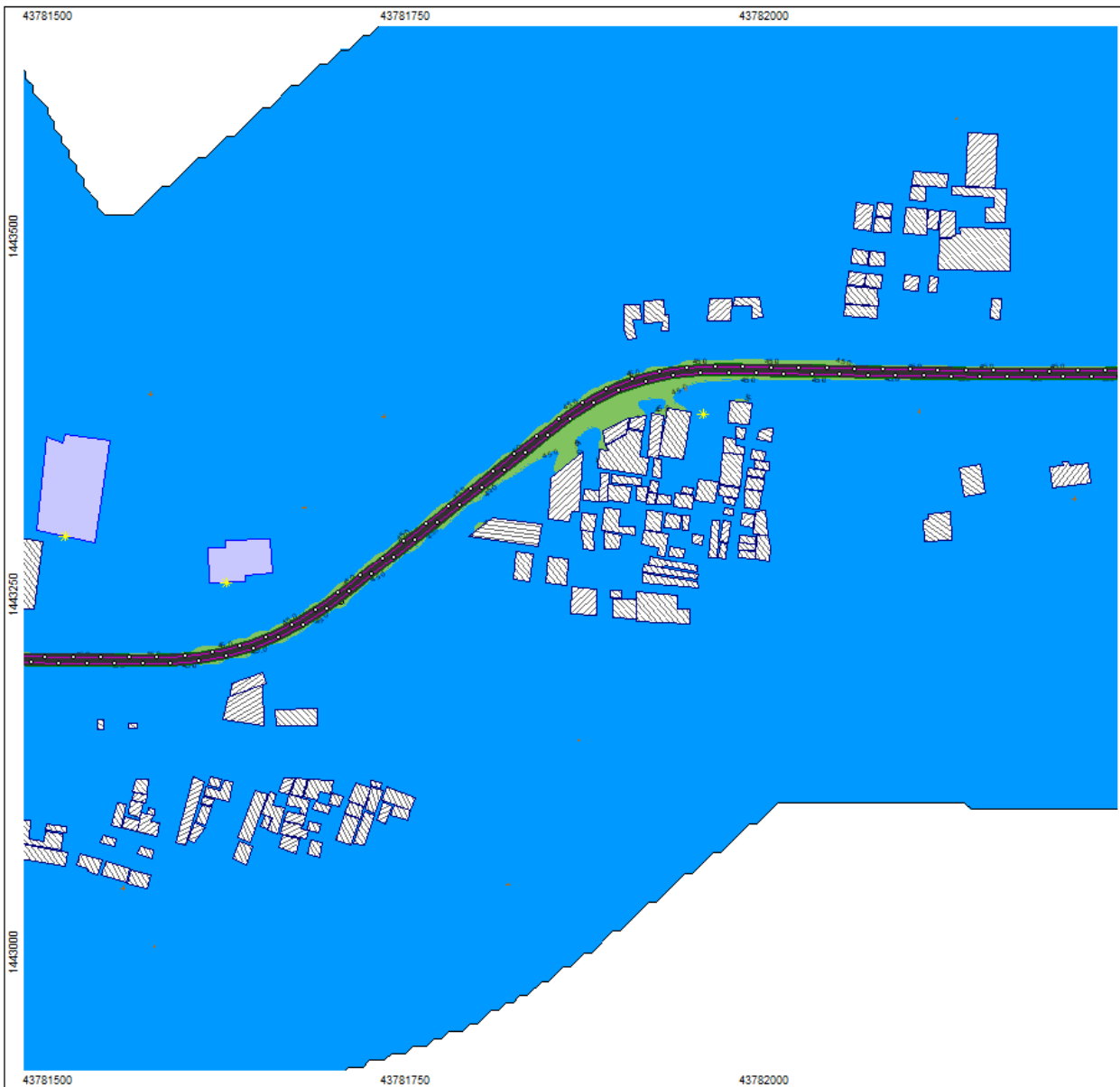
**Levels Leq,d  
 in dB(A)**

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	>= 65

- Signs and symbols**
- Wall
  - Construction Equip
  - ▨ Main building
  - Point receiver
  - +dB(A) increase from
  - Point Sources
  - Live source
  - Geometry library
  - Wall
  - Wall
  - Elevation point
  - ▭ Bodenoffen
  - ▭ Noise calculation area







**KR Puram to Kempegowda International Airport**

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
Noise Contour Map**

**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,n  
in dB(A)**

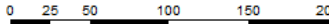
- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- ≥ 65

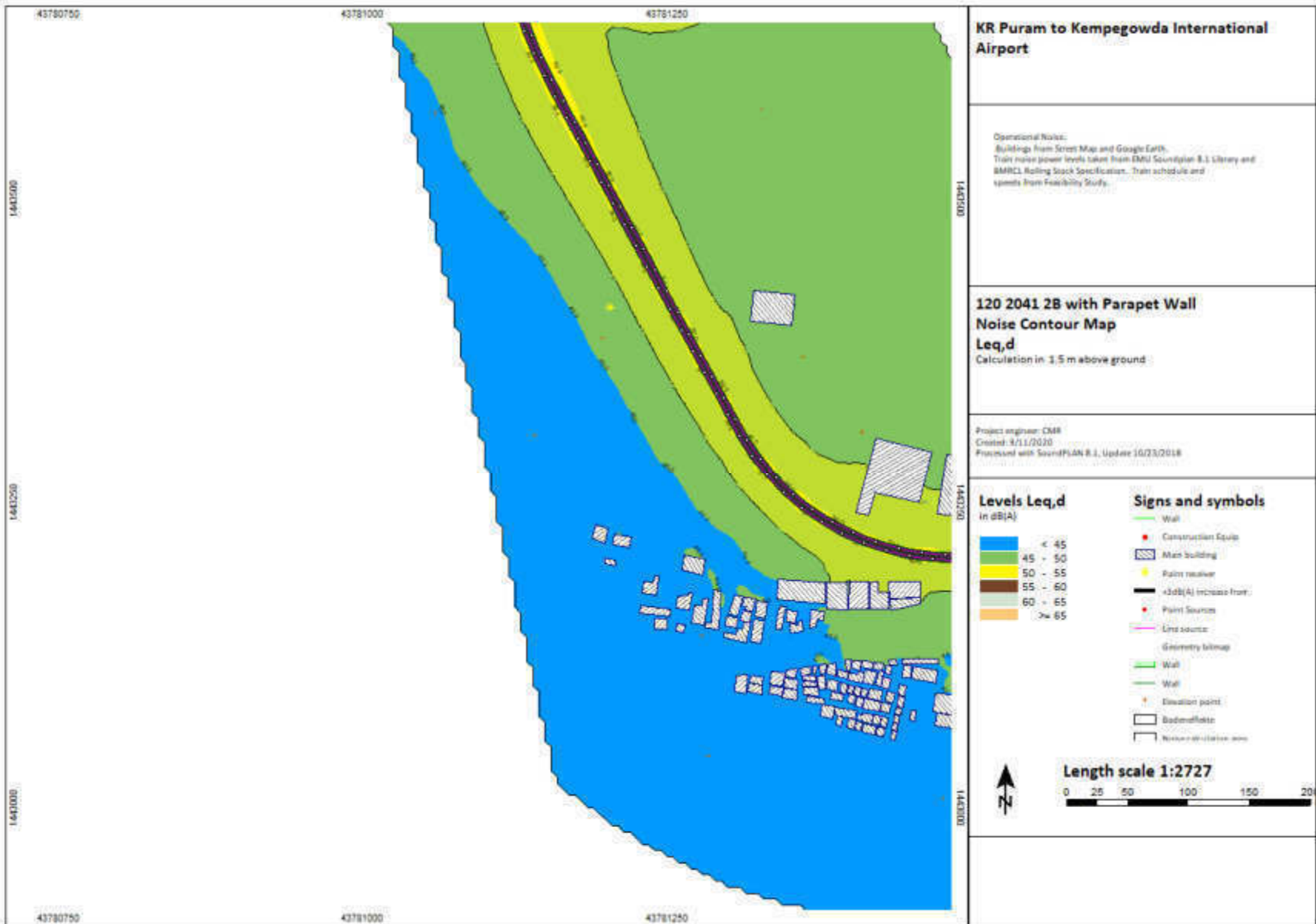
**Signs and symbols**

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area



**Length scale 1:2727**







**KR Puram to Kempegowda International Airport**

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

<b>Levels Leq,n</b> in dB(A)	<b>Signs and symbols</b>
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
≥ 65	Point Sources
	Line source
	Geometry bitmap
	Wall
	Wall
	Elevation point
	Bodeneffekte
	Noise calculation area

**Length scale 1:2727**  
0 25 50 100 150 200



**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from ENQ Soukuptes B.I Library and  
 BMRI Rolling Stock Specification, train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/1/2020  
 Processed with SoundPLAN 8.1, Update: 16/01/2018

<p><b>Levels Leq,d</b> in dB(A)</p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #0070C0; border: 1px solid black; margin-right: 5px;"></span> &lt; 45</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #92D050; border: 1px solid black; margin-right: 5px;"></span> 45 - 50</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FFFF00; border: 1px solid black; margin-right: 5px;"></span> 50 - 55</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FFA500; border: 1px solid black; margin-right: 5px;"></span> 55 - 60</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FF8C00; border: 1px solid black; margin-right: 5px;"></span> 60 - 65</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FF4500; border: 1px solid black; margin-right: 5px;"></span> &gt;= 65</li> </ul>	<p><b>Signs and symbols</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; border-bottom: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: red; border-radius: 50%; margin-right: 5px;"></span> Construction Equip</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px dashed black; margin-right: 5px;"></span> Main building</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border-radius: 50%; margin-right: 5px;"></span> Point receiver</li> <li><span style="display: inline-block; width: 15px; height: 15px; border-bottom: 1px solid black; margin-right: 5px;"></span> +3dB(A) increase from</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: red; border-radius: 50%; margin-right: 5px;"></span> Point Source</li> <li><span style="display: inline-block; width: 15px; height: 15px; border-bottom: 1px solid magenta; margin-right: 5px;"></span> Line source</li> <li><span style="display: inline-block; width: 15px; height: 15px; border-bottom: 1px solid black; margin-right: 5px;"></span> Geometry bitmap</li> <li><span style="display: inline-block; width: 15px; height: 15px; border-bottom: 1px solid green; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 15px; border-bottom: 1px solid green; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 15px; border-bottom: 1px solid black; margin-right: 5px;"></span> Elevation point</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Sound reflector</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Receiver elevation zone</li> </ul>
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**KR Puram to Kempegowda International Airport**

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,n in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
>= 65	Point Sources
	Line source
	Geometry bitmap
	Wall
	Elevation point
	Bodeneffekte
	Noise calculation area

**Length scale 1:2727**

0 25 50 100 150 200

North arrow pointing up.



**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Open Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d**  
in dB(A)

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Dark Green	55 - 60
Light Blue	60 - 65
Dark Blue	>= 65

**Signs and symbols**

- Wall
- Construction Equip
- ▨ Main building
- Point receiver
- +3dB(A) increase from
- Point source
- Line source
- Geometry bitmap
- Wall
- Wall
- Deviation point
- Bufferoffset
- Noise-division area





**KR Puram to Kempegowda International Airport**

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRC Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
Noise Contour Map  
Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,n in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
>= 65	Point Sources
	Line source
	Geometry bitmap
	Wall
	Wall
	Elevation point
	Bodeneffekte
	Noise calculation area

**Length scale 1:2727**

0 25 50 100 150 200

North arrow pointing up.



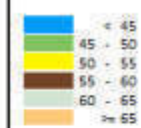
**KR Puram to Kempegowda International Airport**

Operational Noise:  
Buildings from Street Map and Google Earth.  
Train noise-power levels taken from EMU Soundplan 8.1 Library and  
BMRCL Rolling Stock Specification. Train schedule and  
speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
Noise Contour Map  
Leq,d**  
Calculation in 1.5 m above ground.

Project engineer: CNR  
Created: 8/11/2020  
Processed with SoundPLAN 8.1, Update 10/03/2018

**Levels Leq,d  
in dB(A)**



**Signs and symbols**

- Wall
- Construction Equip
- ▨ Main building
- Point receiver
- +dB(A) increase from
- Point Source
- Live source
- Geometry bitmap
- Wall
- Deviation point
- ▭ Building/Block
- ▭ Noise calculation area



**Length scale 1:2727**







**KR Puram to Kempegowda International Airport**

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
Noise Contour Map**

**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,n  
in dB(A)**

- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- ≥ 65

**Signs and symbols**

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area



**Length scale 1:2727**





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from ICMU Soundplan 8.1 Library and IARCL Auditing Work Specification. Train schedule and speeds from Feasibility Study.

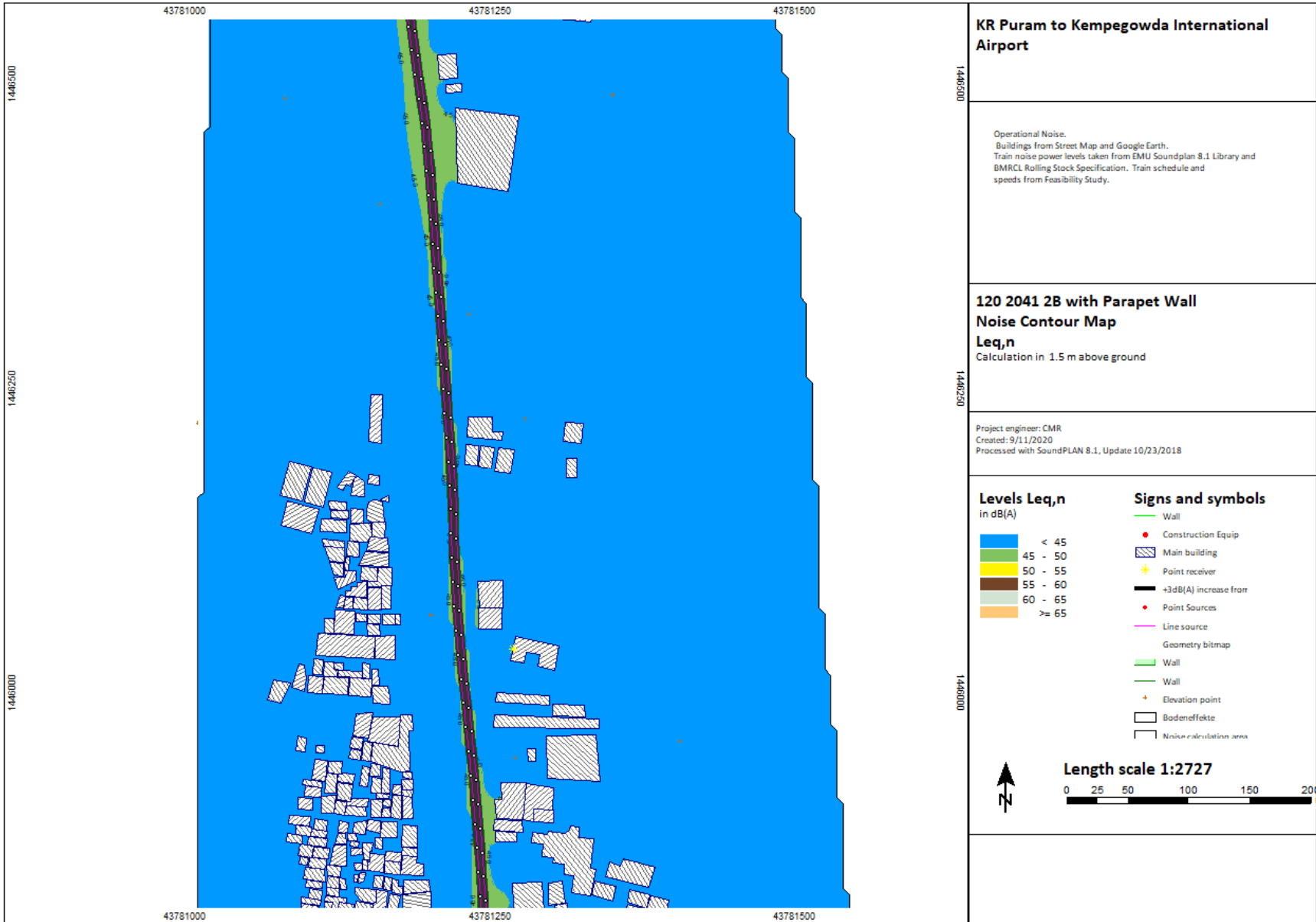
**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 01/1/2018  
 Processed with SoundPLAN 8.1, Update: 10/23/2018

Levels Leq,d in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction site
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+dB(A) increase from
>= 65	Point Source
	Line source
	Geometry barrier
	Wall
	Elevation point
	Road effect line
	Noise calculation area

Length scale 1:2727

0 25 50 100 150 200





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from DMU Soundplan 8.1 Library and  
 (SARL) Rolling Stock Specifications. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,d in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	-3dB(A) increase from
> 65	Point Source
	Line source
	Geometry bitmap
	Wall
	Wall
	Elevation point
	Barrier offset
	Noise contribution area

**Length scale 1:2727**

0 25 50 100 150 200

North arrow pointing up.



## KR Puram to Kempegowda International Airport

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Dark Orange	60 - 65
Red	>= 65

#### Signs and symbols

- Green line: Wall
- Red dot: Construction Equip
- Blue hatched box: Main building
- Yellow star: Point receiver
- Black line: +3dB(A) increase from
- Red dot: Point Sources
- Pink line: Line source
- Green hatched box: Geometry bitmap
- Green line: Wall
- Red dot: Elevation point
- White box: Bodeneffekte
- White box: Noise calculation area



Length scale 1:2727





**KR Puram to Kempegowda International Airport**

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

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Noise Contour Map  
Leq,d**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d  
in dB(A)**

Blue	< 45
Light Blue	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	>= 65

**Signs and symbols**

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Outerwall/hoop
- Receiver with distance point



Length scale 1:2727





**KR Puram to Kempegowda International Airport**

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Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,n in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
>= 65	Point Sources
	Line source
	Geometry bitmap
	Wall
	Wall
	Elevation point
	Bodeneffekte
	Noise calculation area

**Length scale 1:2727**

0 25 50 100 150 200

↑ N



## KR Puram to Kempegowda International Airport

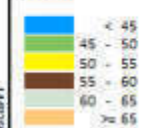
Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 EMRCL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/01/2018

#### Levels Leq,d in dB(A)



#### Signs and symbols

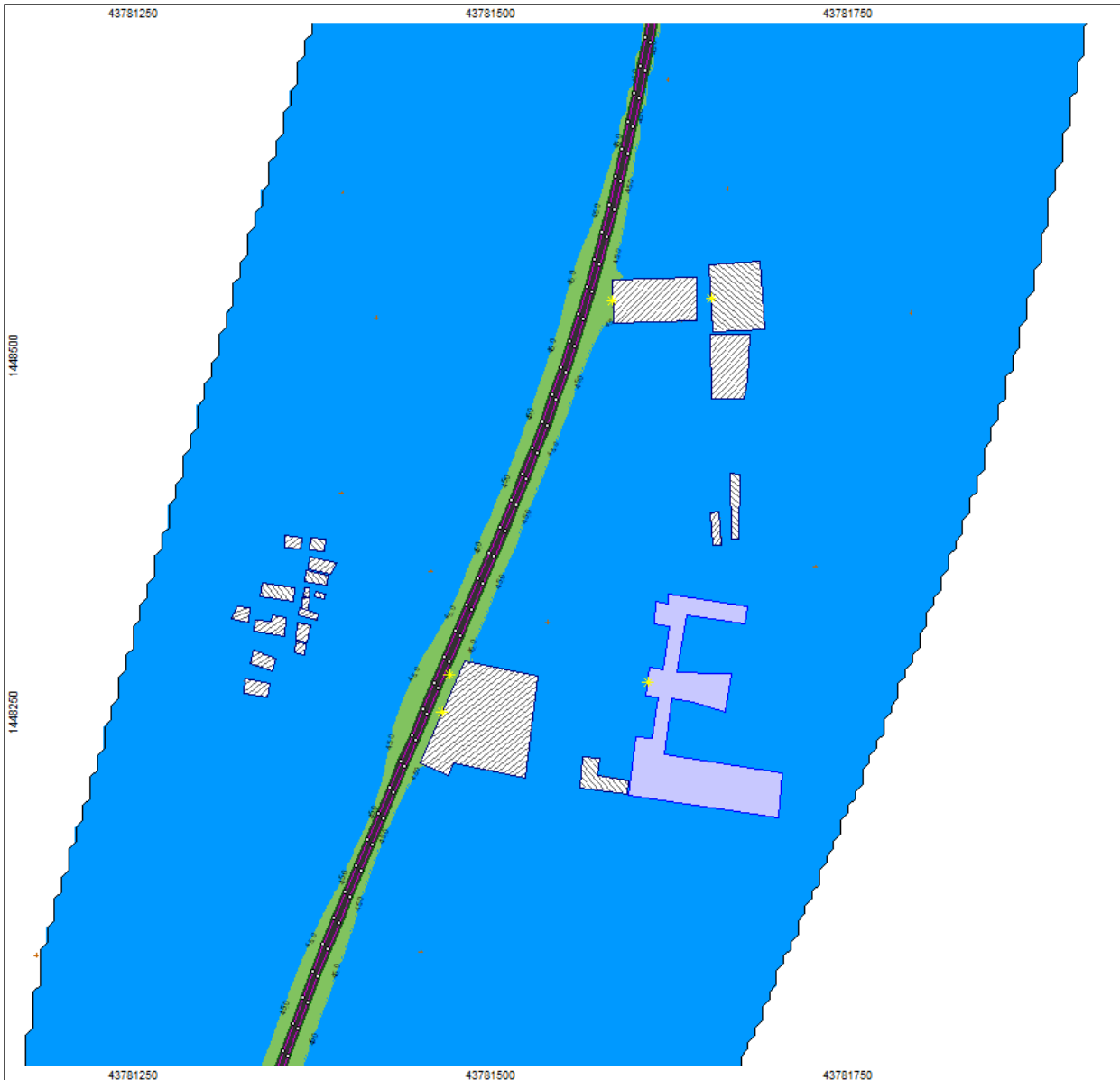
- Wall
- Construction Equip
- ▭ Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Liner duct
- Geometry break
- Wall
- Wall
- Elevator point
- ▭ Building facade
- ▭ Noise reduction zone



Length scale 1:2727







## KR Puram to Kempegowda International Airport

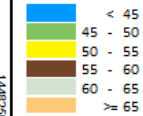
Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)



#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area



Length scale 1:2727





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU SoundPLAN 8.1 Library and  
 BMRC Rolling Stock Specification; Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

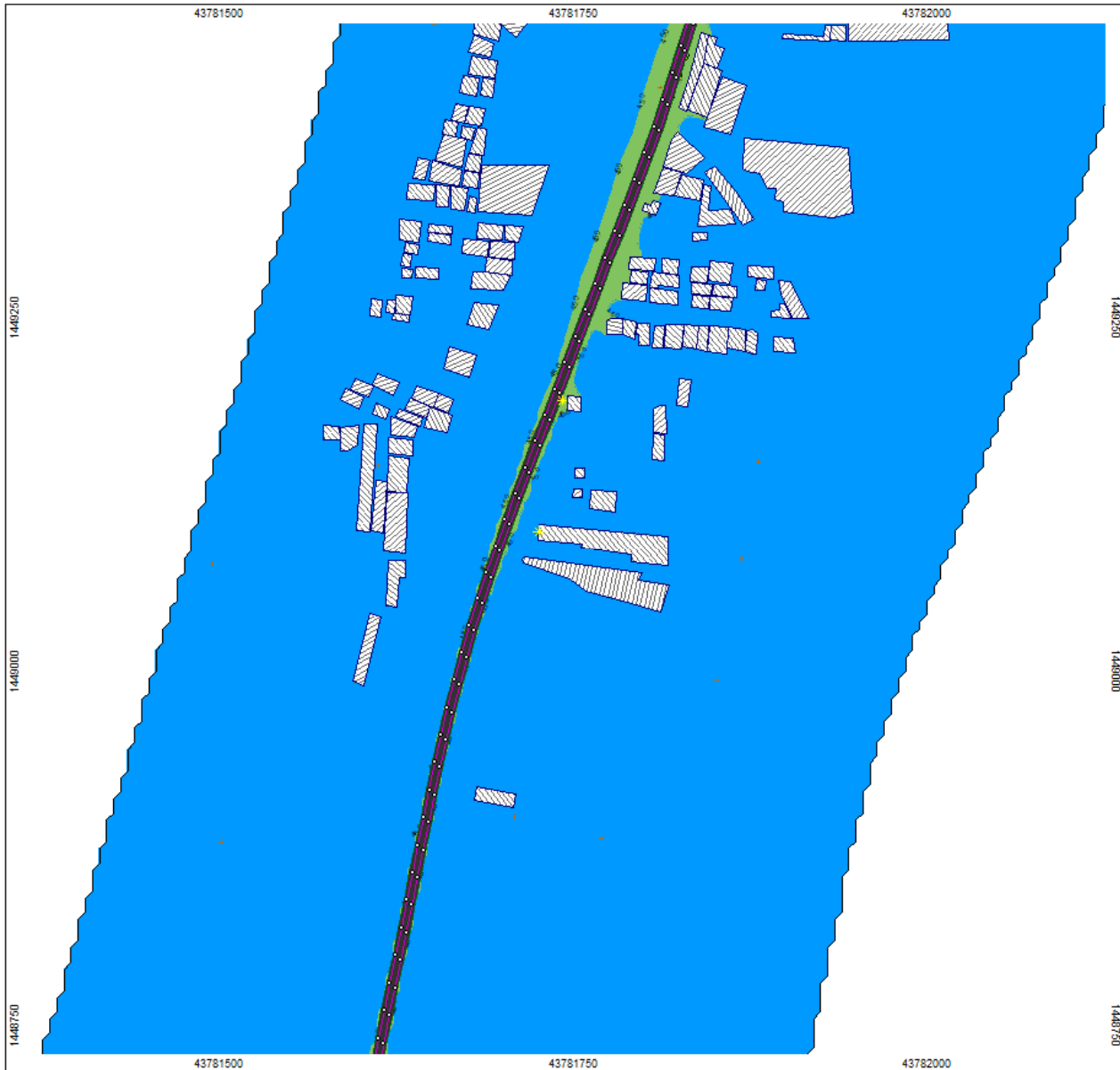
**Levels Leq,d**  
in dB(A)

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	≥ 65

**Signs and symbols**

- Wall
- Construction Equip
- Main building
- Point receiver
- 3dB(A) increase from
- Point Source
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodenreflex
- Rebound/reflection zone





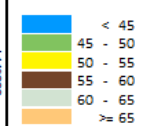
## KR Puram to Kempegowda International Airport

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRC Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,n Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)



#### Signs and symbols

- Wall
- Construction Equip
- ▨ Main building
- ★ Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area



Length scale 1:2727





**KR Puram to Kempegowda International Airport**

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,d**  
 Calculation in 1.5 m above ground

Operational Notes:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from BMU Soundplan 8.1 Library and  
 BMRB Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

Project engineer: CMB  
 Created: 9/11/2018  
 Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,d in dB(A)	Signs and symbols
< 45	Watt
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
>= 65	Point Sources
	Line source
	Geometry Strmap
	Wall
	Wall
	Elevation point
	Boundary block
	Noise calculation area

**Length scale 1:2727**

0 25 50 100 150 200



**KR Puram to Kempegowda International Airport**

Operational Noise:  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from ICM Soundplan 8.1 Library and BAMCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,n**  
Calculation in 1.5 m above ground.

Project engineer: CMR  
Created: 9/7/2018  
Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,n in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
>= 65	Point Sources
	Line source
	Geometry bitmap
	Wall
	Wall
	Elevation point
	Bodeneffekte
	Noise calculation area

**Length scale 1:2727**

0 25 50 100 150 200

052/09P1

005/09P1



**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth  
 Train noise power levels taken from EMU Soundation 8.1 Library and  
 BMRCL Building Stock Specification, Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMH  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d  
 in dB(A)**

Blue	< 45
Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Light Orange	>= 65

**Signs and symbols**

Green line	Wall
Red dot	Construction Equip
Hatched rectangle	Main building
Yellow star	Point receiver
Black line	+3dB(A) increase from
Red dot	Point Source
Pink line	Line source
Green line	Geometry bitmap
Green line	Wall
Red dot	Elevation point
White rectangle	Building floor
Hatched rectangle	Noise calculation area



**Length scale 1:2727**





### KR Puram to Kempegowda International Airport

Operational Noise  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRCL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
 Calculation in 1.5 m above ground

Project engineer: CMB  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)

- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- >= 65

#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- 3dB(A) increase from
- Point sources
- Line source
- Geometry bitmap
- Wall
- Elevation point
- Garden/Plaza
- Noise calculation area



Length scale 1:2727





## KR Puram to Kempegowda International Airport

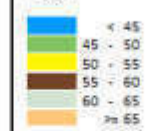
Operational Noise,  
Buildings from Street Map and Google Earth,  
Train noise power levels taken from ICMU Soundplan 8.1 Library and  
BARRL Rolling Stock Specification, Train schedule and  
speeds from Feasibility Study.

### 120 2041 2B with Parapot Wall Noise Contour Map Leq,d

Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 8/5/2020  
Processed with SoundPLAN 8.1, Update 10/03/2018

#### Levels Leq,d in dB(A)



#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase front
- Point Source
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Building block
- Boundary of noise area



Length scale 1:2727







## KR Puram to Kempegowda International Airport

Operational Noise:  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and  
BMFL Rolling Stock Specification, Train schedule and  
speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**

Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update (02/1/2018)

#### Levels Leq,n in dB(A)



#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Subsoil data
- Machine vibration area



Length scale 1:2727





**KR Puram to Kempegowda International Airport**

Operational Noise  
 Buildings from Street Map and Google Earth  
 Train noise power levels taken from UMu Soundplan 8.1 Library and IARRCL Rolling Stock Specification, Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

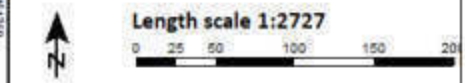
Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d**  
in dB(A)

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Orange	60 - 65
Dark Orange	>= 65

**Signs and symbols**

- Wall
- Construction Equip
- Man building
- Point receiver
- <math>\Delta</math>dB(A) increase from...
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bottomoffset
- Noise distribution area





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise-power levels taken from EMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map**

**Leq,n**  
 Calculation in 1.5 m above ground

Project engineer: CNR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,n**  
 in dB(A)

Blue	< 45
Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Light Green	60 - 65
Orange	>= 65

**Signs and symbols**

Green line	Wall
Red square	Construction Equip
Hatched rectangle	Main building
Yellow dot	Point receiver
Black line	-3dB(A) increase from
Red dot	Point Source
Pink line	Line source
Green rectangle	Geometry bitmap
Green line	Wall
Red dot	Elevation point
White rectangle	Badereffekte
White rectangle	Notenabschirmung





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRCI Rolling Stock Specification. Train schedule and  
 aspects from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMH  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, update 10/03/2018

**Levels Leq,d**  
in dB(A)

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Dark Orange	60 - 65
Red	>= 65

**Signs and symbols**

- Wall
- Construction Equip
- ▨ Main building
- Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- ▨ Gateway bitmap
- Wall
- Wall
- Elevation point
- ▭ Buffer offset
- ▭ Buffer intermediate zone





## KR Puram to Kempegowda International Airport

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and  
BNSFC Building Stock Specification. Train schedule and  
speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
Calculation in 1.5 m above ground.

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/01/2018

**Levels Leq,n**  
in dB(A)

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Brown	60 - 65
Dark Brown	> 65

#### Signs and symbols

- Water
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- Geometry library
- Wall
- Wall
- Elevation point
- Soundfactor
- Noise calculation area



Length scale 1:2727





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRCL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

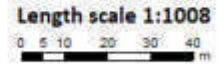
Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d  
 in dB(A)**

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Dark Brown	60 - 65
Orange	>= 65

**Signs and symbols**

- Wall
- Construction Equip
- ▭ Main building
- ★ Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- Geometry skipup
- Wall
- Wall
- + Divulter posts
- ▭ Bodenreflekt
- ▭ Noise contribution area





### KR Puram to Kempegowda International Airport

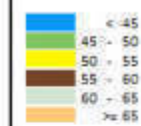
Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRCL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,n

Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)



#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Soilnoiseplate
- Noise-reducing barrier



Length scale 1:1008





**KR Puram to Kempegowda International Airport**

Operational Noise.  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from DMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMH  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,d in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
>= 65	Point sources
	Line source
	Geometry bitmap
	Wall
	Wall
	Deviation point
	Bodenoffette
	Bodenoffette

**Length scale 1:2109**

0 20 40 80 120 1





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from BMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map**

**Leq,n**  
 Calculation in 1.5 m above ground.

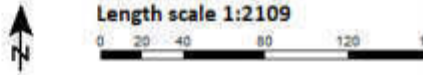
Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1. Update 10/21/2018

**Levels Leq,n  
 in dB(A)**

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Grey	60 - 65
Orange	> 65

**Signs and symbols**

- Wall
- Construction Equip
- Main building
- Point receiver
- 3dB(A) increase from
- Point Source
- Line source
- Geometry obstacle
- Wall
- Wall
- Elevation point
- Bottom of floor
- Maximum elevation zone





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,d**  
 Calculation in 1.5 m above ground.

Project engineer: CML  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/21/2018

<p><b>Levels Leq,d</b> in dB(A)</p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #add8e6; border: 1px solid black; margin-right: 5px;"></span> &lt; 45</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #90ee90; border: 1px solid black; margin-right: 5px;"></span> 45 - 50</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ffff00; border: 1px solid black; margin-right: 5px;"></span> 50 - 55</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ffa500; border: 1px solid black; margin-right: 5px;"></span> 55 - 60</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ff4500; border: 1px solid black; margin-right: 5px;"></span> 60 - 65</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> &gt; 65</li> </ul>	<p><b>Signs and symbols</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> Construction Equip</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #cccccc; border: 1px solid black; margin-right: 5px;"></span> Main building</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ffff00; border: 1px solid black; margin-right: 5px;"></span> Point receiver</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid black; margin-right: 5px;"></span> -3dB(A) increase from</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> Point source</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px dashed black; margin-right: 5px;"></span> Line source</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #90ee90; border: 1px solid black; margin-right: 5px;"></span> Geometry bitmap</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> Elevation point</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Emission factor</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Noise reduction area</li> </ul>
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## KR Puram to Kempegowda International Airport

Operational Noise.  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from DMU Soundplan 8.1 Library and  
 BMRCL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2018  
 Processed with SoundPLAN 8.1, Update 10/03/2018

#### Levels Leq,n in dB(A)

- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- >= 65

#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- 3dB(A) increase from
- Point source
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Gridreflake
- Section calculation walls



Length scale 1:2109





**KR Puram to Kempegowda International Airport**

Operational Note:  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and  
BMCL Rolling Stock Specification, Train schedule and  
speeds from Feasibility Study.

**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,d**  
Calculation in 1.5 m above ground

Project engineer: CM8  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/01/2018

**Levels Leq,d in dB(A)**

Blue	< 45
Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	>= 65

**Signs and symbols**

Green line	Wall
Red square	Construction Spike
Hatched polygon	Main building
Yellow circle	Point receiver
Black line	+3dB(A) increase from
Red circle	Point Source
Pink line	Line source
Green line	Geometry Skimp
Green line	Wall
Red cross	Elevation point
White rectangle	Boundary factor
Hatched rectangle	Boundary reduction zone



Length scale 1:2109





**KR Puram to Kempegowda International Airport**

Operational Rules:  
 Buildings from Screen Map and Google Earth  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMMCL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map**

**Leq,n**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 03/1/2020  
 Processed with SoundPLAN 8.1, Update 10/03/2018

**Levels Leq,n**  
 in dB(A)

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Dark Green	55 - 60
Brown	60 - 65
Orange	>= 65

**Signs and symbols**

Green line	Wall
Red dot	Construction Equip
Hatched rectangle	Main building
Yellow star	Point receiver
Black line	>3dB(A) increase from
Red dot	Point Source
Pink line	Line source
Green area	Geometry bitmap
Green line	Wall
Red dot	Elevation point
Hatched rectangle	Buildoffsite
White rectangle	Screen or shield type wall





**KR Puram to Kempegowda International Airport**

Operational Noise  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRC Building Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in: 1.5 m above ground

Project engineer: CMR  
 Created: 9/3/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d  
 in dB(A)**

- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- > 65

**Signs and symbols**

- Wall
- Construction Equip.
- Main building
- Point receiver
- +3dB(A) increase from
- Point source
- Line source
- Geometry element
- Wall
- Wall
- Elevation point
- Buffer distance
- Noise reduction value



**Length scale 1:2109**





### KR Puram to Kempegowda International Airport

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from IAFU Soundplan 8.1 Library and  
 BMRB Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)

- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- > 65

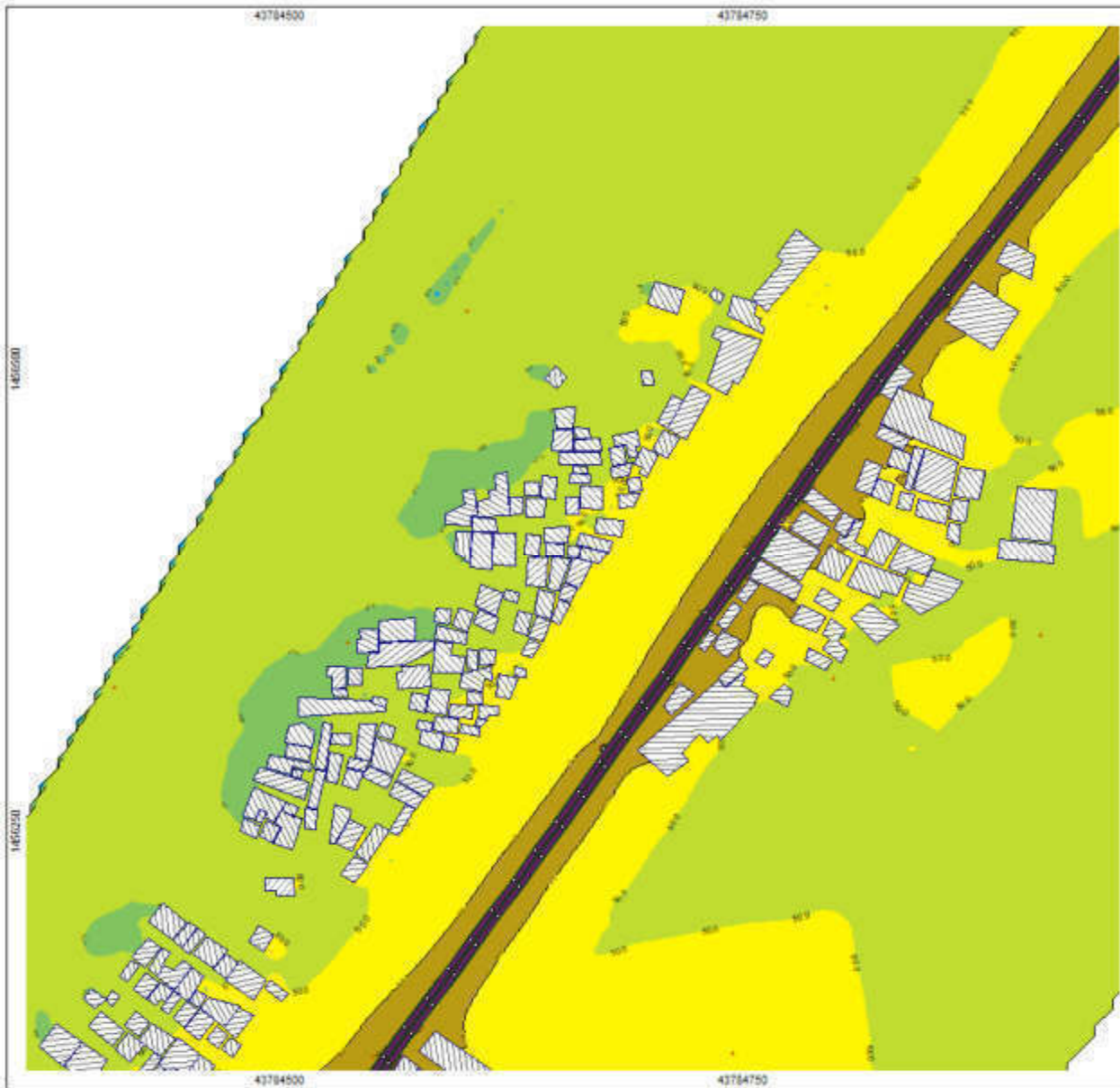
#### Signs and symbols

- Wall
- Construction Equip.
- Main building
- Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bottom of lake
- Bottom of lake (no area)



Length scale 1:2109





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundmap 8.1 Library and  
 BARRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 28 with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1. Update 10/23/2018

**Levels Leq,d  
 in dB(A)**

Blue	< 45
Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Orange	60 - 65
Red	> 65

**Signs and symbols**

- Wall
- Construction Equip.
- ▨ Main building
- Point receiver
- -3dB(A) increase from
- Point Source
- Line source
- Geometry lines
- Wall
- Wall
- Elevation point
- Buffer/offset
- Noise/contour area







**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 SAREC Rolling Stock Specifications. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map**

**Leq,n**  
 Calculation in 1.5 m above ground

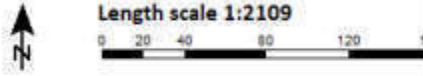
Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,n  
 in dB(A)**

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Dark Green	60 - 65
Orange	>= 65

**Signs and symbols**

Green line	Wall
Red dot	Construction Equip.
Hatched rectangle	Main building
Yellow star	Point receiver
Black line	+3dB(A) increase from
Red dot	Point Source
Pink line	Line source
Green line	Geometry diagram
Green line	Wall
Green line	Wall
Red star	Elevation point
White rectangle	Building facade
Black rectangle	Receiver of the calculation area





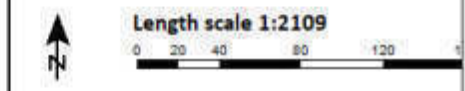
**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BNRCL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,d in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase from
> 65	Point Source
	Line source
	Geometry strip
	Wall
	Wall
	Elevation point
	Buffer/offset
	Noise reduction area





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,n**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

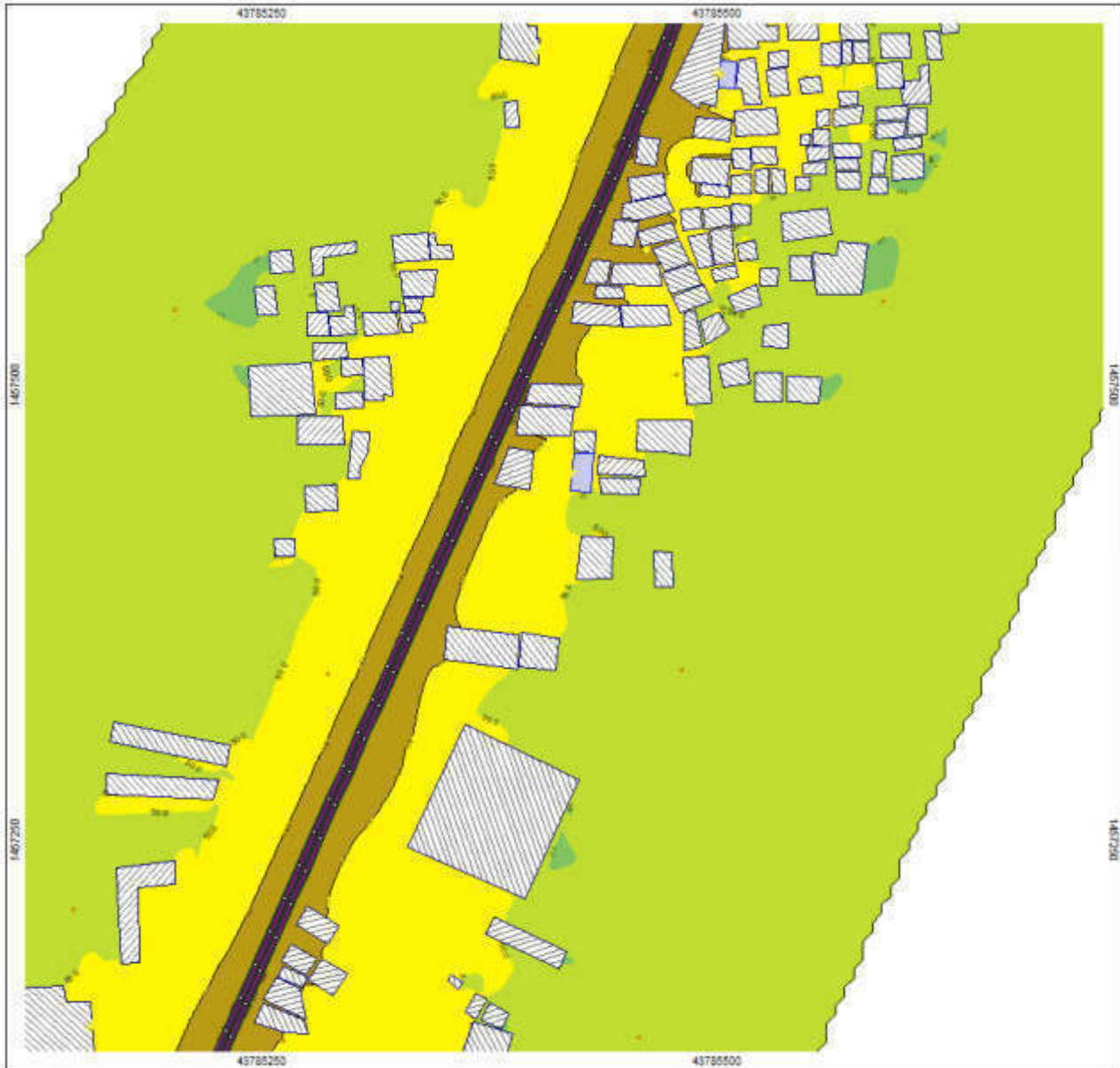
**Levels Leq,n**  
 in dB(A)

Blue	< 45
Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Orange	60 - 65
Red	>= 65

**Signs and symbols**

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase front
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Deviation point
- Subsofftake
- Noise reduction zone





### KR Puram to Kempegowda International Airport

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from BMU Soundplan 8.1 Library and  
 BMARL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,d Calculation in: 1.5 m above ground

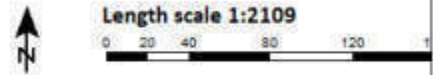
Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d**  
in dB(A)

Light Blue	< 45
Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	> 65

**Signs and symbols**

- Wall
- Construction Equip
- ▨ Main building
- ✦ Point receiver
- -3dB(A) increase from
- Point Source
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodenreflekt
- ▭ Wpocherabschirmung





## KR Puram to Kempegowda International Airport

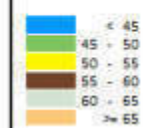
Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU SoundPLAN 8.1 library and  
 BMCL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
 Calculation in 1.5 m above ground

Project engineer: CMB  
 Created: 8/11/2018  
 Processed with SoundPLAN 8.1, Update 10/21/2018

#### Levels Leq,n in dB(A)



#### Signs and symbols

- Wall
- Construction Spike
- ▨ Main building
- Point receiver
- +2dB(A) increase from
- Point Source
- Litra source
- Geometry obstacle
- Wall
- Elevation point
- Buffer offset
- Noise calculation area



Length scale 1:2109





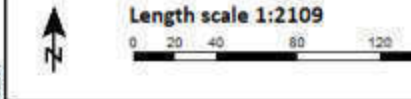
**KR Puram to Kempegowda International Airport**

Operational Noise.  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRL Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

<p><b>Levels Leq,d</b> in dB(A)</p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #00FF00; border: 1px solid black; margin-right: 5px;"></span> &lt; 45</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> 45 - 50</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FFFF00; border: 1px solid black; margin-right: 5px;"></span> 50 - 55</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FFD700; border: 1px solid black; margin-right: 5px;"></span> 55 - 60</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FFA500; border: 1px solid black; margin-right: 5px;"></span> 60 - 65</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FF4500; border: 1px solid black; margin-right: 5px;"></span> &gt;= 65</li> </ul>	<p><b>Signs and symbols</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px dashed black; margin-right: 5px;"></span> Construction Equip</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Main building</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px dotted black; margin-right: 5px;"></span> Point receiver</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> +3dB(A) increase from</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Point Source</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Line source</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Greenery bitmap</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Elevation point</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Bottomoffsite</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Noise contribution area</li> </ul>
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**KR Puram to Kempegowda International Airport**

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Operational Noise.  
 Buildings from Survey Map and Google Earth.  
 Train noise power levels taken from DMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

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**120 2041 2B with Parapet Wall**  
**Noise Contour Map**  
**Leq,n**  
 Calculation in 1.5 m above ground

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Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/03/2018

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<b>Levels Leq,n</b> in dB(A)	<b>Signs and symbols</b>
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
>= 65	+10dB(A) Increased floor
	Point Source
	Line source
	Geometry bitmap
	Wall
	Wall
	Obstacle point
	Buildings/obstacle
	Noise propagation zone

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**Length scale 1:2109**

0 20 40 80 120 1



### KR Puram to Kempegowda International Airport

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRC Building Stock Specification, Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,d

Calculation in 1.5 m above ground

Project engineer: CMB  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/21/2018

#### Levels Leq,d in dB(A)

- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- >= 65

#### Signs and symbols

- Wall
- Construction Equip
- Main building
- + Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- Geometry Obmap
- Wall
- Wall
- Elevation point
- Building/Obst
- Noise calculation area



Length scale 1:2109







**KR Puram to Kempegowda International Airport**

Operational Noise  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Building Stack Specification. Train schedule and speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map**

**Leq,n**  
 Calculation in 1.5 m above ground.

Project engineer: CMR  
 Created: 9/3/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,n  
 in dB(A)**

- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- >= 65

**Signs and symbols**

- Wall
- Construction Equip
- Main building
- Point receiver
- 3 dB(A) increase from
- Point Source
- Line source
- Geometry bitmap
- Wall
- Obstacle point
- Bodenreflex
- Noise reduction point



**Length scale 1:2109**





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in: 3.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d  
 in dB(A)**

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Dark Green	60 - 65
Orange	> 65

- Signs and symbols**
- Wall
  - Construction Equip.
  - ▨ Main building
  - ✦ Point receiver
  - +3dB(A) increase front
  - Point Source
  - Line source
  - Geometry Sitemap
  - Wall
  - Wall
  - Elevation point
  - Bodenfläche
  - ▭ Maximum radiation area





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in: 3.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d  
 in dB(A)**

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Dark Green	60 - 65
Orange	> 65

**Signs and symbols**

- Wall
- Construction Equip.
- Main building
- Point receiver
- +3dB(A) increase front
- Point Source
- Line source
- Geometry strip
- Wall
- Wall
- Elevation point
- Bodenfläche
- Maximum radiation area





## KR Puram to Kempegowda International Airport

Operational Noise  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from DMU Soundplan 8.1 Library and  
 BMRC, Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,d

Calculation in: 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,d in dB(A)



#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Building/Block
- Noise calculation area



Length scale 1:2109





## KR Puram to Kempegowda International Airport

Operational Noise.  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from DMU Soundplan 8.1 Library and  
 BNSFCL Building Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

**Leq,n**  
 Calculation in 1.5m above ground.

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,n in dB(A)



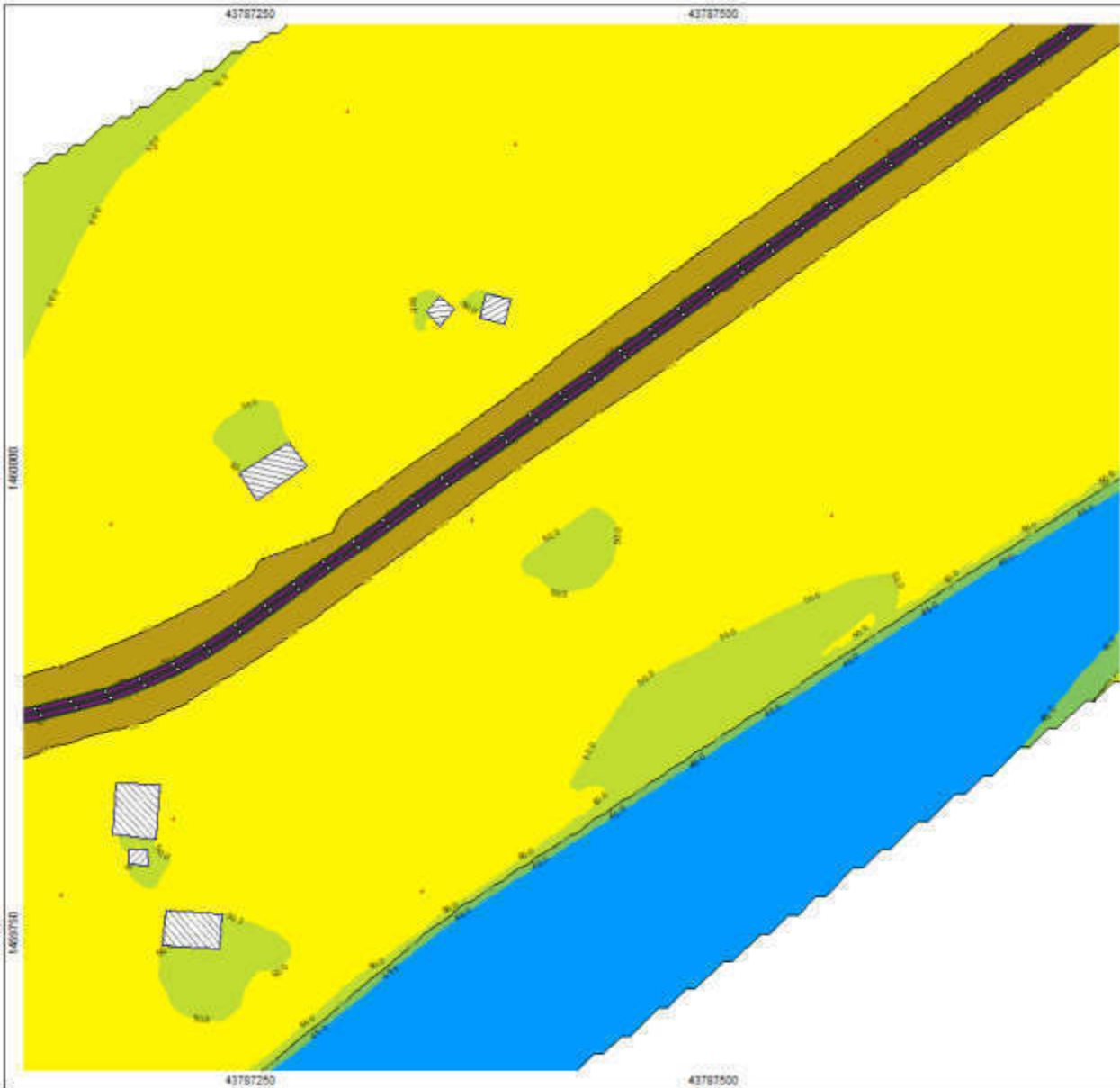
#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- >3dB(A) increase from
- Point Source
- Line source
- Geometry & layout
- Wall
- Elevation points
- Buildings/Blocks
- Noise reduction area



Length scale 1:2109





**KR Puram to Kempegowda International Airport**

Operational Noise  
 Buildings from Josim Map and Google Earth.  
 Train noise power levels taken from IAFI Soundplan 8.1 Library and  
 BMRB Rolling Stock Specification. Train schedule and  
 speeds from feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d  
 in dB(A)**

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Orange	60 - 65
Dark Orange	> 65

**Signs and symbols**

- Wall
- Construction Equip
- Main building
- Point receiver
- +dB(A) increase from
- Point Source
- Line source
- Sawtooth blimp
- Wall
- Wall
- Elevation point
- Bottom of floor
- Aperture of window area





## KR Puram to Kempegowda International Airport

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU SoundPLAN 8.1 Library and  
 BMRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

Leq,n  
 Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2010  
 Processed with SoundPLAN 8.1, Update 10/03/2018

#### Levels Leq,n in dB(A)

Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	>= 65

#### Signs and symbols

- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Boundary file
- Noise prediction area



Length scale 1:2109





**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BARRC Rolling Stock Specification. Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground

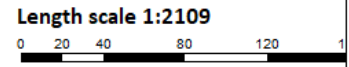
Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

**Levels Leq,d  
 in dB(A)**

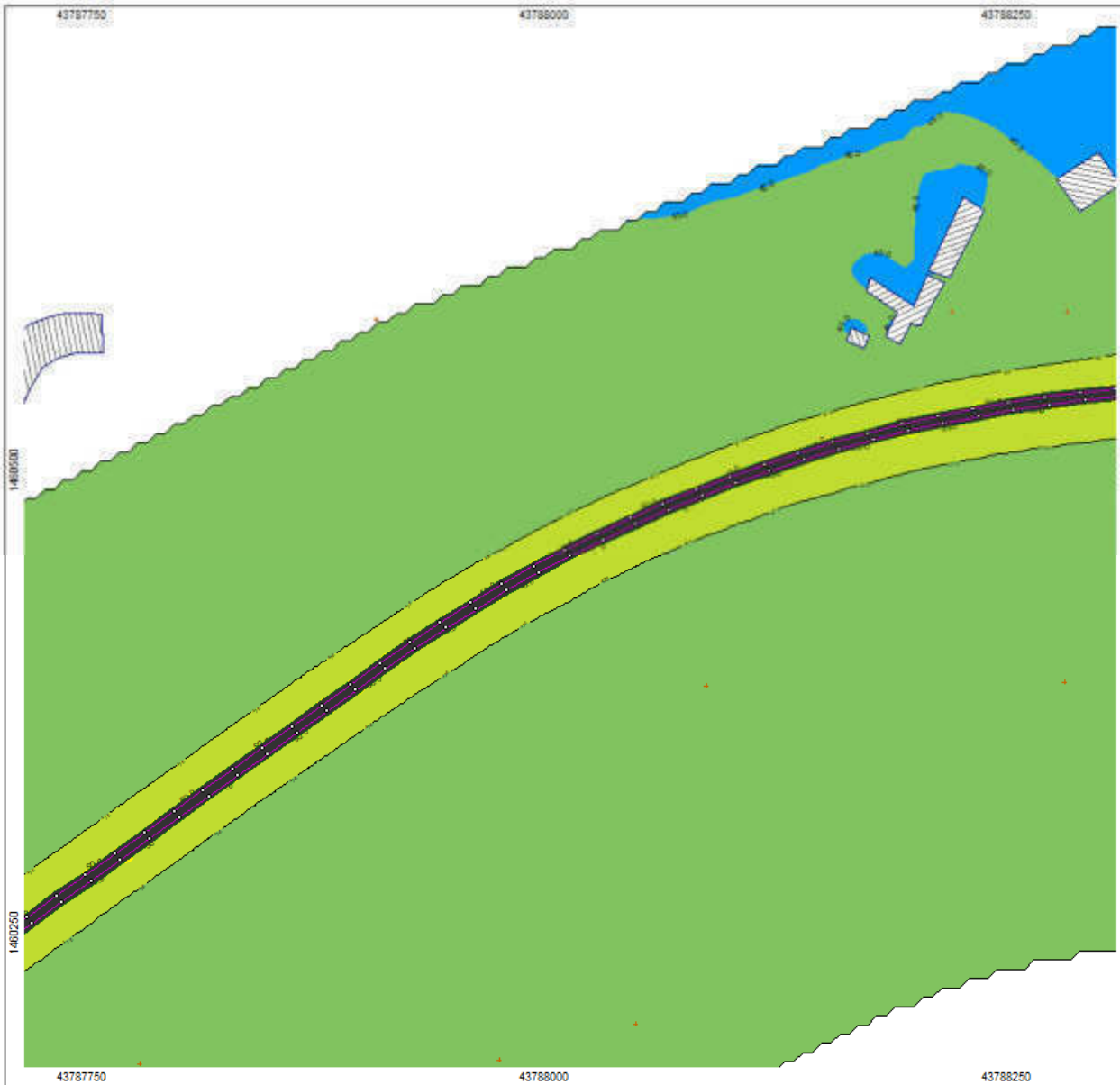
< 45
45 - 50
50 - 55
55 - 60
60 - 65
>= 65

**Signs and symbols**

- Wall
- Construction Equip
- ▨ Main building
- ✦ Point receiver
- +3dB(A) increase from
- ♦ Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- + Elevation point
- Bodeneffekte
- ▭ Noise calculation area







### KR Puram to Kempegowda International Airport

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1 Library and  
 BARRCL Roofing Stack Specifications. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,n Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 8/11/2020  
 Processed with SoundPLAN 8.1, Update 10/01/2018

#### Levels Leq,n in dB(A)

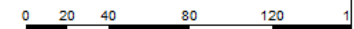
- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- >= 65

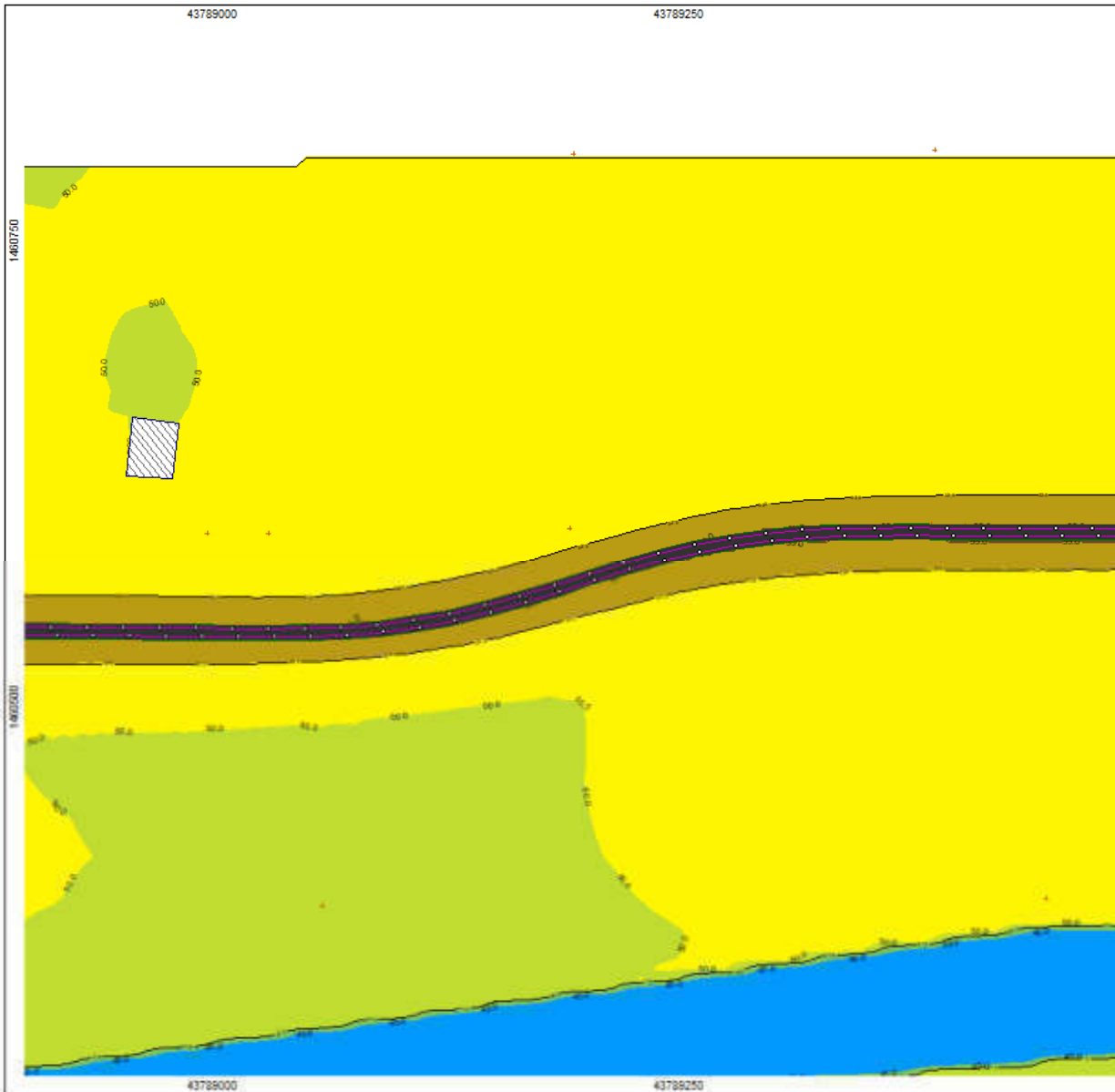
#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area



Length scale 1:2109





## KR Puram to Kempegowda International Airport

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and  
BMRL Rolling Stock Specification. Train schedule and  
speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map

Leq,d  
Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

Levels Leq,d in dB(A)	
	< 45
	45 - 50
	50 - 55
	55 - 60
	60 - 65
	>= 65

Signs and symbols	
	Wall
	Construction Equip
	Main building
	Point receiver
	>300(A) increase limit
	Point Sources
	Line source
	Geometry Viewmap
	Wall
	Elevation points
	Buildings/fields
	Water/vegetation areas



Length scale 1:2109





### KR Puram to Kempegowda International Airport

Operational Noise:  
 Buildings from Swire Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan 8.1.1 Library and BARRCL Rolling Stock Soundification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,n

Calculation in 1.5 m above ground.

Project engineer: CMR  
 Created: 5/11/2025  
 Processed with SoundPLAN 8.1, Update 10/3/2018

#### Levels Leq,n in dB(A)



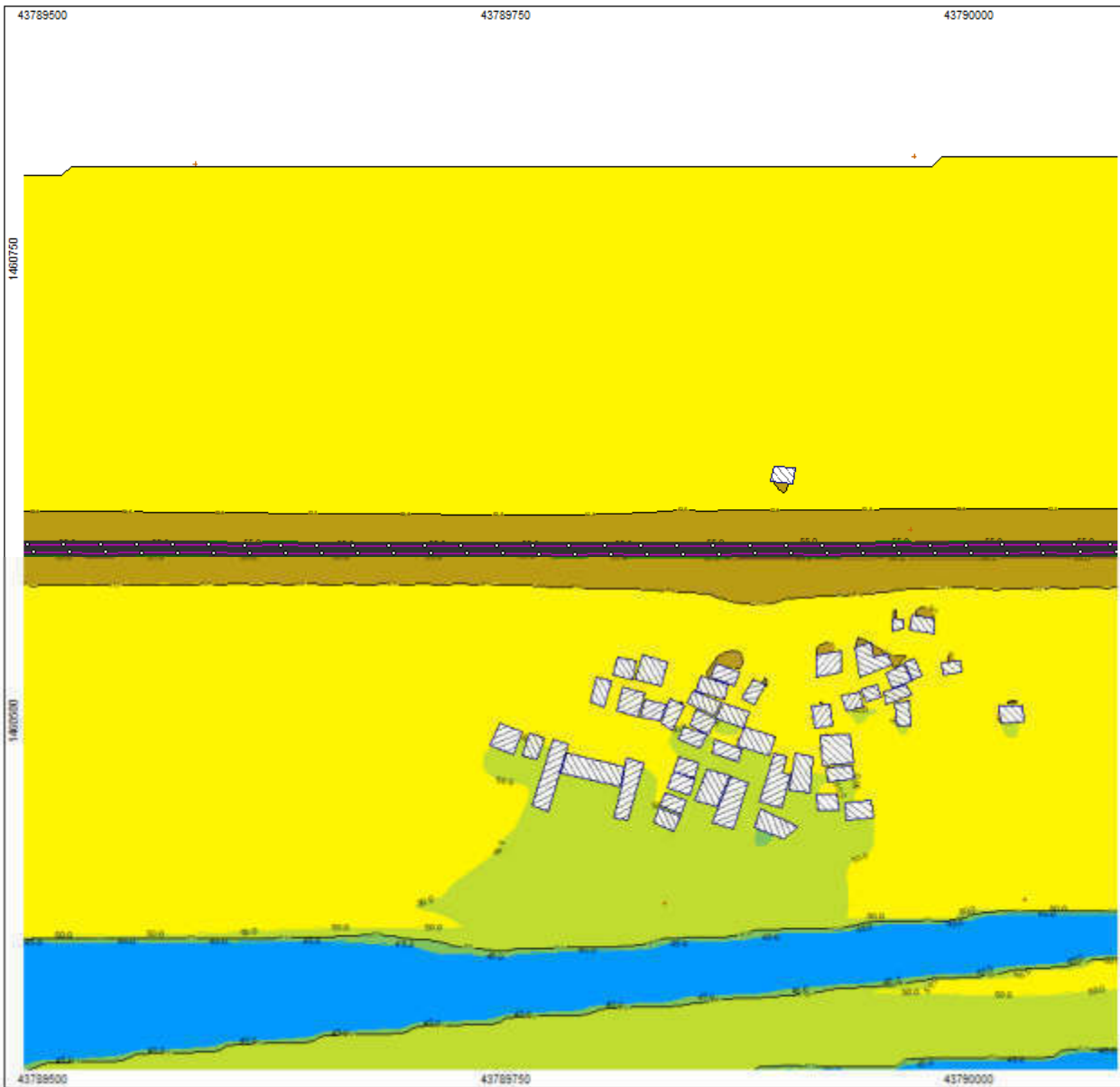
#### Signs and symbols

- Construction Equip
- Mixed building
- Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Exclusion Area
- Noise calculation area



Length scale 1:2109





## KR Puram to Kempegowda International Airport

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,d Calculation in 1.5 m above ground

Project engineer: CMR  
Created: 9/11/2020  
Processed with SoundPLAN 8.1, Update 10/23/2018

#### Levels Leq,d in dB(A)

Blue	< 45
Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	>= 65

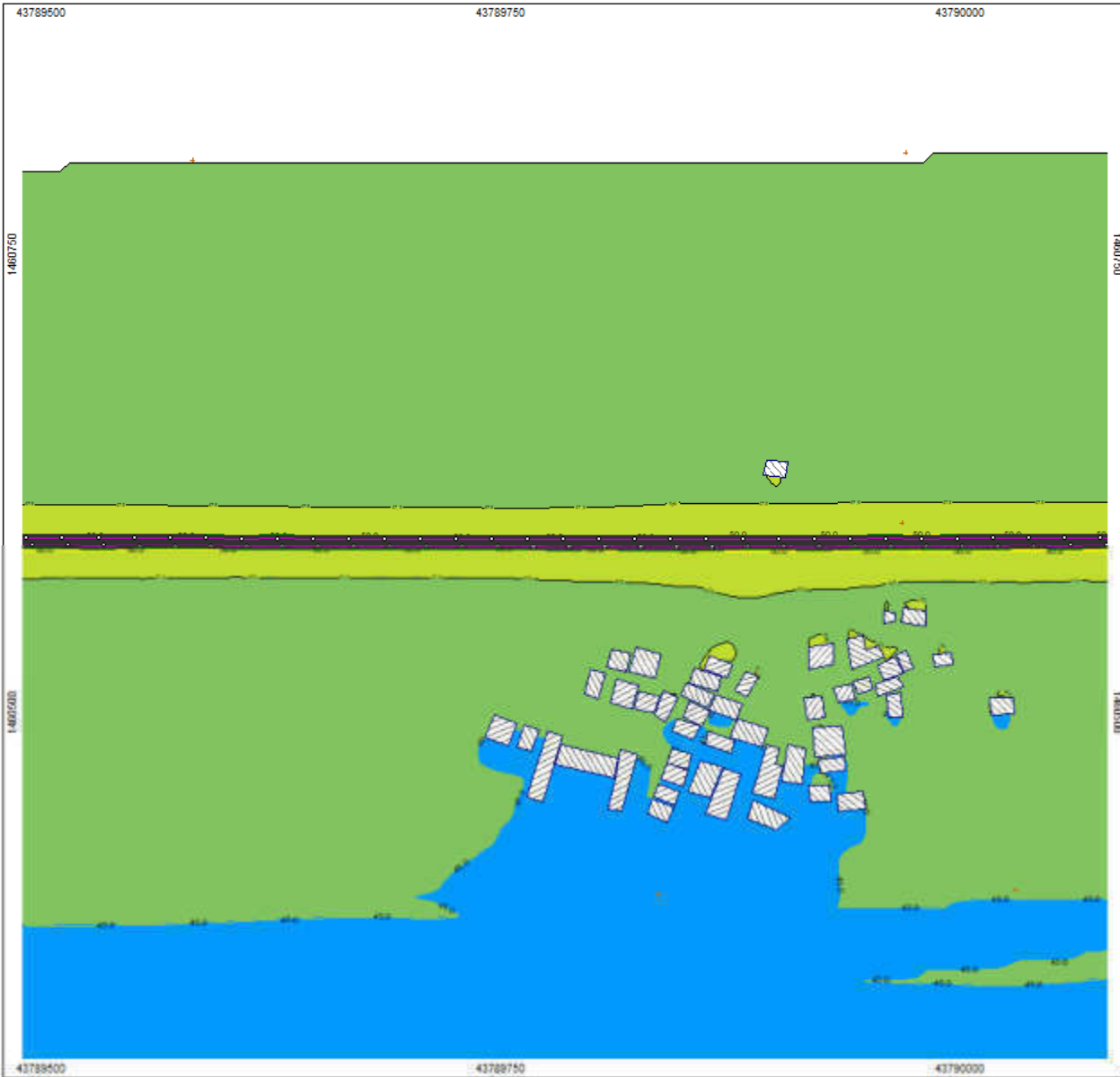
#### Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source:
  - Geometry bitmap
  - Wall
  - Wall
- Elevation point
- Bottomoflake
- Water calculation area



Length scale 1:2109





## KR Puram to Kempegowda International Airport

Operational Noise.  
Buildings from Street Map and Google Earth.  
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,n

Calculation in 1.5 m above ground

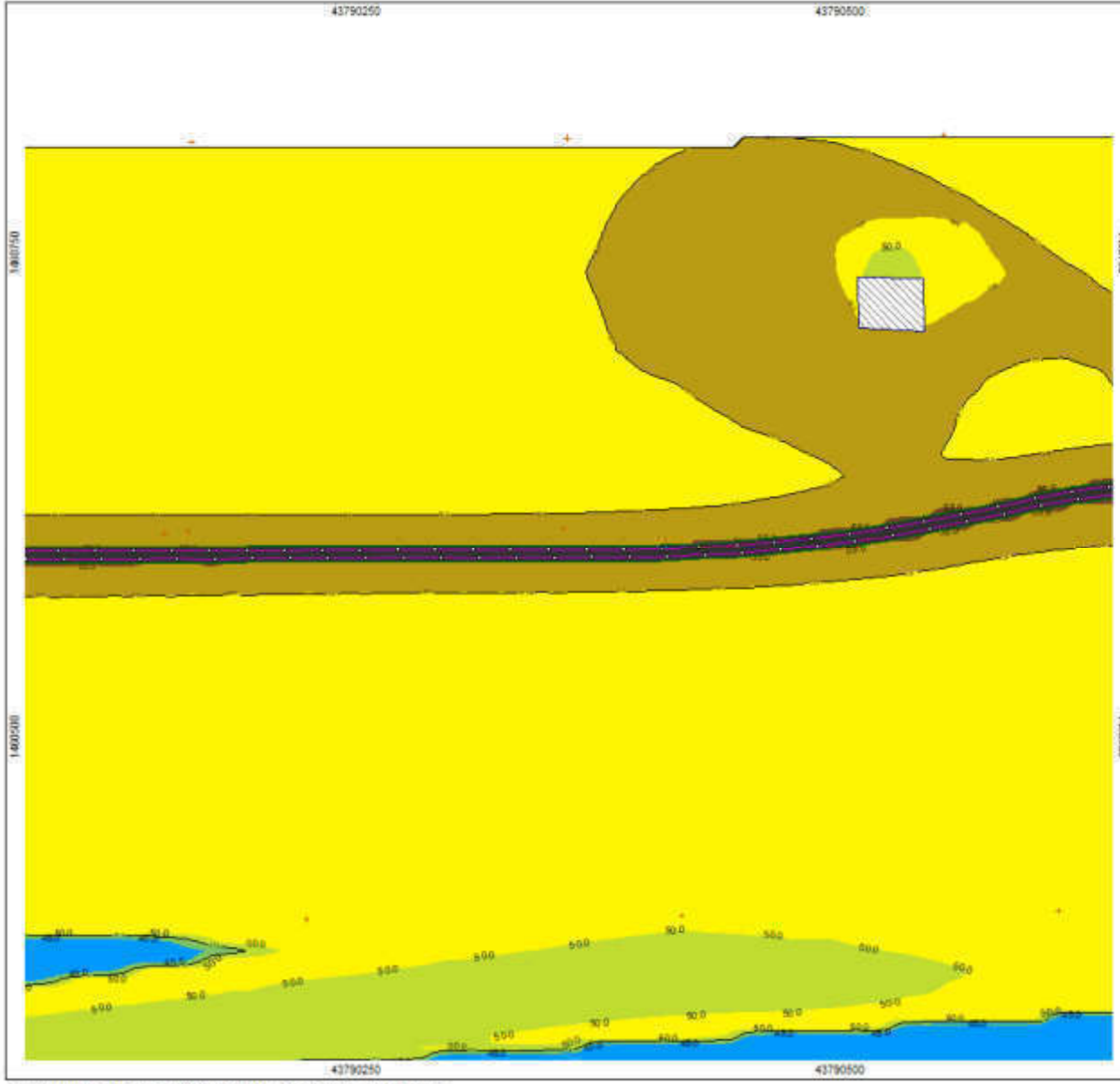
Project engineer: CMR

Created: 9/11/2020

Processed with SoundPLAN 8.1, Update 10/23/2018

<p><b>Levels Leq,n</b> in dB(A)</p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #0000FF; border: 1px solid black; margin-right: 5px;"></span> &lt; 45</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #008080; border: 1px solid black; margin-right: 5px;"></span> 45 - 50</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #00FF00; border: 1px solid black; margin-right: 5px;"></span> 50 - 55</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> 55 - 60</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> 60 - 65</li> <li><span style="display: inline-block; width: 15px; height: 15px; background-color: #FFD700; border: 1px solid black; margin-right: 5px;"></span> &gt;= 65</li> </ul>	<p><b>Signs and symbols</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Construction Equip</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Main building</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Point receiver</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> +dB(A) increase front</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Point Source</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Line source</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Geometry bitmap</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Elevation point</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Bottomflanke</li> <li><span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></span> Noise propagation area</li> </ul>
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**Length scale 1:2109**



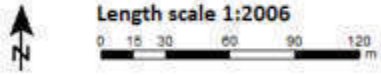
**KR Puram to Kempegowda International Airport**

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from DMU Soundplan 8.1 Library and  
 BMRCL Rolling Stock Specification, Train schedule and  
 speeds from Feasibility Study.

**120 2041 2B with Parapet Wall  
 Noise Contour Map  
 Leq,d**  
 Calculation in 1.5 m above ground:

Project engineer: CMR  
 Created: 8/11/2020  
 Processed with SoundPLAN 8.1, Update 10/23/2018

<p><b>Levels Leq,d</b> in dB(A)</p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #0070C0; border: 1px solid black; margin-right: 5px;"></span> &lt; 45</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> 45 - 50</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFF00; border: 1px solid black; margin-right: 5px;"></span> 50 - 55</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; border: 1px solid black; margin-right: 5px;"></span> 55 - 60</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; border: 1px solid black; margin-right: 5px;"></span> 60 - 65</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; border: 1px solid black; margin-right: 5px;"></span> &gt;= 65</li> </ul>	<p><b>Signs and symbols</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid green; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px dashed red; margin-right: 5px;"></span> Construction barrier</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid blue; margin-right: 5px;"></span> Main building</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></span> Point receiver</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: black; border: 1px solid black; margin-right: 5px;"></span> +3dB(A) increase from</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> Point sources</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid magenta; margin-right: 5px;"></span> Line source</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid green; margin-right: 5px;"></span> Geometry barrier</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid green; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid green; margin-right: 5px;"></span> Wall</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid red; margin-right: 5px;"></span> Elevation point</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Sound barrier</li> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Noise calculation area</li> </ul>
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## KR Puram to Kempegowda International Airport

Operational Noise:  
 Buildings from Street Map and Google Earth.  
 Train noise power levels taken from EMU Soundplan S.I Library and  
 BARRCL Building Stock Specification. Train schedule and  
 speeds from Feasibility Study.

### 120 2041 2B with Parapet Wall Noise Contour Map Leq,n

Calculation in 1.5 m above ground

Project engineer: CMR  
 Created: 9/11/2020  
 Processed with SoundPLAN S.I. Update 15/03/2018

#### Levels Leq,n in dB(A)

Light Blue	$\leq 45$
Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Orange	$\geq 65$

#### Signs and symbols

- Wall
- Construction Equip
- ▨ Main building
- Point receiver
- +3dB(A) increase from
- Point Source
- Line source
- Geometry blockup
- Wall
- Wall
- Elevation points
- Bodefftake
- Noise prediction area



Length scale 1:2006



