

Environmental Impact Assessment

October 2020

India: Bengaluru Metro Rail Project

Phase 2B (Airport Metro Line)

KR Puram to Kempegowda International Airport

Volume 6
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.

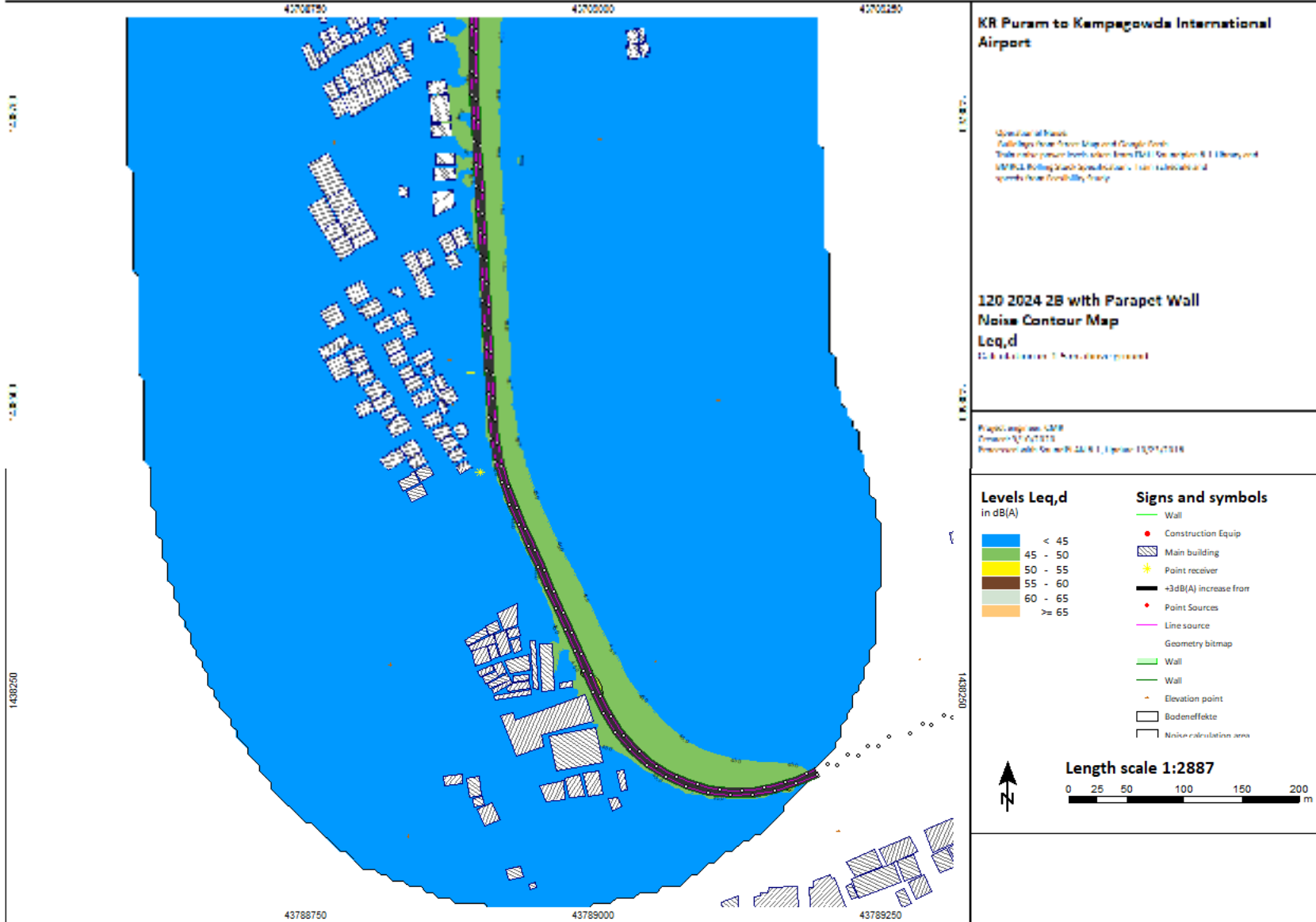
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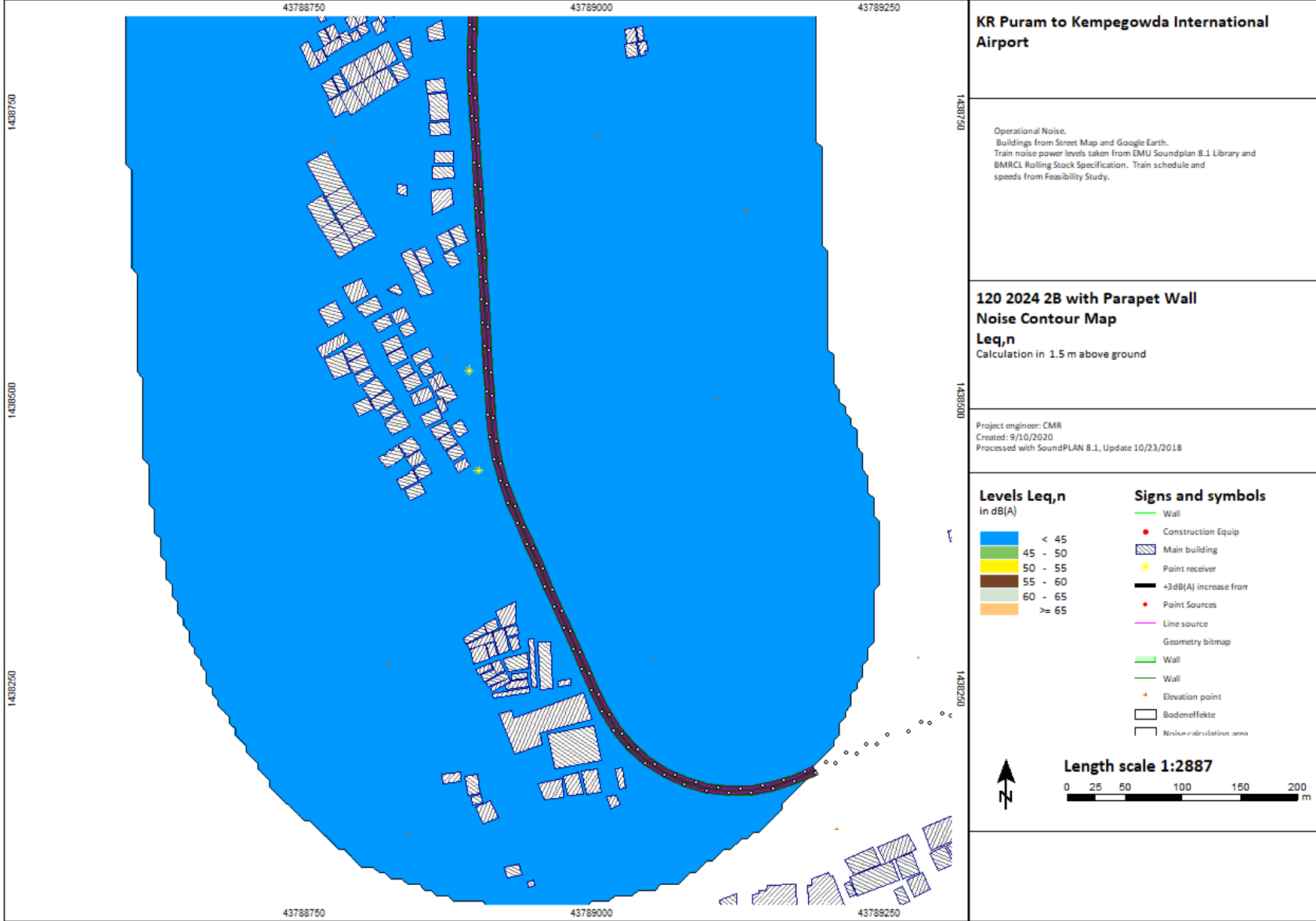
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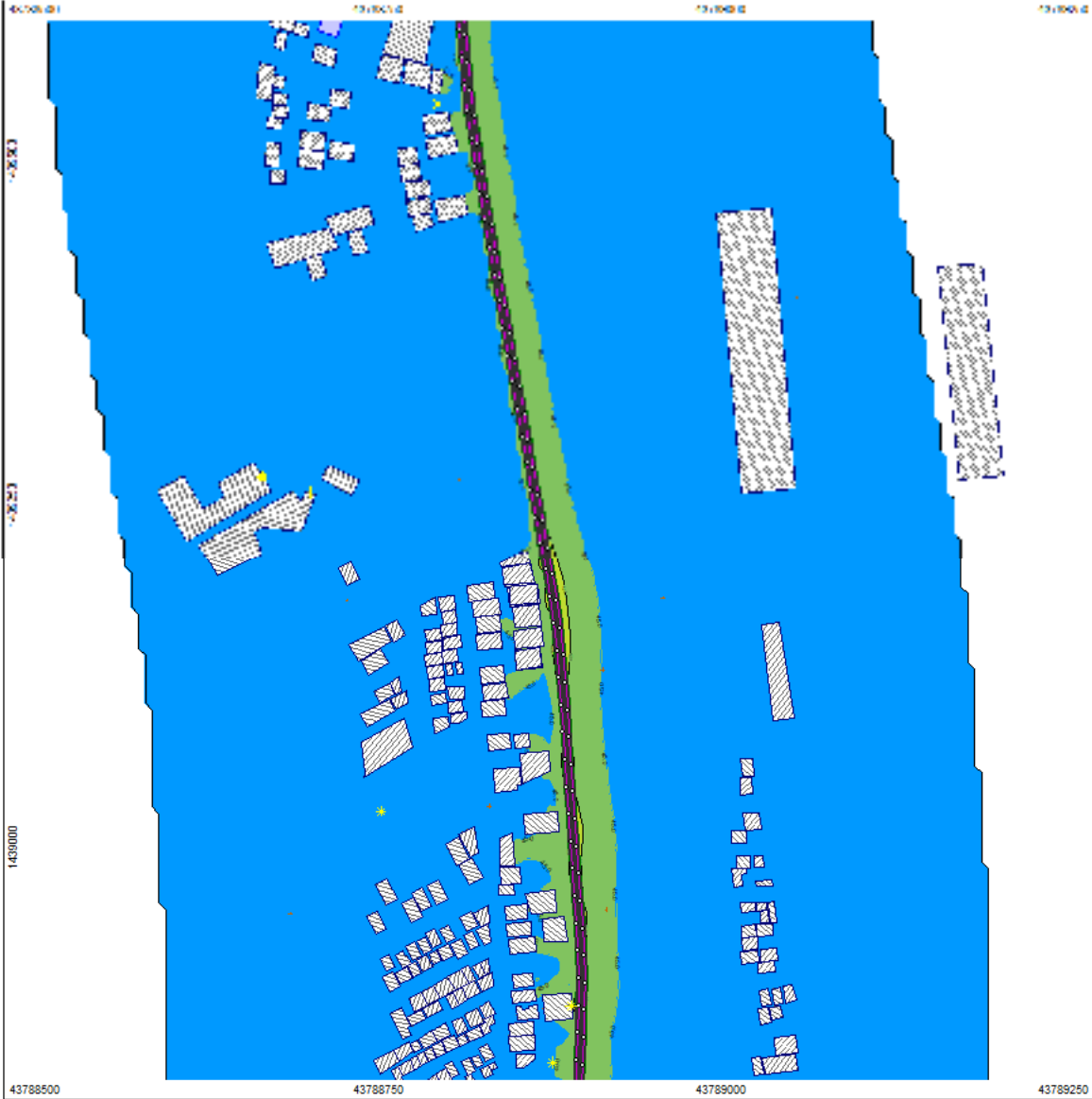
APPENDIX C NOISE CONTOUR MAPS

ORR- KR PURAM

YEARS 2024, 2031, 2041







KR Puram to Kempegowda International Airport

Prepared by: Bangalore Metro Rail Corporation Limited
 Main building levels taken from BMRCL's Level 2, Utility and BMRCL's Building Level Specifications. Data taken from various sources from feasibility study.

**120 2024 2B with Parapet Wall
 Noise Contour Map
 Leq,d
 Calculation in 1.5 m above ground**

Project name: 120 2024 2B
 Created: 11/11/2024
 Projected with Scale: 1:2887, UTM, UTM Zone 48Q, Datum: WGS 84

Levels Leq,d in dB(A)		Signs and symbols	
Blue	< 45	Green line	Wall
Green	45 - 50	Red dot	Construction Equip
Yellow	50 - 55	Hatched rectangle	Main building
Brown	55 - 60	Yellow star	Point receiver
Orange	60 - 65	Black line	+3dB(A) increase from
Dark Orange	>= 65	Red dot	Point Sources
		Pink line	Line source
		Green line	Geometry bitmap
		Green line	Wall
		Green line	Wall
		Black dot	Elevation point
		White rectangle	Bodeneffekte
		Black outline	Noise calculation area

Length scale 1:2887

0 25 50 100 150 200 m

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 2024 2B with Parapet Wall
Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

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

Levels Leq,n in dB(A)	Signs and symbols

Length scale 1:2887

0 25 50 100 150 200 m



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 2024 2B with Parapet Wall
Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

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

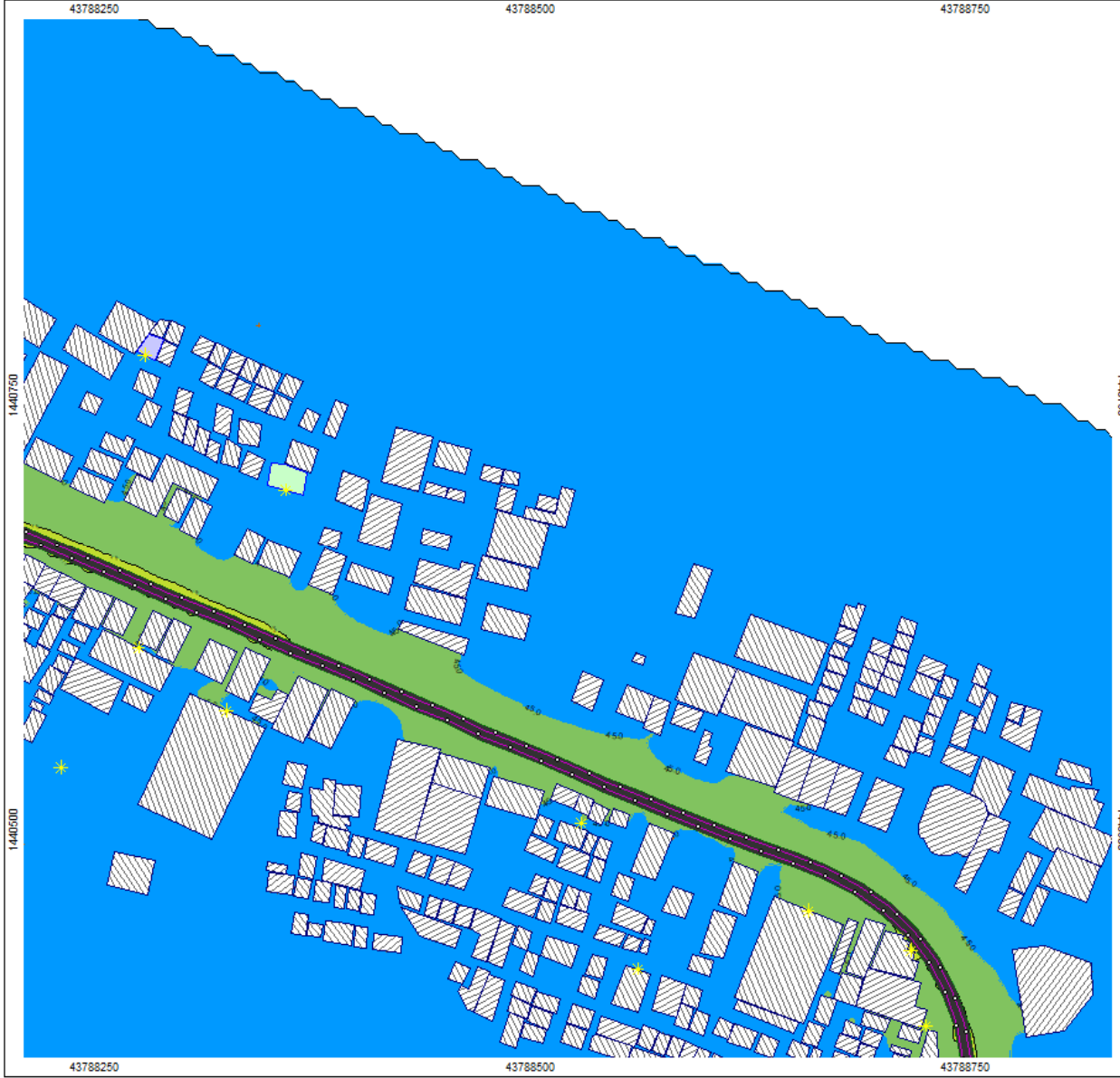
Levels Leq,d in dB(A)	Signs and symbols
< 45	Wall
45 - 50	Construction Equip
50 - 55	Main building
55 - 60	Point receiver
60 - 65	+3dB(A) increase front
>= 65	Point Sources
	Line source
	Geometry bitmap
	Wall
	Wall
	Elevation point
	Bodeneffekte
	Noise calculation area

Length scale 1:2887

0 25 50 100 150 200 m

North arrow pointing up.





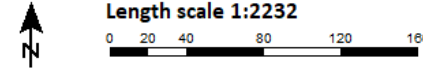
KR Puram to Kempegowda International Airport

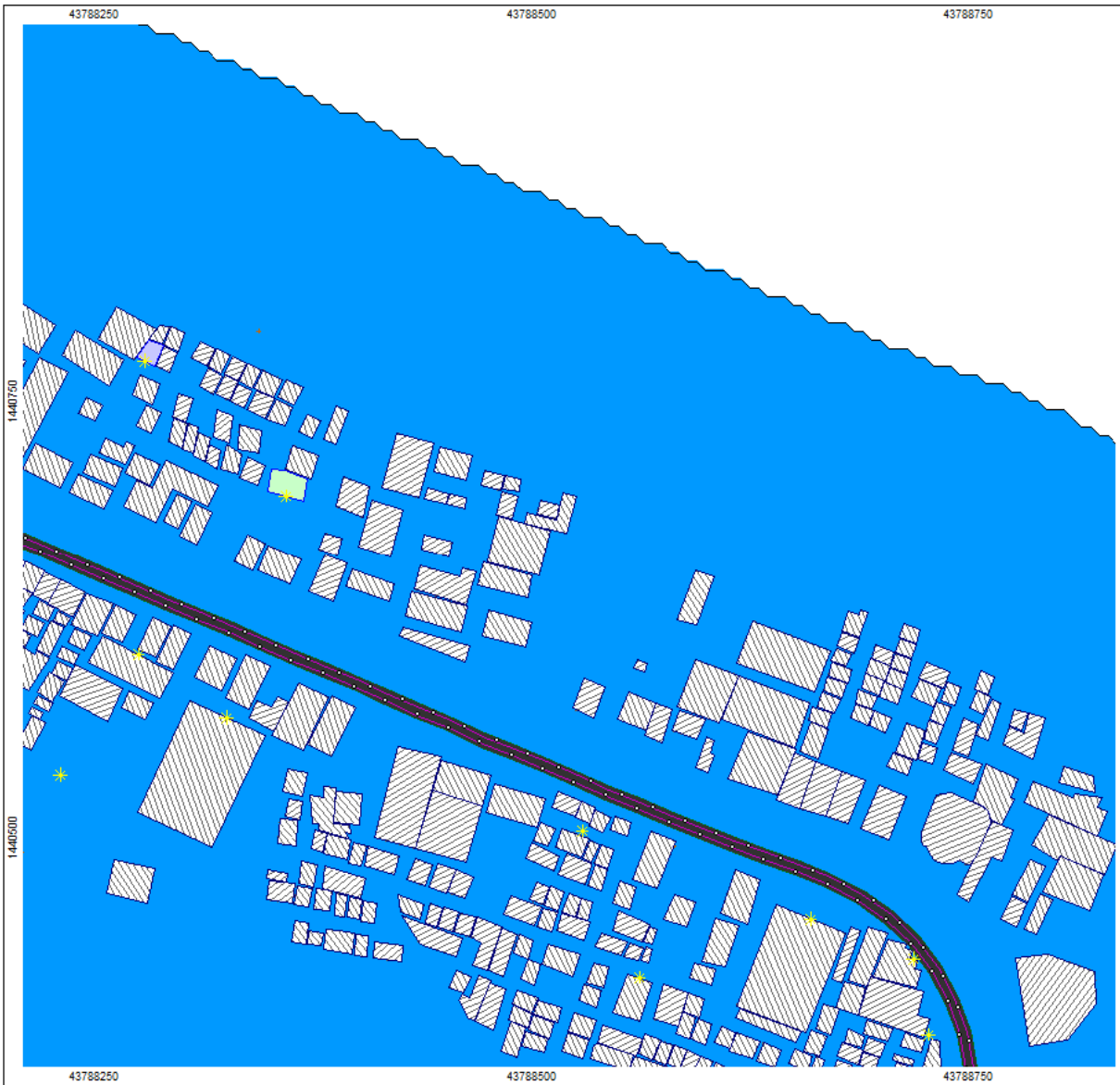
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**120 2024 2B with Parapet Wall
Noise Contour Map
Leq,d**
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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
	Elevation point
	Bodeneffekte
	Noise calculation area





KR Puram to Kempegowda International Airport

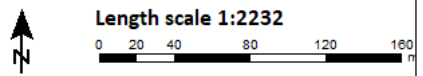
Operational Noise.
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

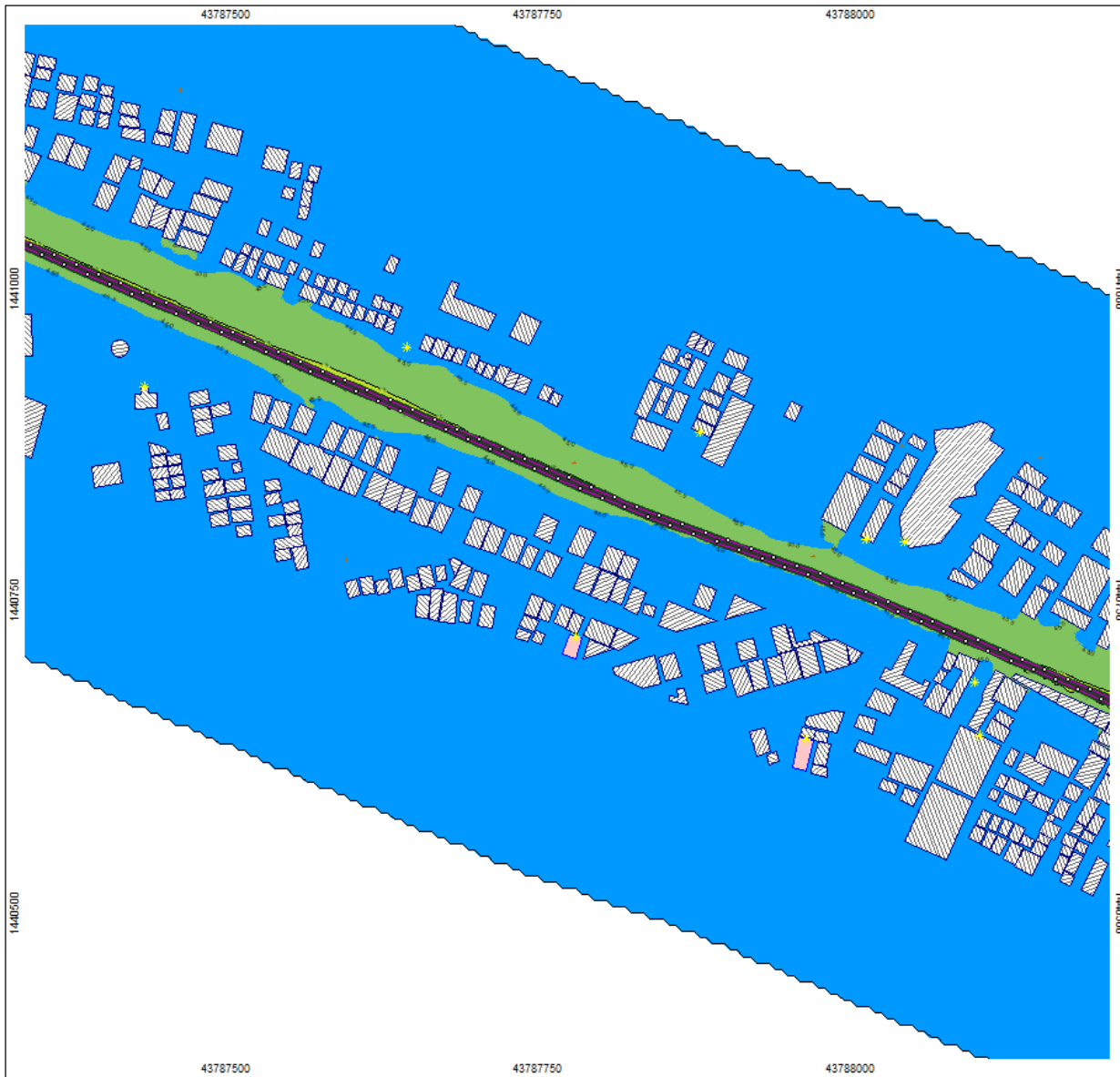
**120 2024 2B with Parapet Wall
 Noise Contour Map**

Leq,n
 Calculation in 1.5 m above ground

Project engineer: CMR
 Created: 9/10/2020
 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





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 2024 2B with Parapet Wall
Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

Project engineer: CMR
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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
	Elevation point
	Bodeneffekte
	Noise calculation area

Length scale 1:3101
0 25 50 100 150 200 m

↑ N



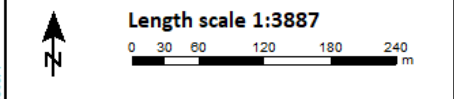
"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2024 2A with Parapet Wall
 Noise Contour Map
 Leq,d**
 Calculation in: 1.5 m above ground

Project engineer: CMR
 Created: 9/10/2020
 Processed with SoundPLAN 8.1, Update: 10/23/2019

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
			Linesource
			Geometry bitmap
			Wall
			Wall
			Elevation point
			Bodeneffekte
			Noise calculation area





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

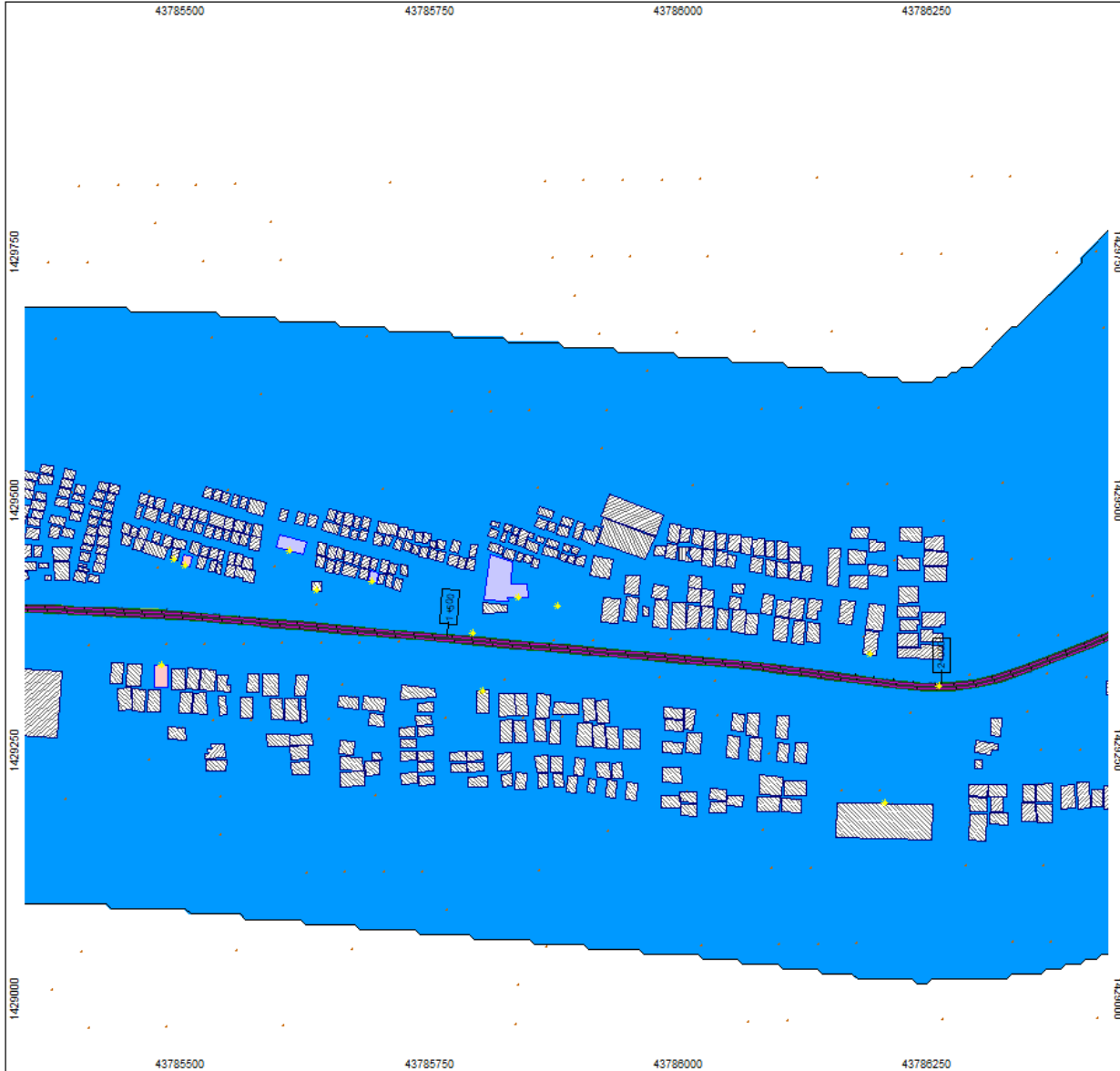
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from DMU Soundplan 8.1 Library and BMRL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2024 2A with Parapet Wall
Noise Contour Map
Leq,d**
Calculation in 1.5 m above ground

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

<p>Levels Leq,d in dB(A)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 >= 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> Wall Construction Equip. Main building Point receiver +3dB(A) increase from Point Sources Line source Geometry bitmap Wall Wall Elevation points Bottom effects Noise reduction zone
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“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

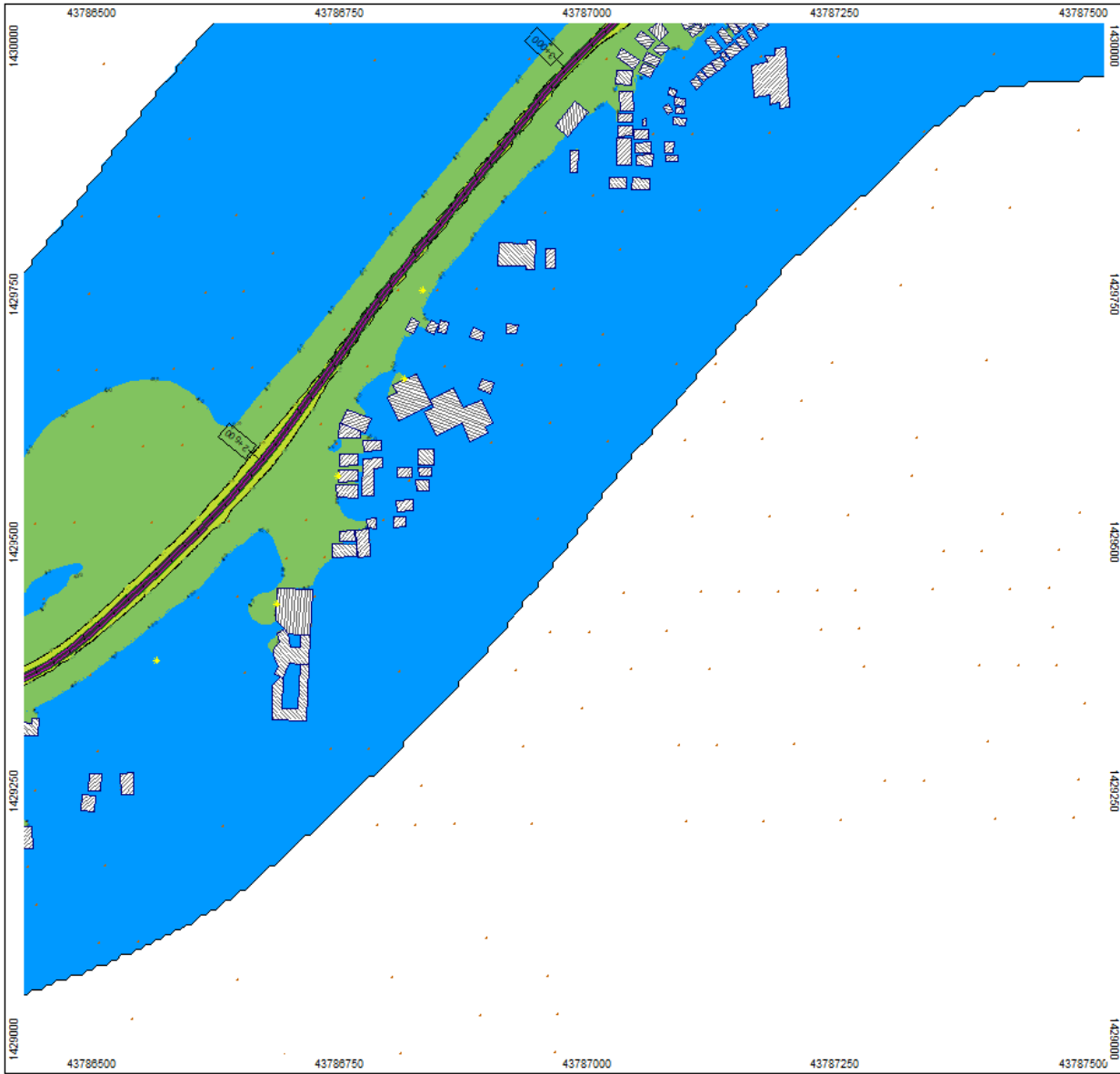
110 2024 2A with Parapet Wall Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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 1:3887

0 30 60 120 180 240 m



"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2024 2A with Parapet Wall Noise Contour Map
Leq,d

Calculation in 1.5 m above ground

Project engineer: CMR
 Created: 9/10/2020
 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

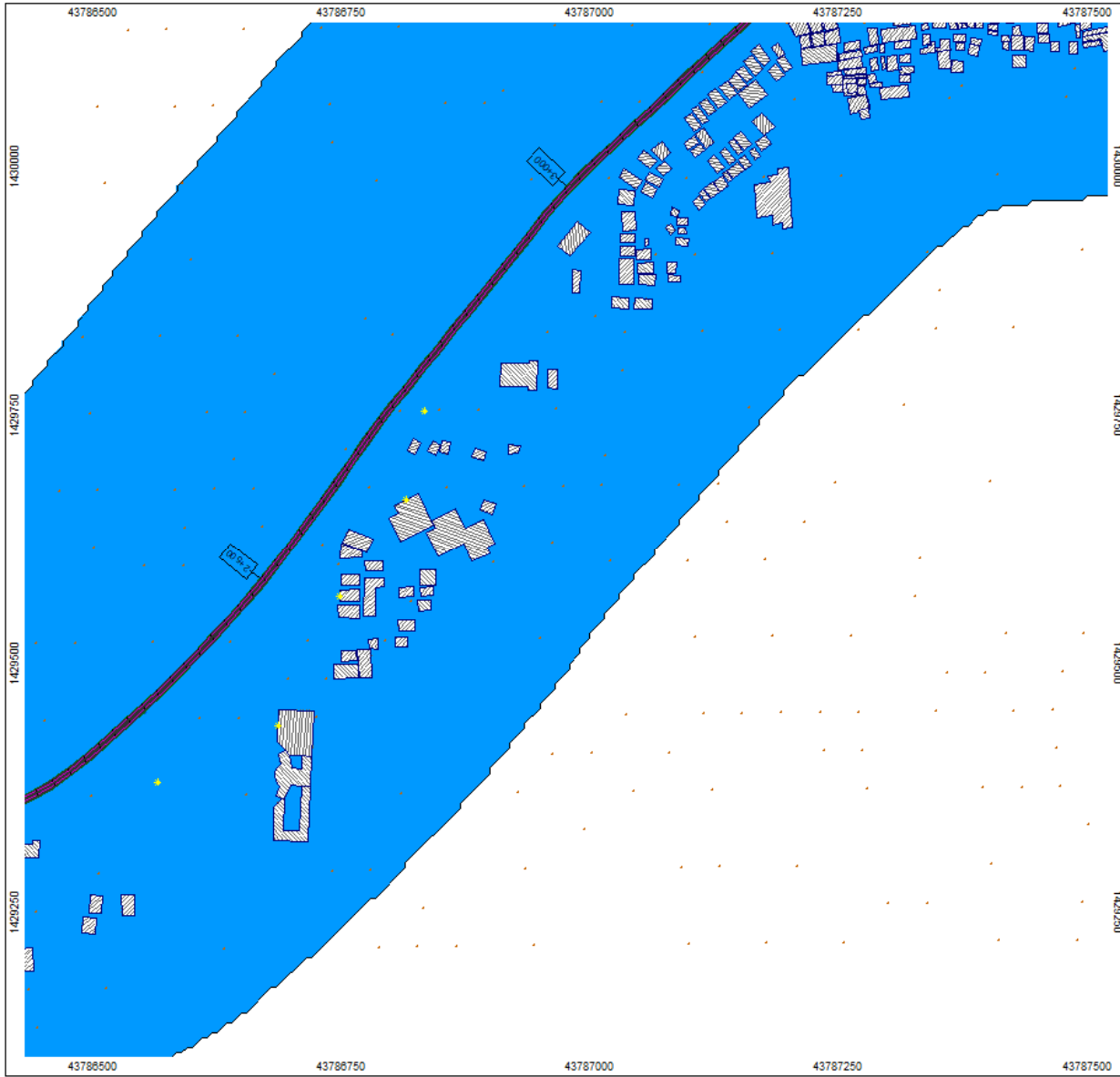
Signs and symbols

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



Length scale 1:3887





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

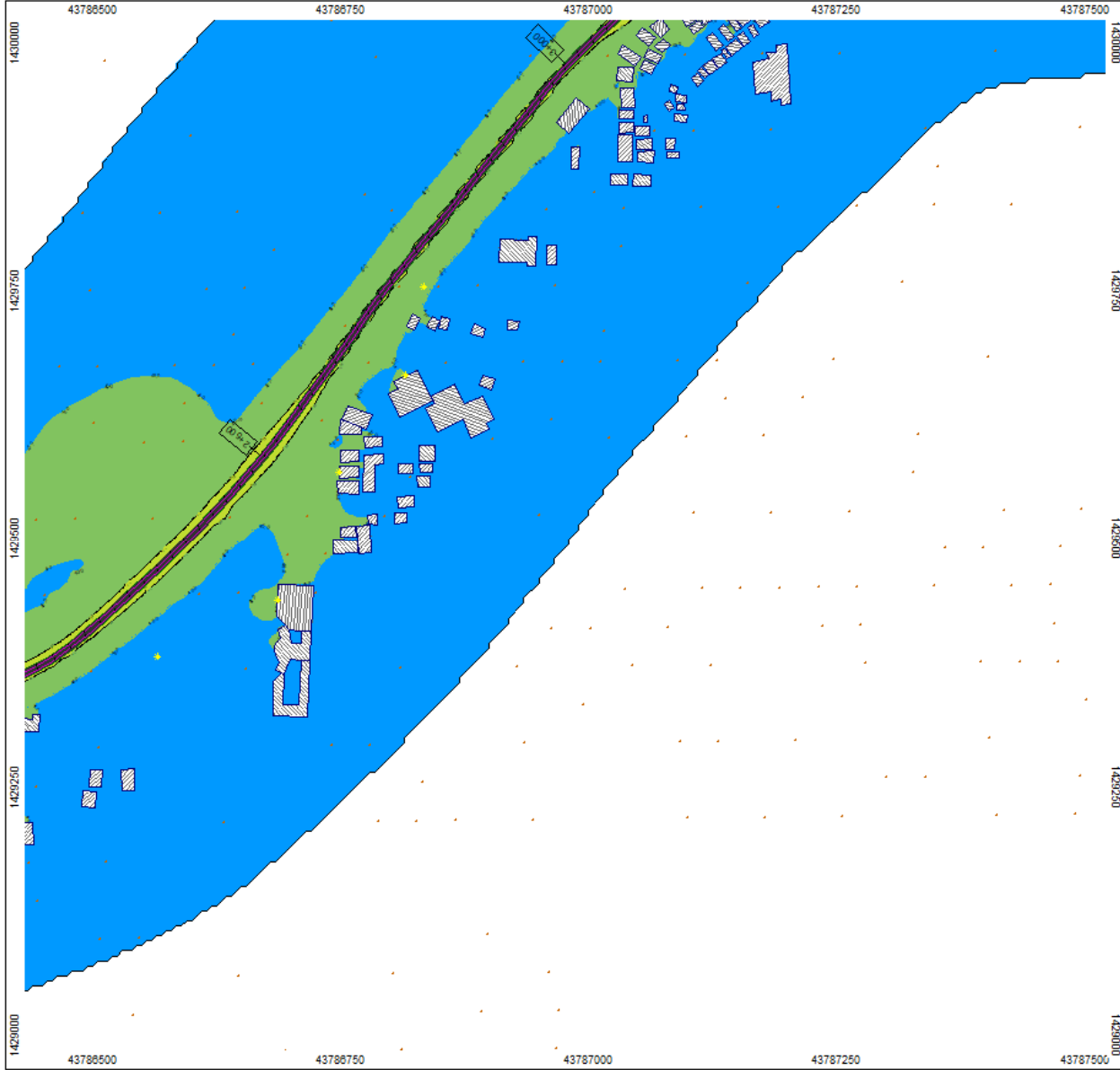
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRC Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

110 2024 2A with Parapet Wall
Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

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

Levels Leq,n in dB(A)		Signs and symbols	
Blue	< 45	Green line	Wall
Light Green	45 - 50	Red star	Construction Equip
Yellow	50 - 55	Hatched rectangle	Main building
Orange	55 - 60	Yellow star	Point receiver
Dark Orange	60 - 65	Black line	+3dB(A) increase from
Red	>= 65	Red dot	Point source
		Pink line	Line source
		Grey rectangle	Geometry bitmap
		Green line	Wall
		Green line	Wall
		Red dot	Elevation point
		White rectangle	Bodeneffekte
		Blue rectangle	Noise calculation area

Length scale 1:3887
0 30 60 120 180 240 m



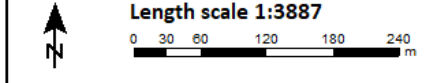
“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

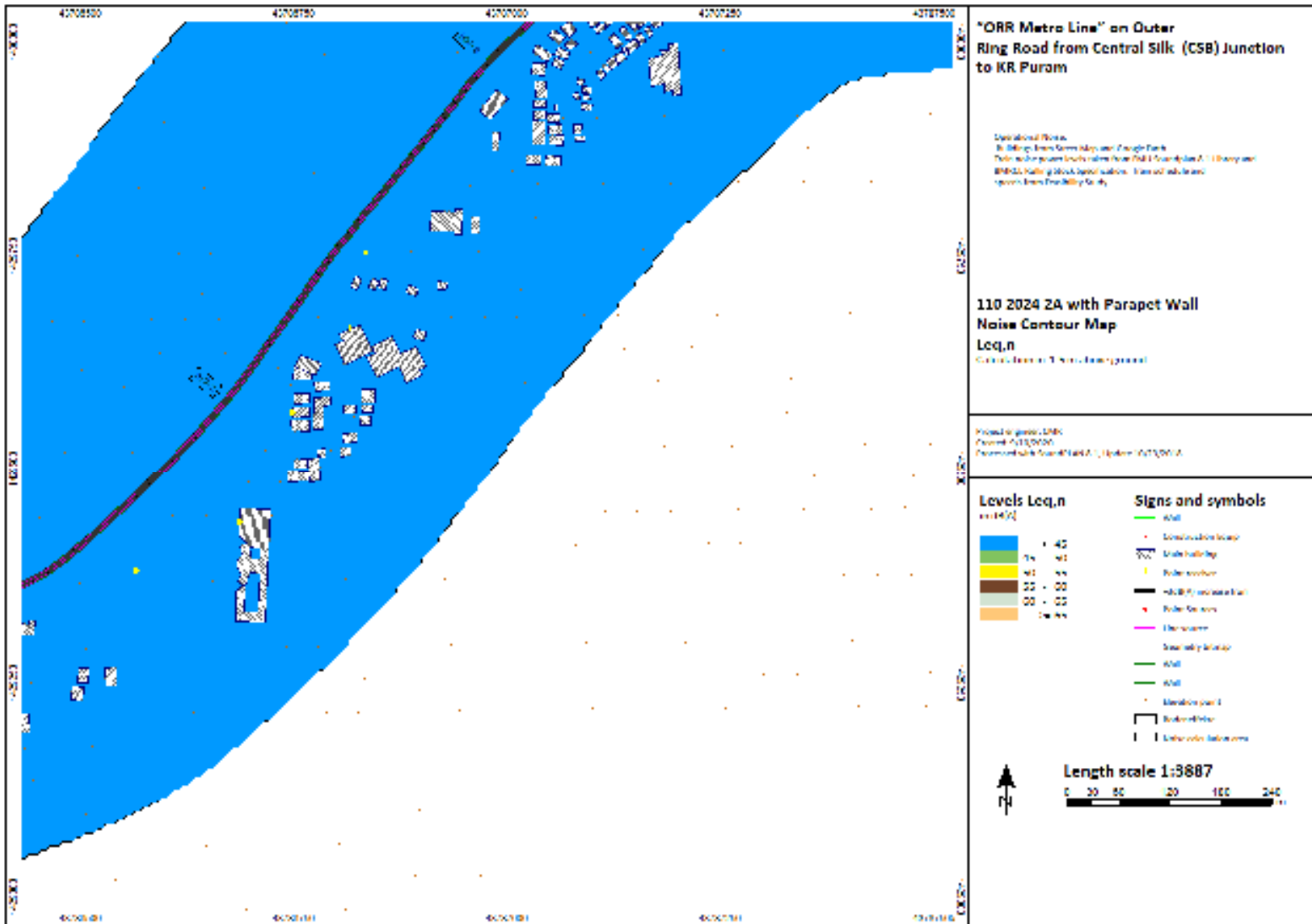
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2024 2A with Parapet Wall
Noise Contour Map
Leq,d**
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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
	Elevation point
	Bodeneffekte
	Noise calculation area







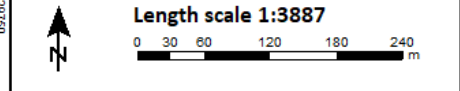
"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

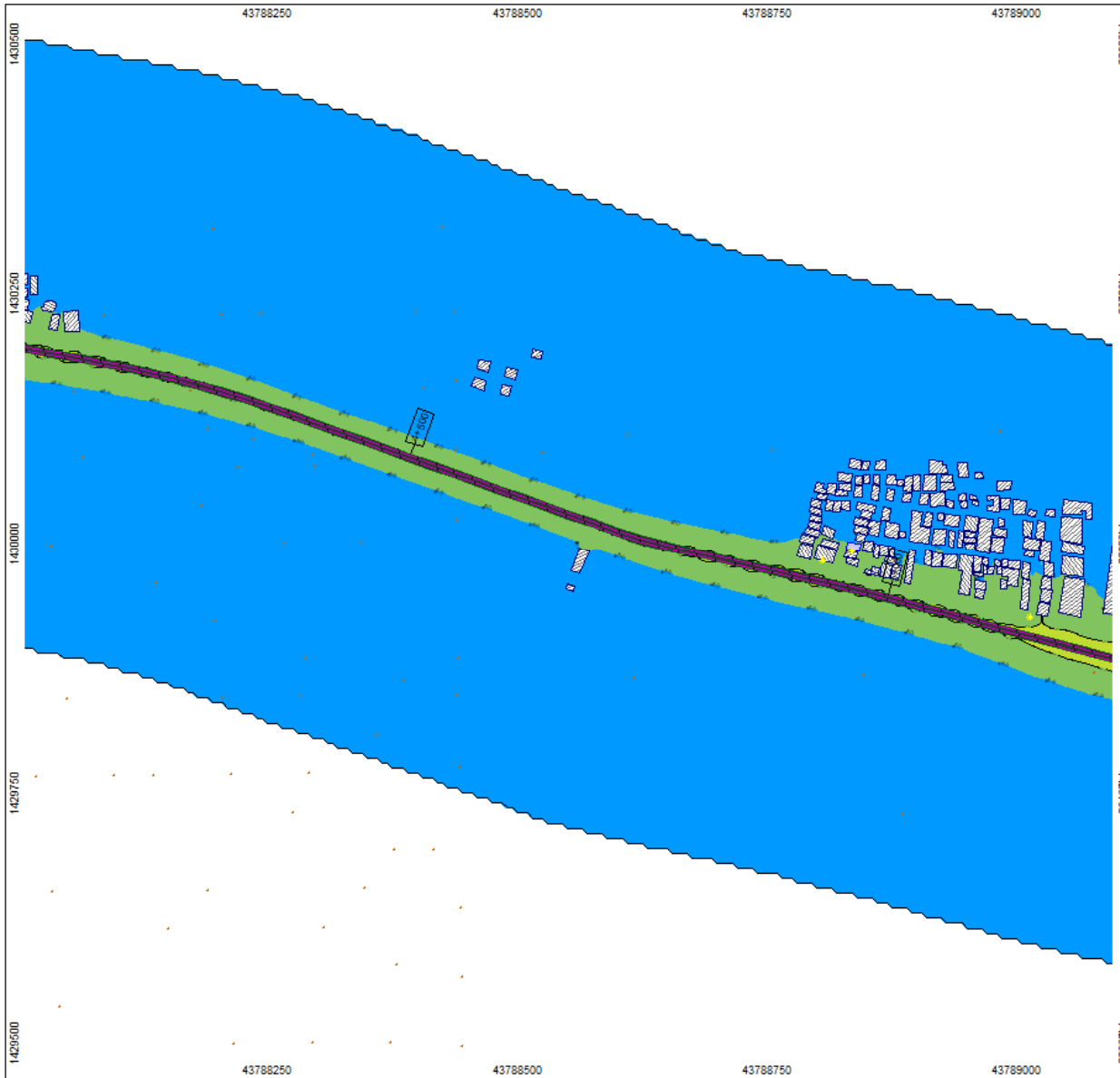
Operational Noise
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.1 Library and BMARC Rolling Stock Specifications. Train schedule and spreads from Feasibility Study.

110 2024 2A with Parapet Wall Noise Contour Map
Leq,d
 Calculation in 1.5 m above ground

Project engineer: CMR
 Created: 9/10/2020
 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
	Elevation point
	Bodeneffekte
	Noise calculation area





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

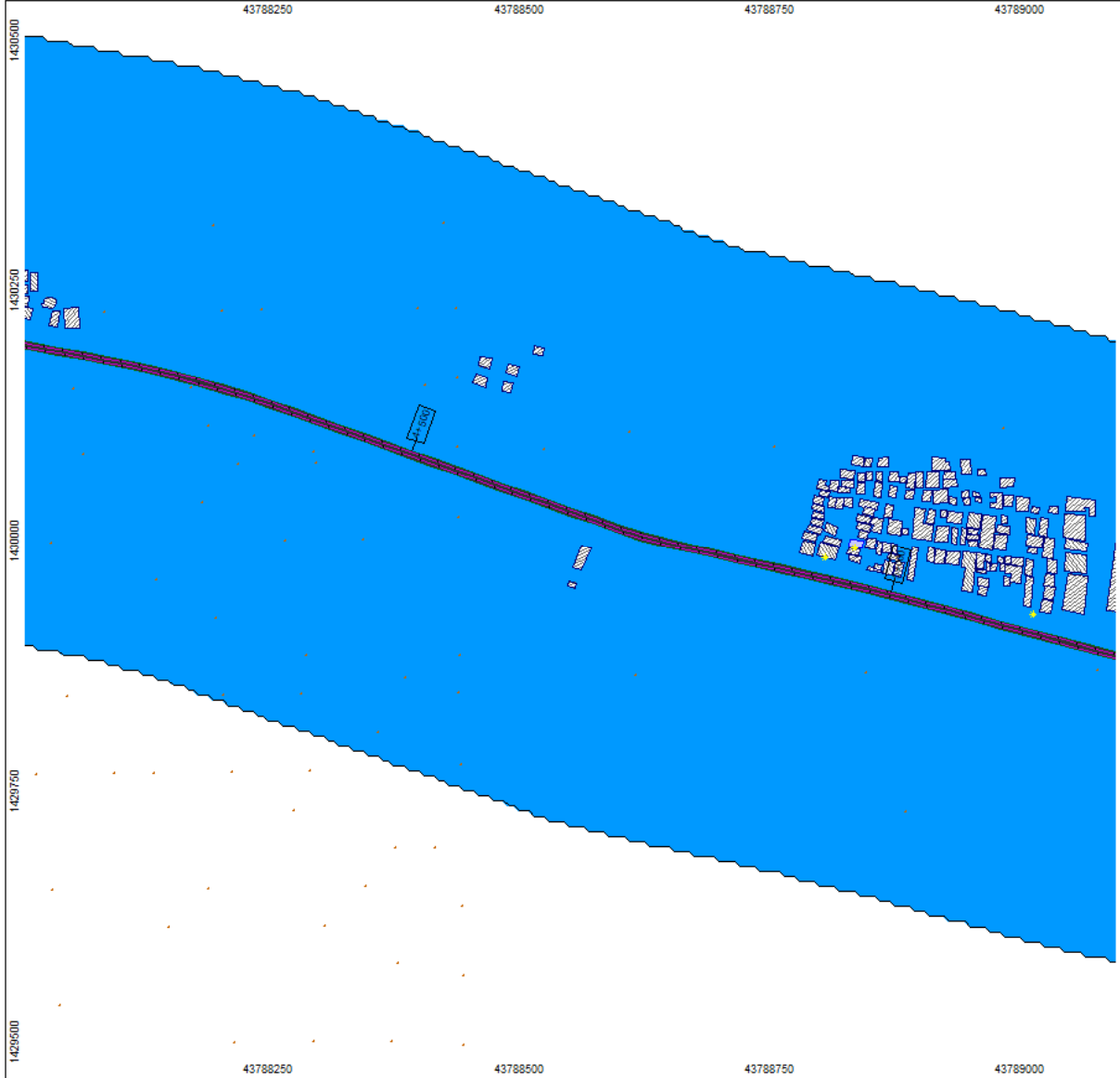
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

110 2024 2A with Parapet Wall
Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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 front
>= 65	Point Sources
	Linesource
	Geometry bitmap
	Wall
	Wall
	Elevation point
	Bodeneffekte
	Noise calculation area

Length scale 1:3887
0 30 60 120 180 240 m



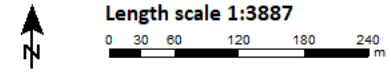
“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2024 2A with Parapet Wall Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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 |





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2024 2A with Parapet Wall
Noise Contour Map
Leq,d**
Calculation in 1.5 m above ground

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

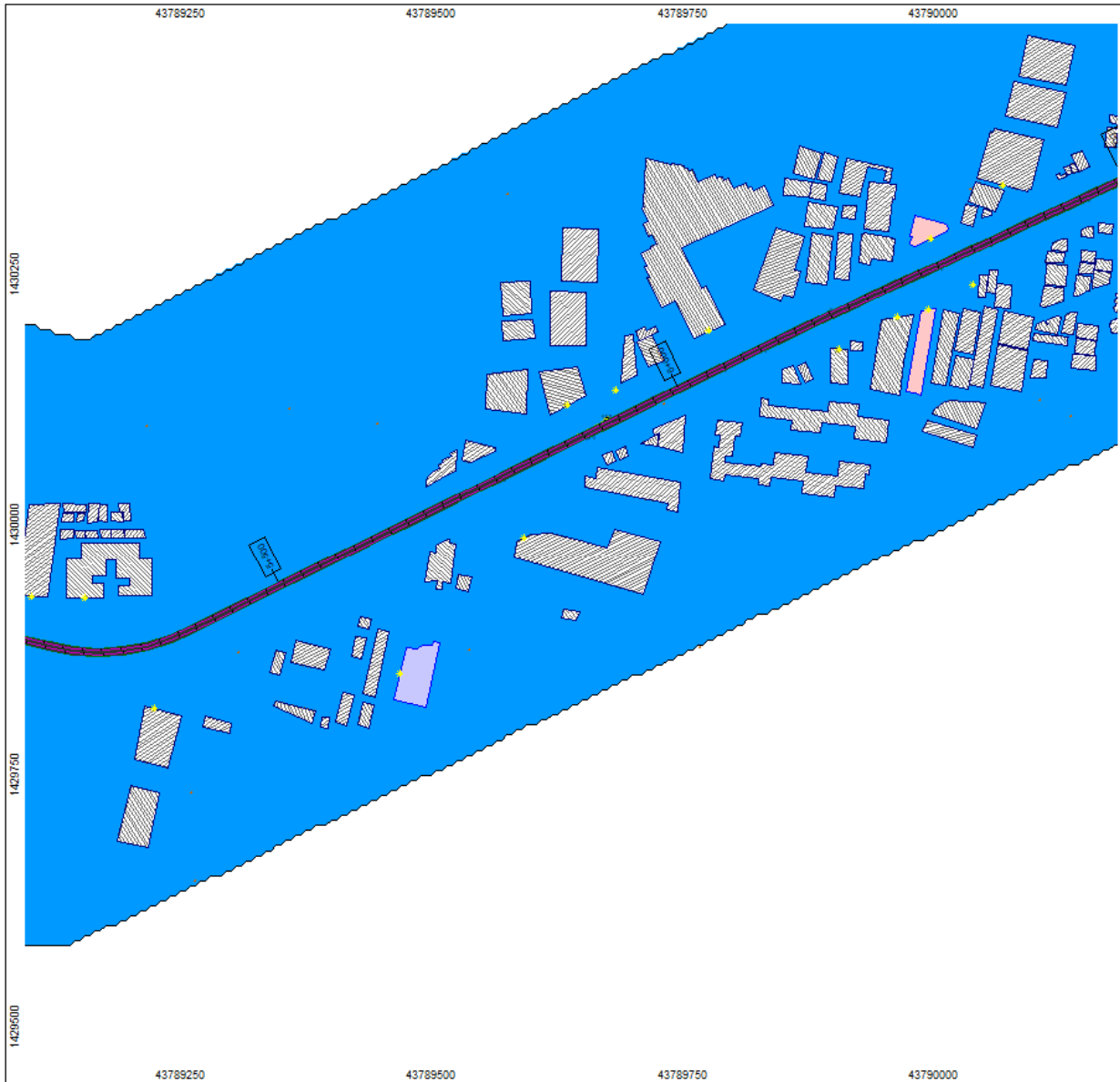
Levels Leq,d in dB(A)

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

Signs and symbols

- Wall
- Construction Equip
- Main building
- ▲ Point receiver
- +1dB(A) increase from
- Point Sources
- Lite source
- Geometry linemap
- Wall
- Elevation point
- Boundaryline
- Noise contour line





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2024 2A with Parapet Wall
Noise Contour Map**

Leq,n
Calculation in 1.5 m above ground

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

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

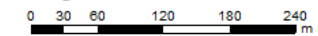
- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- ≥ 65

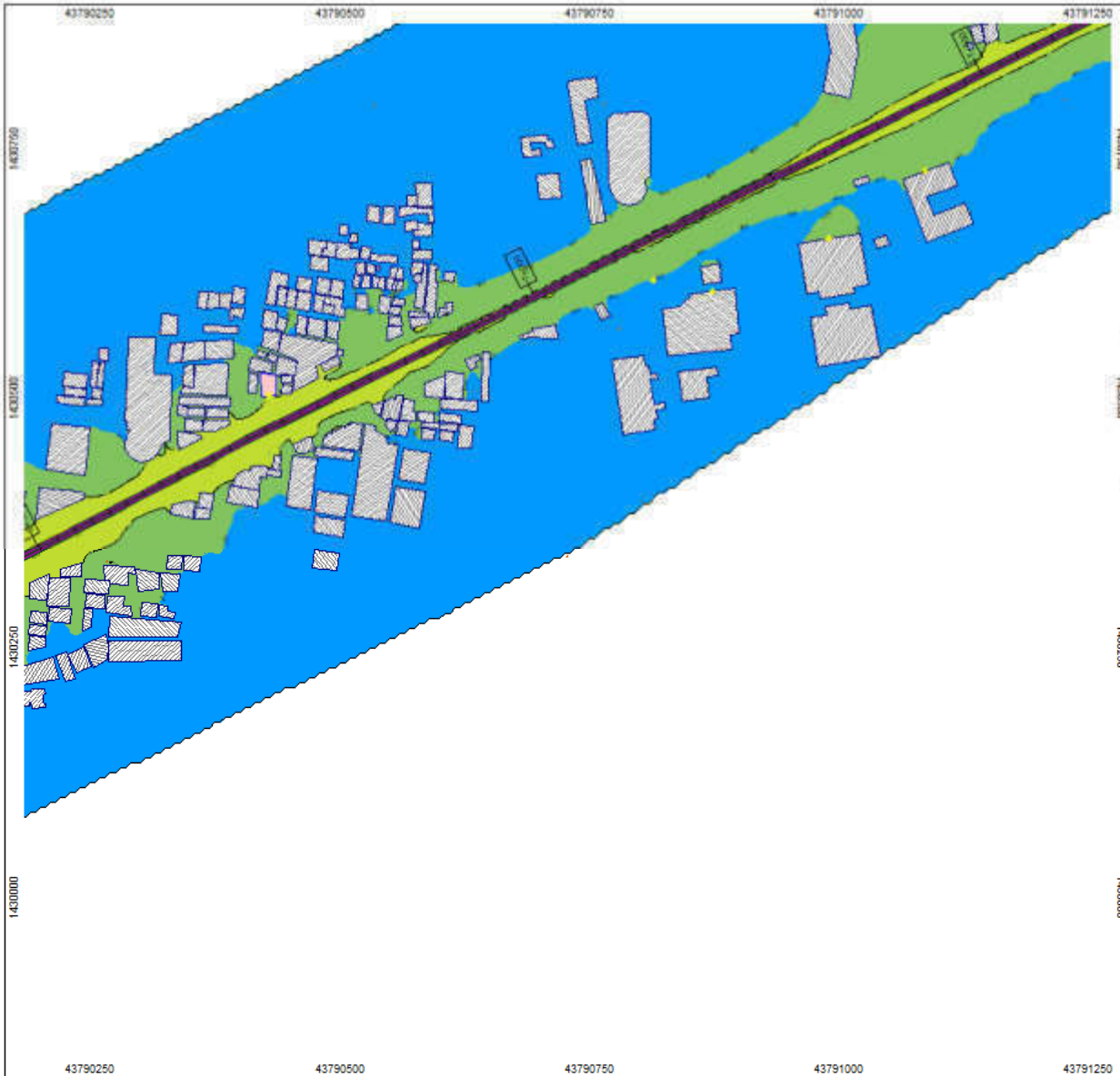
Signs and symbols

- 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 1:3887





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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

110 2024 2A with Parapet Wall Noise Contour Map
Leq,d

Calculation in 1.5 m above ground

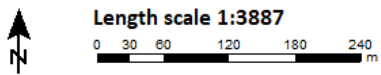
Project engineer: CMR
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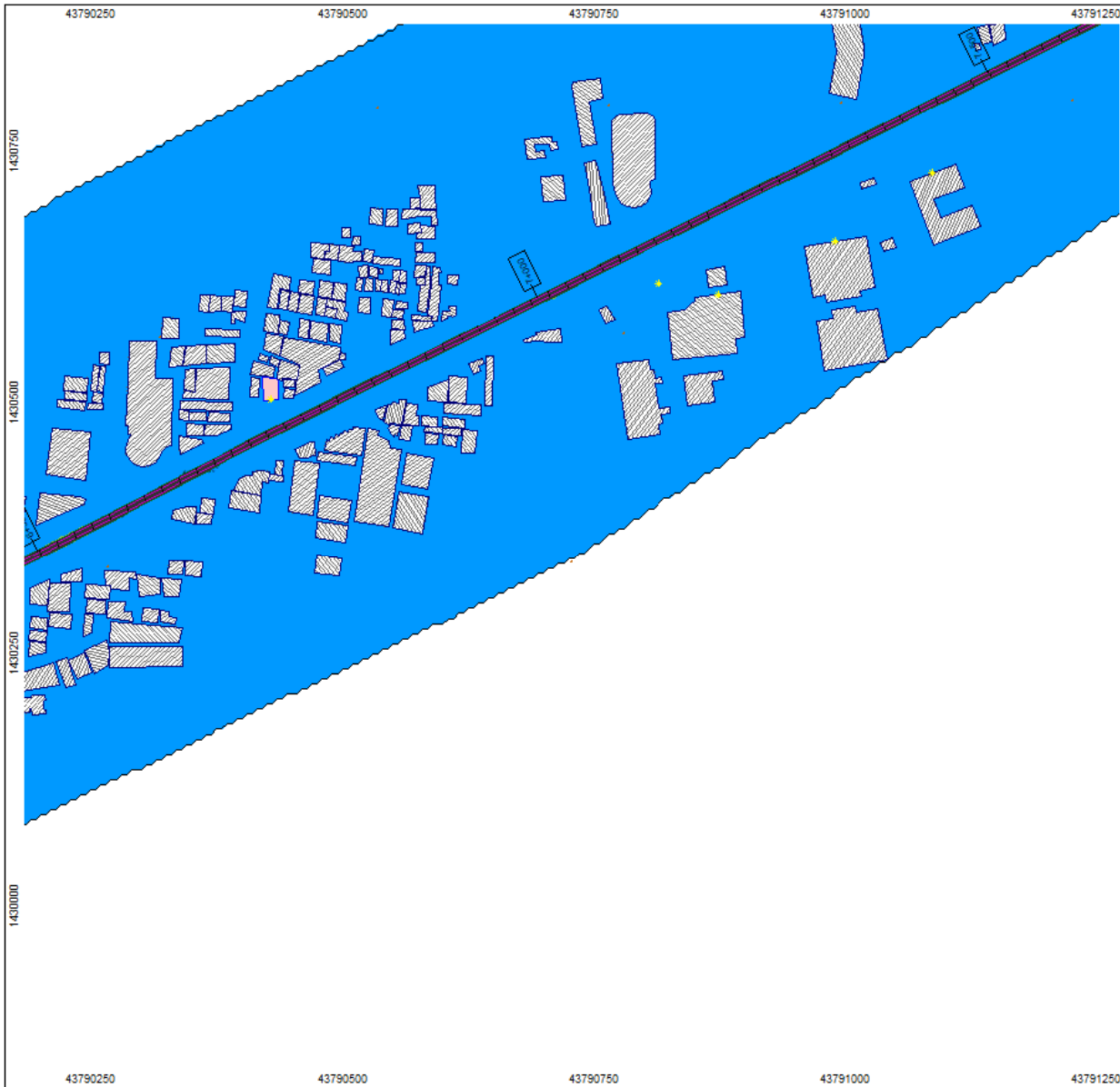
Levels Leq,d in dB(A)

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

Signs and symbols

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





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2024 2A with Parapot Wall
Noise Contour Map
Leq,n**
Calculation in 1.5 m above ground

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

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

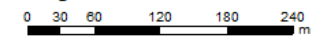
Blue	< 45
Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Grey	60 - 65
Orange	> 65

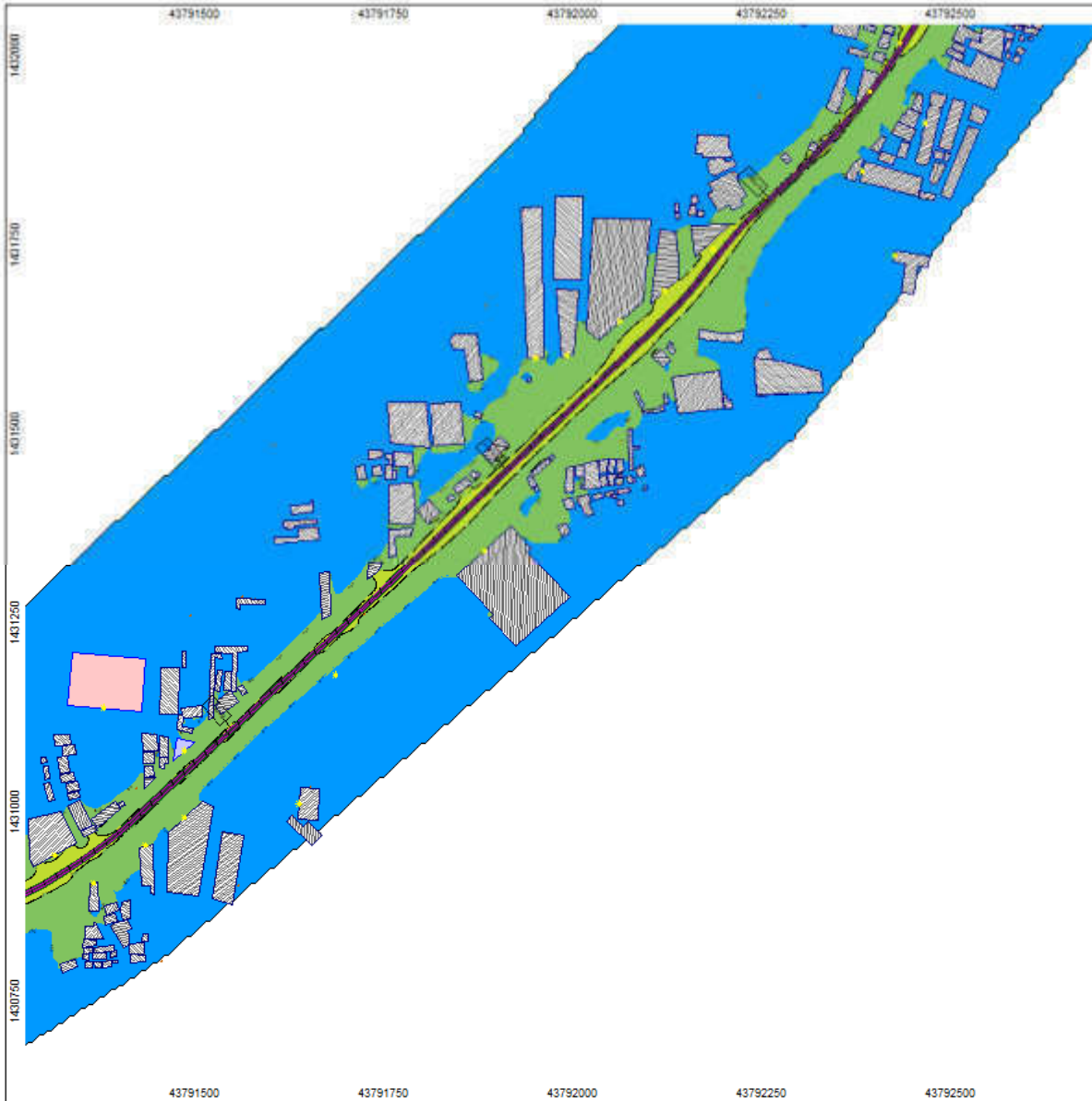
Signs and symbols

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



Length scale 1:3887





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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

**110 2024 2A with Parapet Wall
 Noise Contour Map
 Leq,d**
 Calculation in 1.5 m above ground

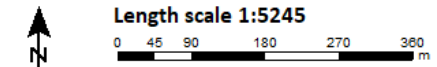
Project engineer: CMM
 Created: 9/10/2023
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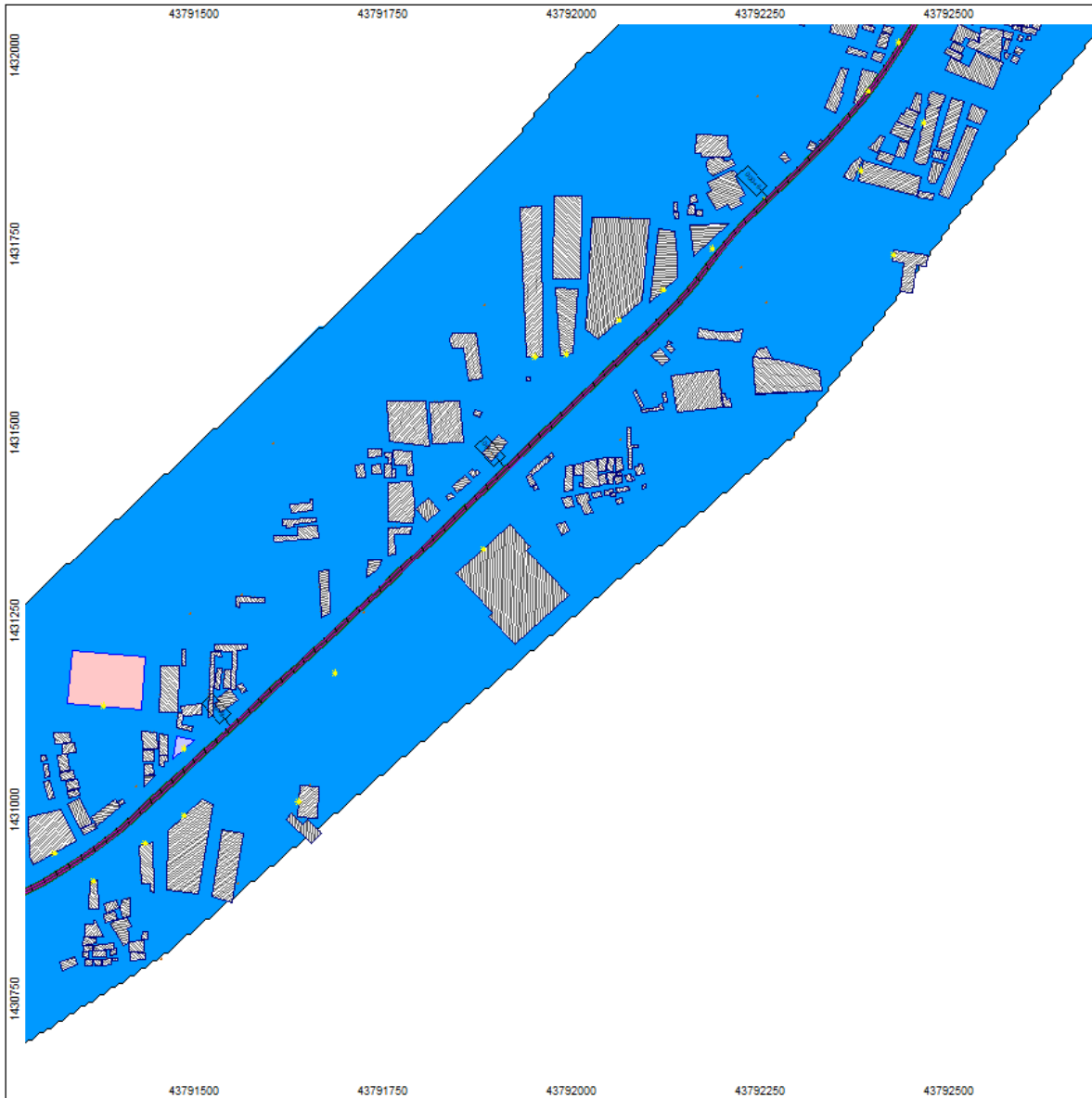
**Levels Leq,d
 in dB(A)**

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 Sources
- Line source
- Geometry bitmap
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2024 2A with Parapet Wall Noise Contour Map

Leq,n
Calculation in 1.5 m above ground

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

Levels Leq,n in dB(A)

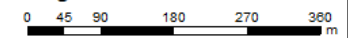
Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Dark Green	60 - 65
Orange	>= 65

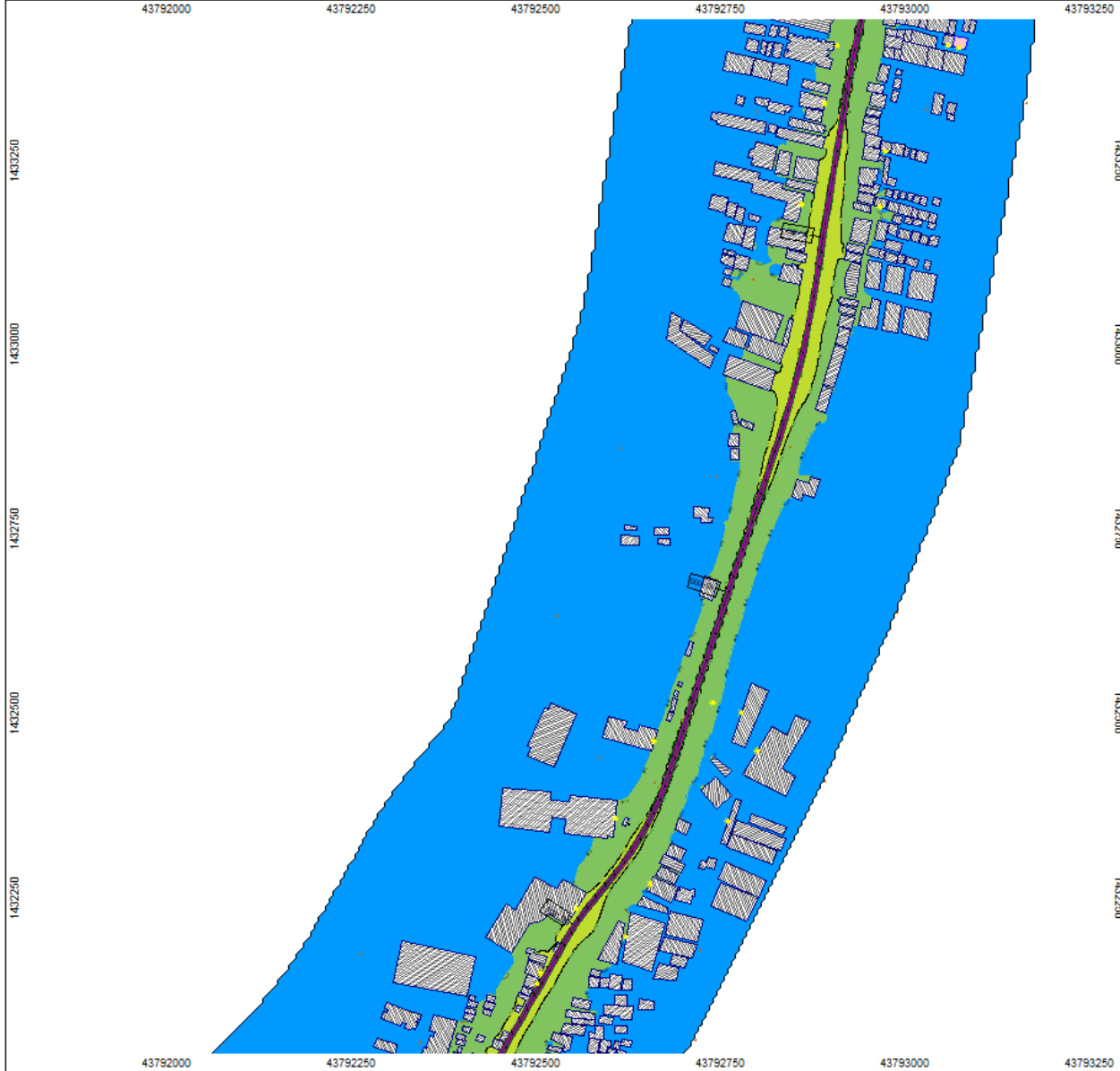
Signs and symbols

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



Length scale 1:5245





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

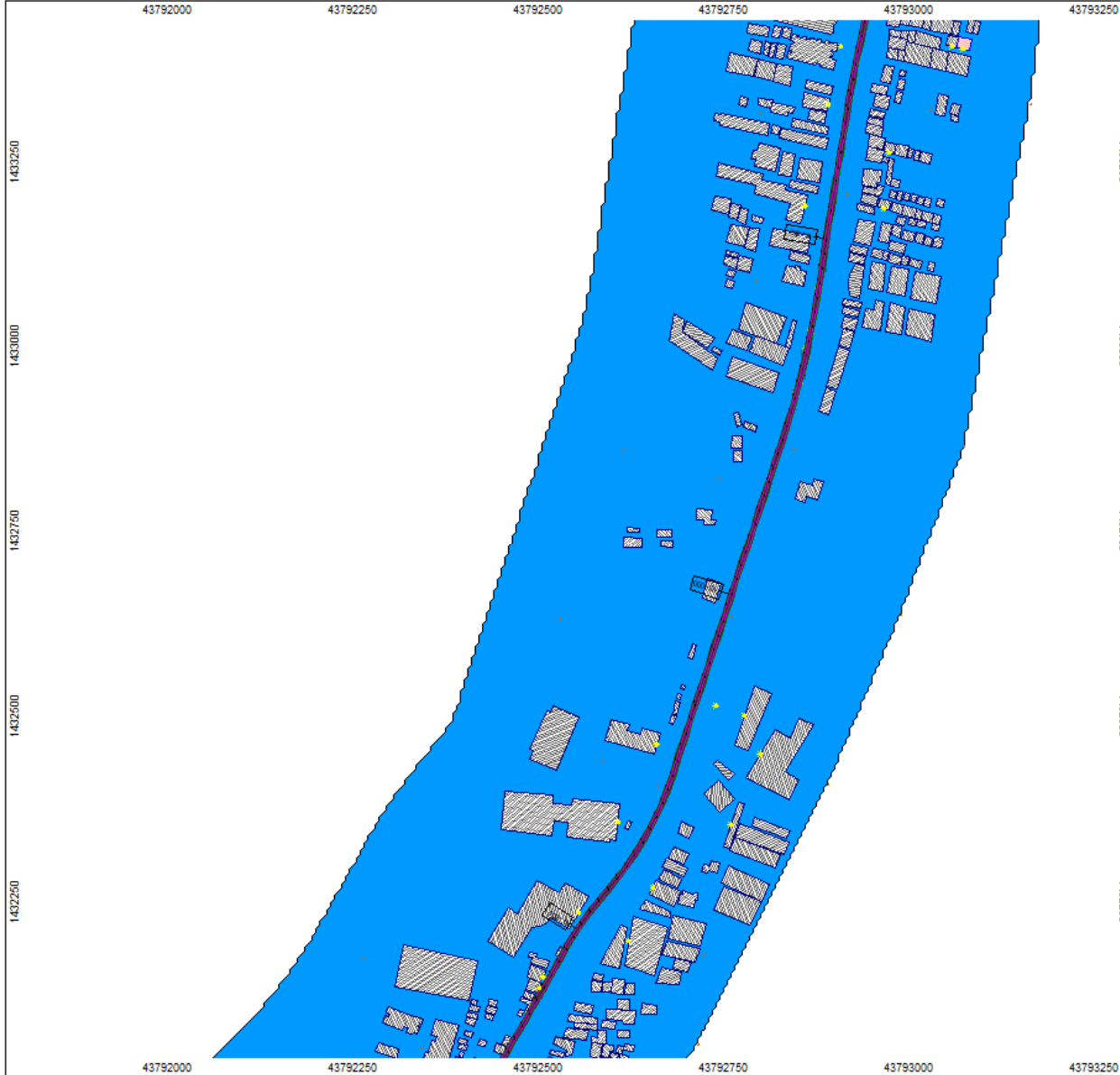
**110 2024 2A with Parapet Wall
Noise Contour Map
Leq,d**
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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
			Elevation point
			Bodeneffekte
			Noise calculation area

Length scale 1:5245

0 45 90 180 270 360 m



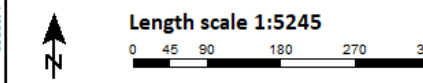
“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2024 2A with Parapet Wall
Noise Contour Map
Leq,n**
Calculation in 1.5 m above ground

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

<p>Levels Leq,n in dB(A)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 >= 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> 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
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"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2024 2A with Parapet Wall
Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

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

Levels Leq,d in dB(A)

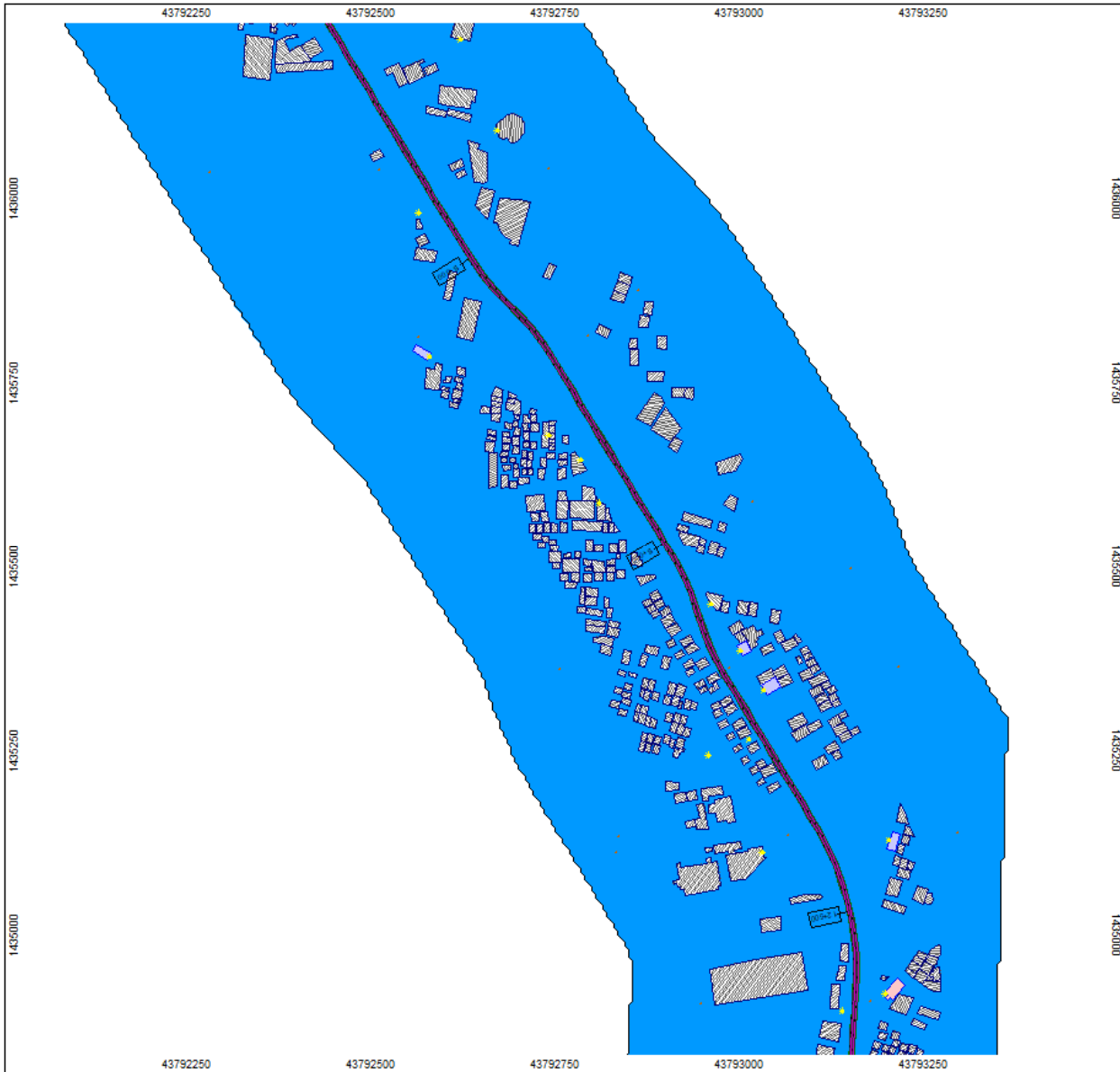
Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	≥ 65

Signs and symbols

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

Length scale 1:5245

0 45 90 180 270 360 m



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

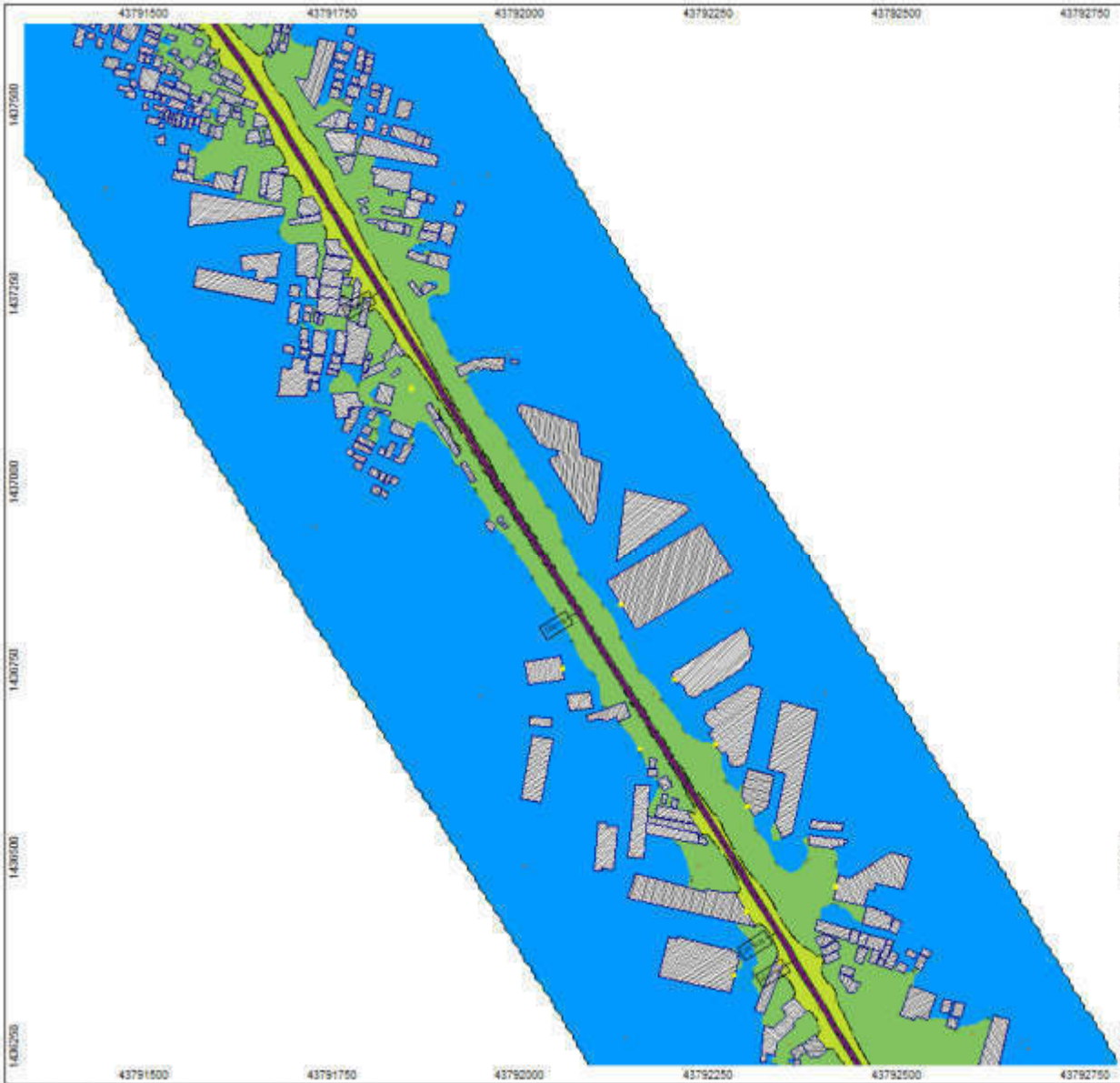
110 2024 2A with Parapet Wall Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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 1:5245

0 45 90 180 270 360 m



"ORR Metro Line" on Outer Ring Road from Central Silk Junction to KR Puram

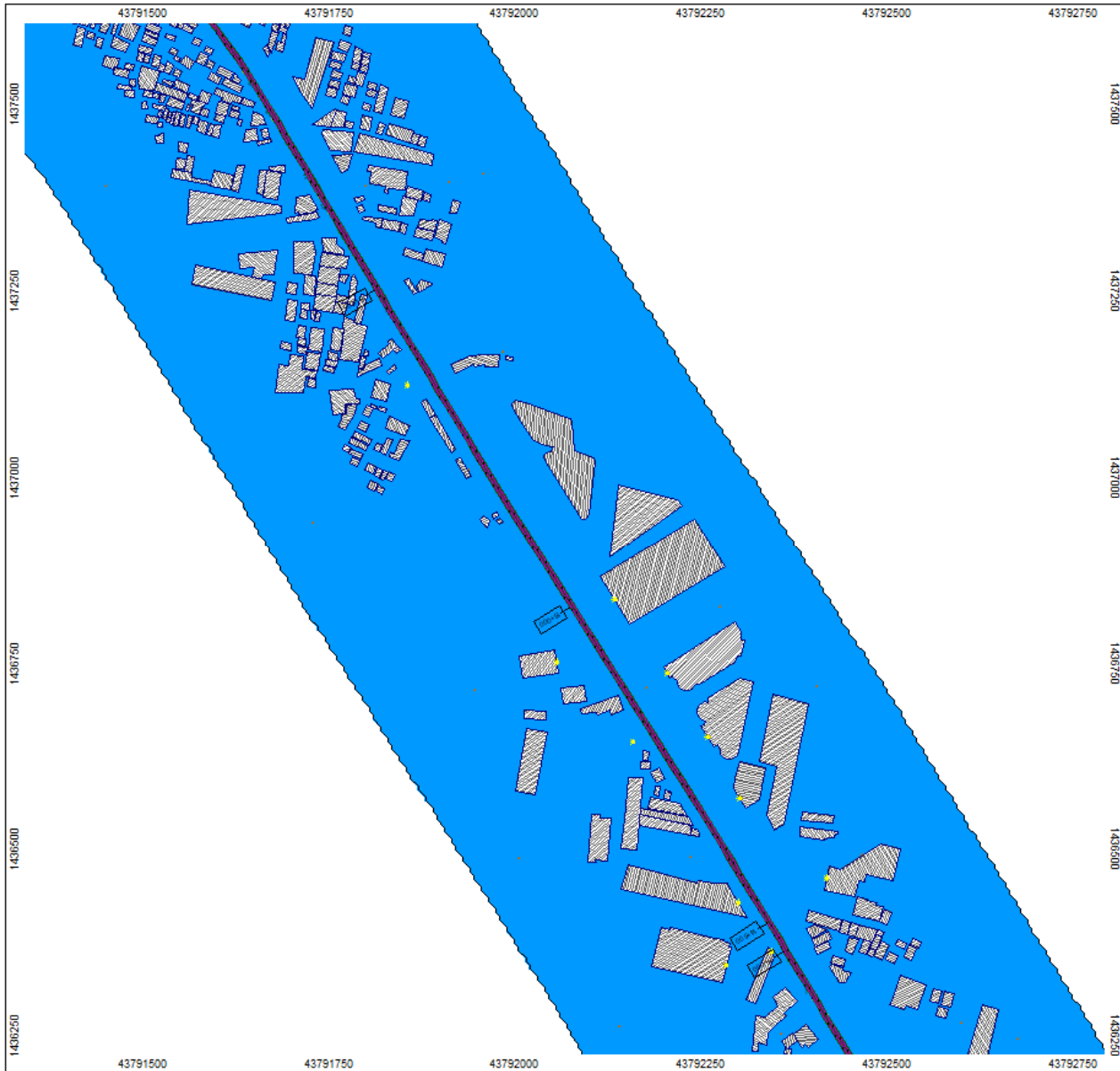
Operational Noise:
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.1 Library and BAWCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2024 2A with Parapet Wall
 Noise Contour Map
 Leq,d**
 Calculation in 1.5 m above ground

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

Levels Leq,d in dB(A)	Signs and symbols
45 - 50	Wall
50 - 55	Construction Equip
55 - 60	Main building
60 - 65	Point receiver
≥ 65	-5dB(A) increase from
	Point Source
	Line source
	Geometry block
	Wall
	Wall
	Diversion point
	Barrier/offset
	Noise reduction zone

Length scale 1:5181
 0 45 90 180 270 360 m



"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

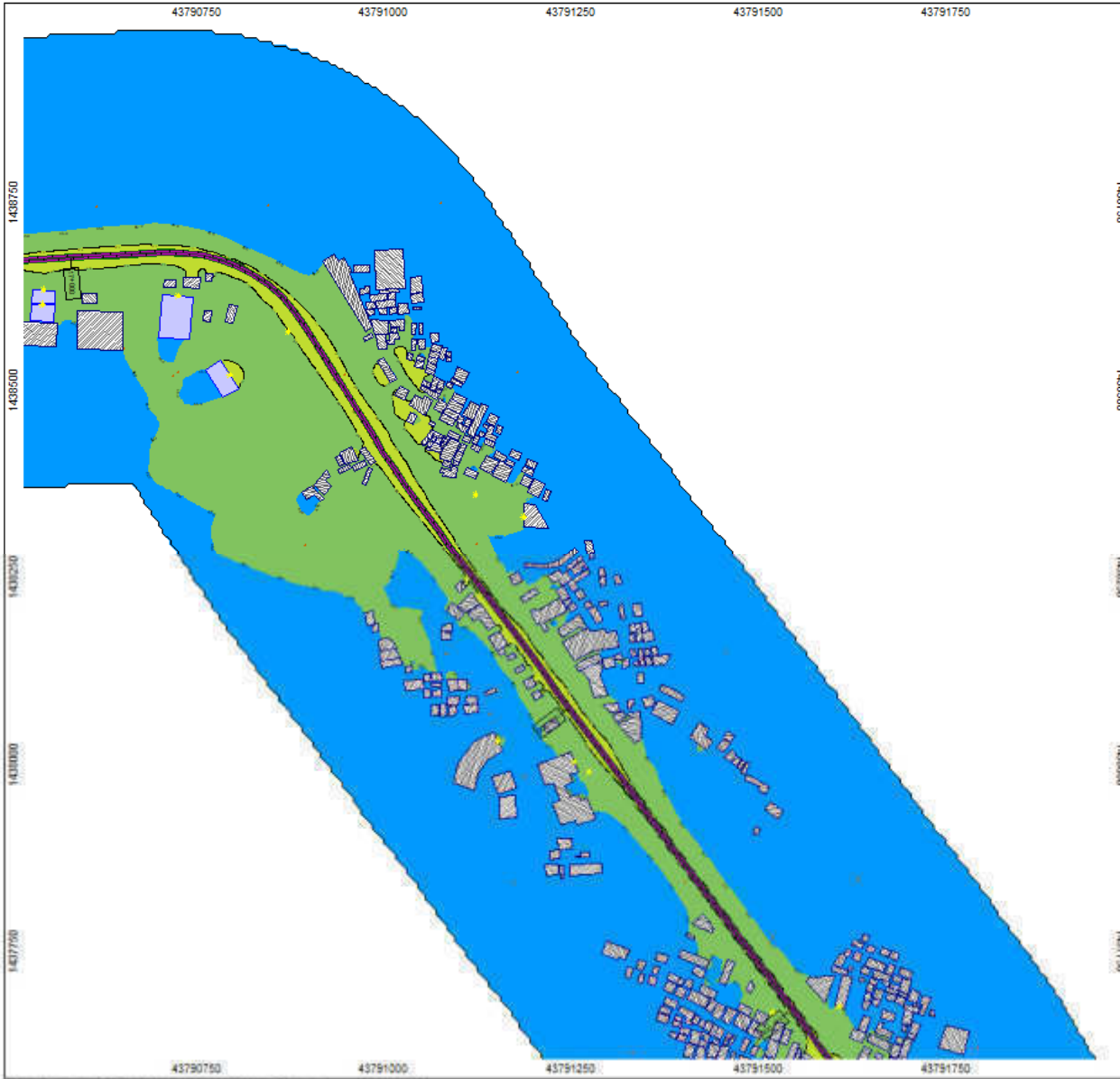
110 2024 2A with Parapet Wall
Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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 1:5181

0 45 90 180 270 360 m



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

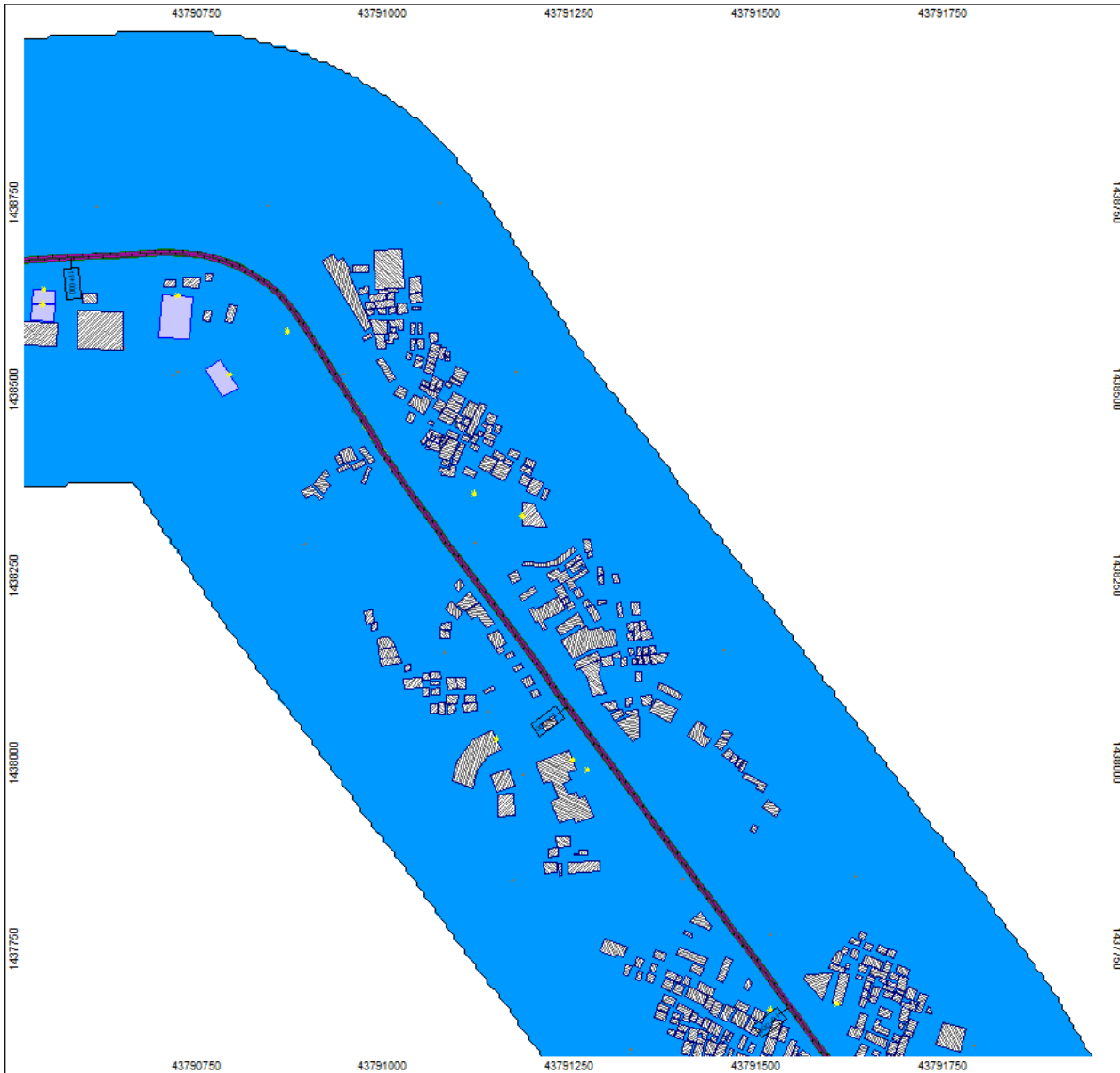
110 2024 2A with Parapet Wall Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

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

<p>Levels Leq,d in dB(A)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 >= 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> Wall Construction Equip Main building Point receiver +dB(A) increase from Point Source Line source Geometry linkmap Wall Wall Elevation point Building/lot Noise calculation area
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Length scale 1:5181

0 45 90 180 270 360 m



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2024 2A with Parapet Wall Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

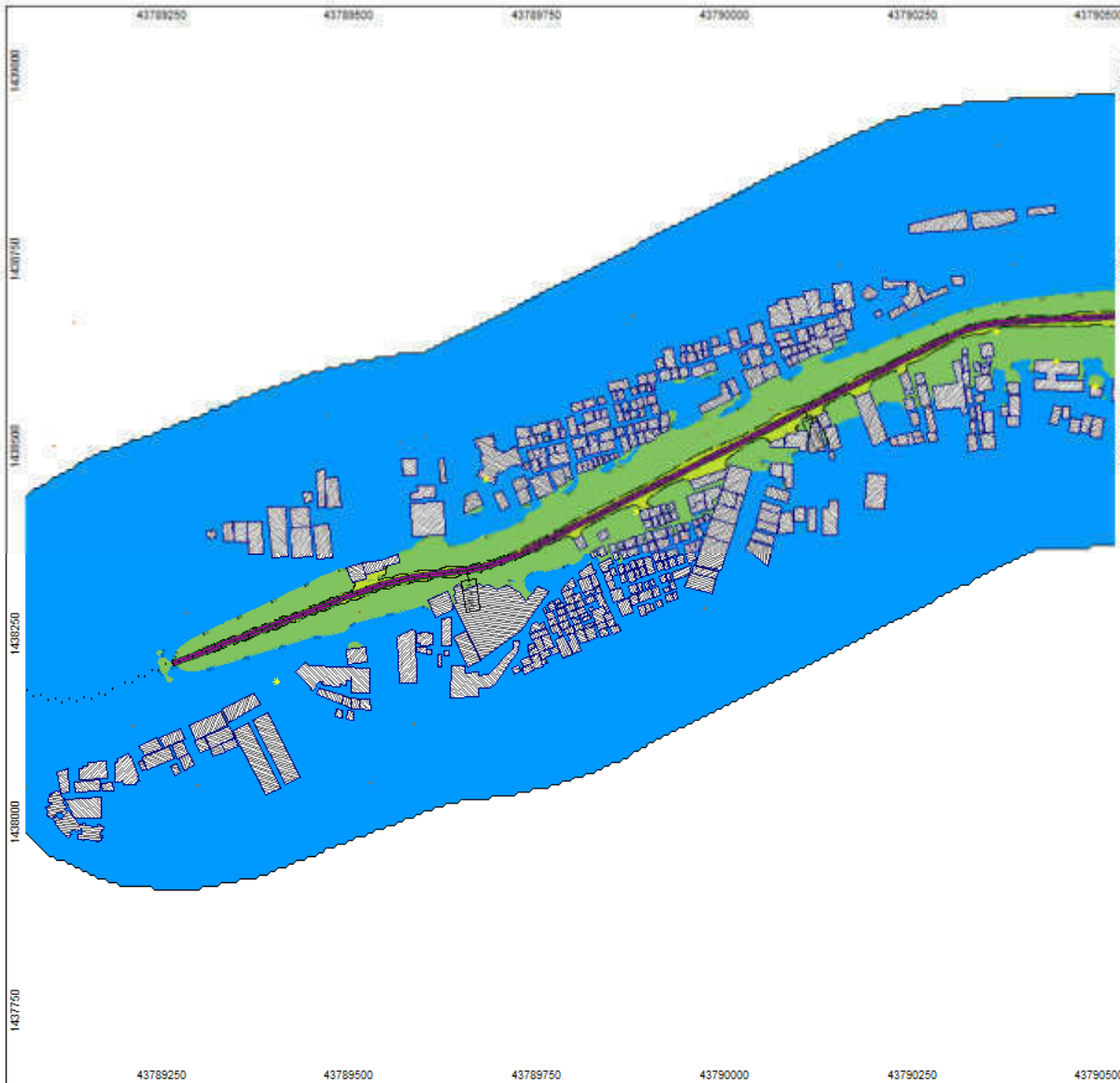
Project engineer: CMR
Created: 9/10/2020
Processed with SoundPLAN 8.1, Update 10/23/2018

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

Length scale 1:5181

0 45 90 180 270 360 m

North arrow pointing up.



"ORR Metro Line" on Outer Ring Road from Central Silk Junction to KR Puram

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

**110 2024 2A with Parapet Wall
 Noise Contour Map
 Leq,d**

Calculation in 1.5 m above ground.

Project Engineer: CMH
 Created: 8/10/2023
 Processed with SoundPLAN 8.1, Update 10/23/2018

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

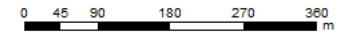
- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- ≥ 65

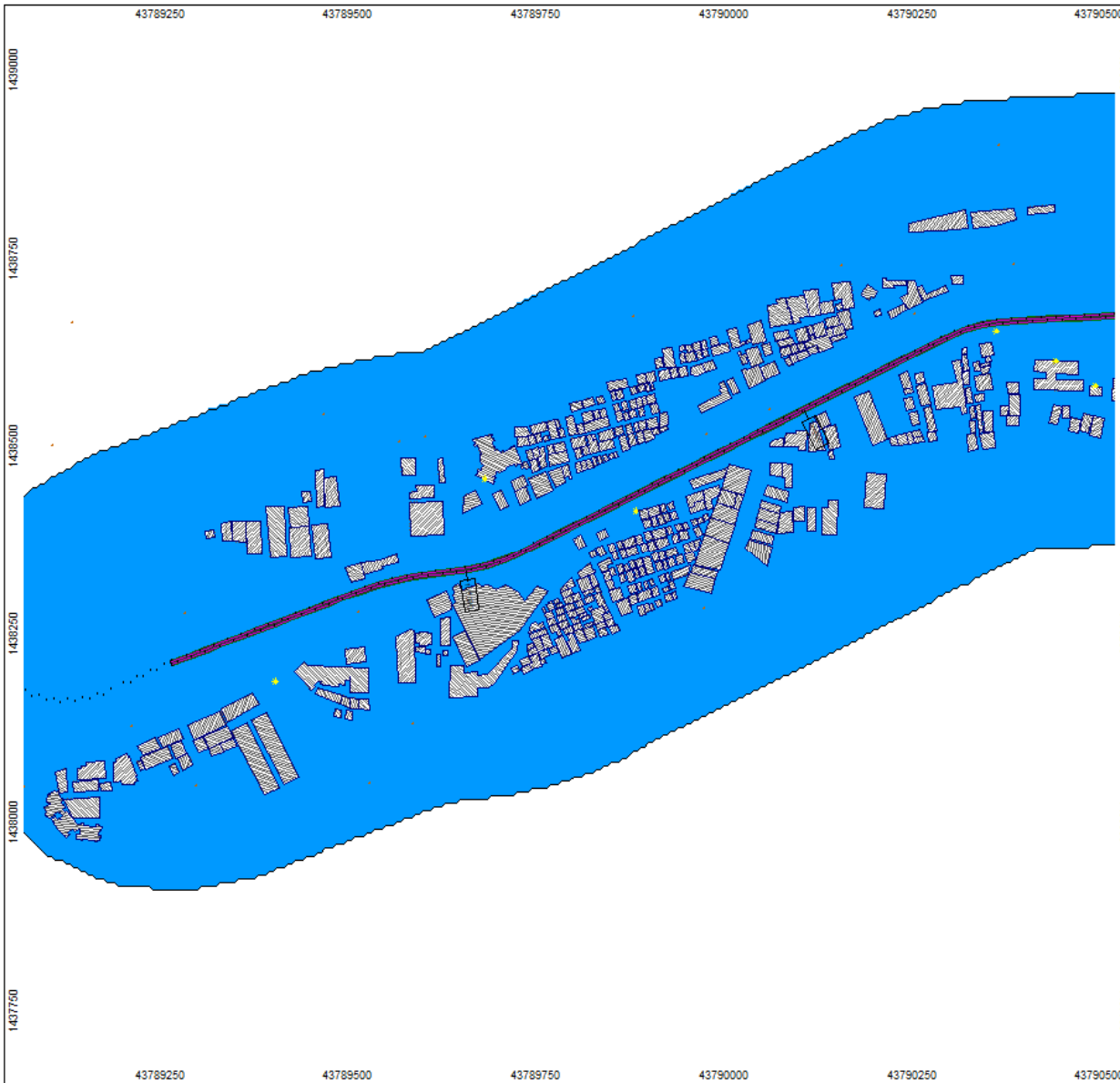
Signs and symbols

- 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



Length scale 1:5181





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2024 2A with Parapet Wall
Noise Contour Map
Leq,n**
Calculation in 1.5 m above ground

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

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

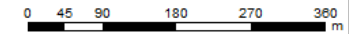
- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- ≥ 65

Signs and symbols

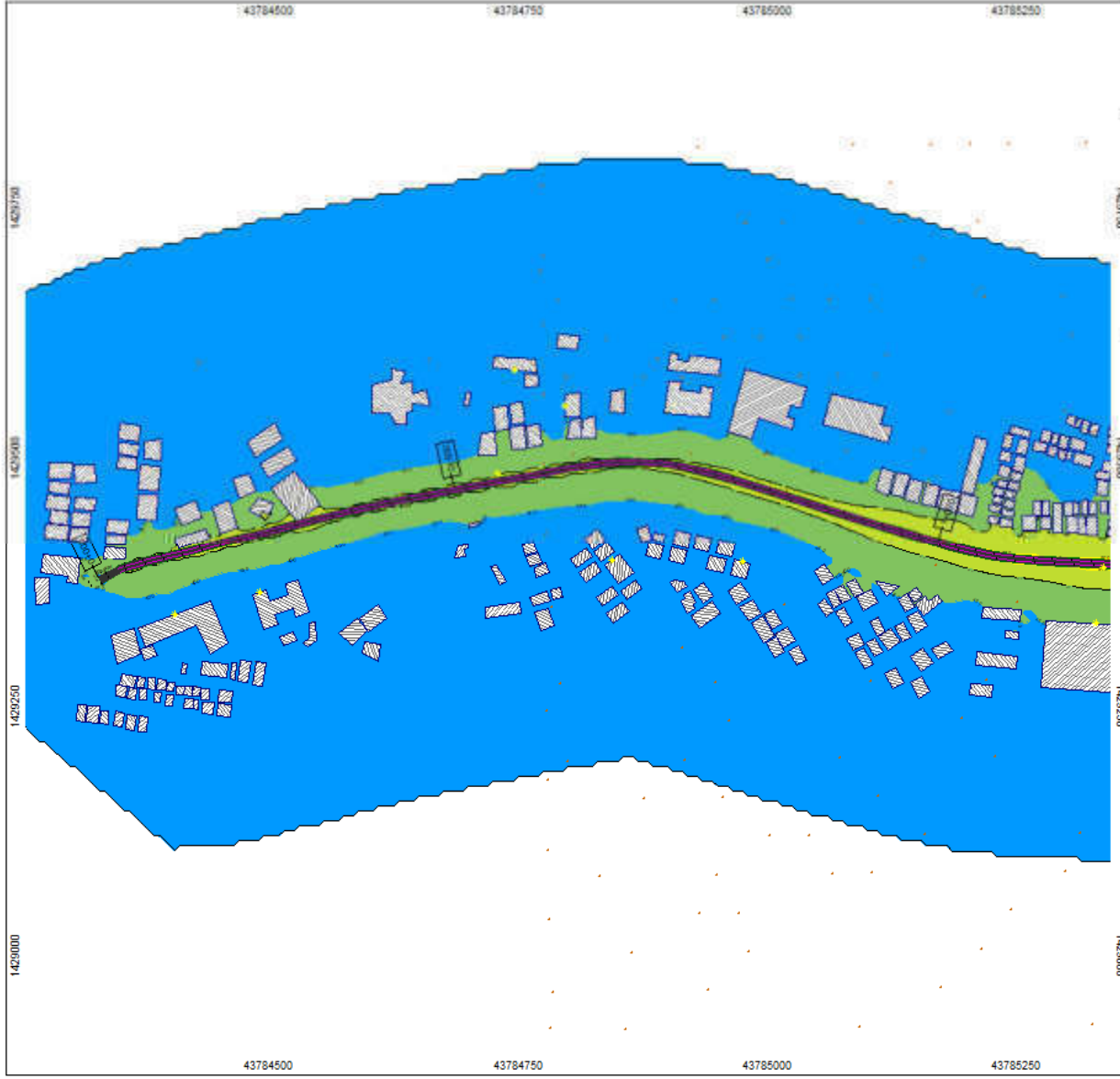
- Wall
- Construction Equip
- Main building
- Point receiver
- 3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area



Length scale 1:5181



Year 2031



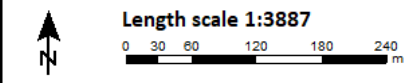
"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

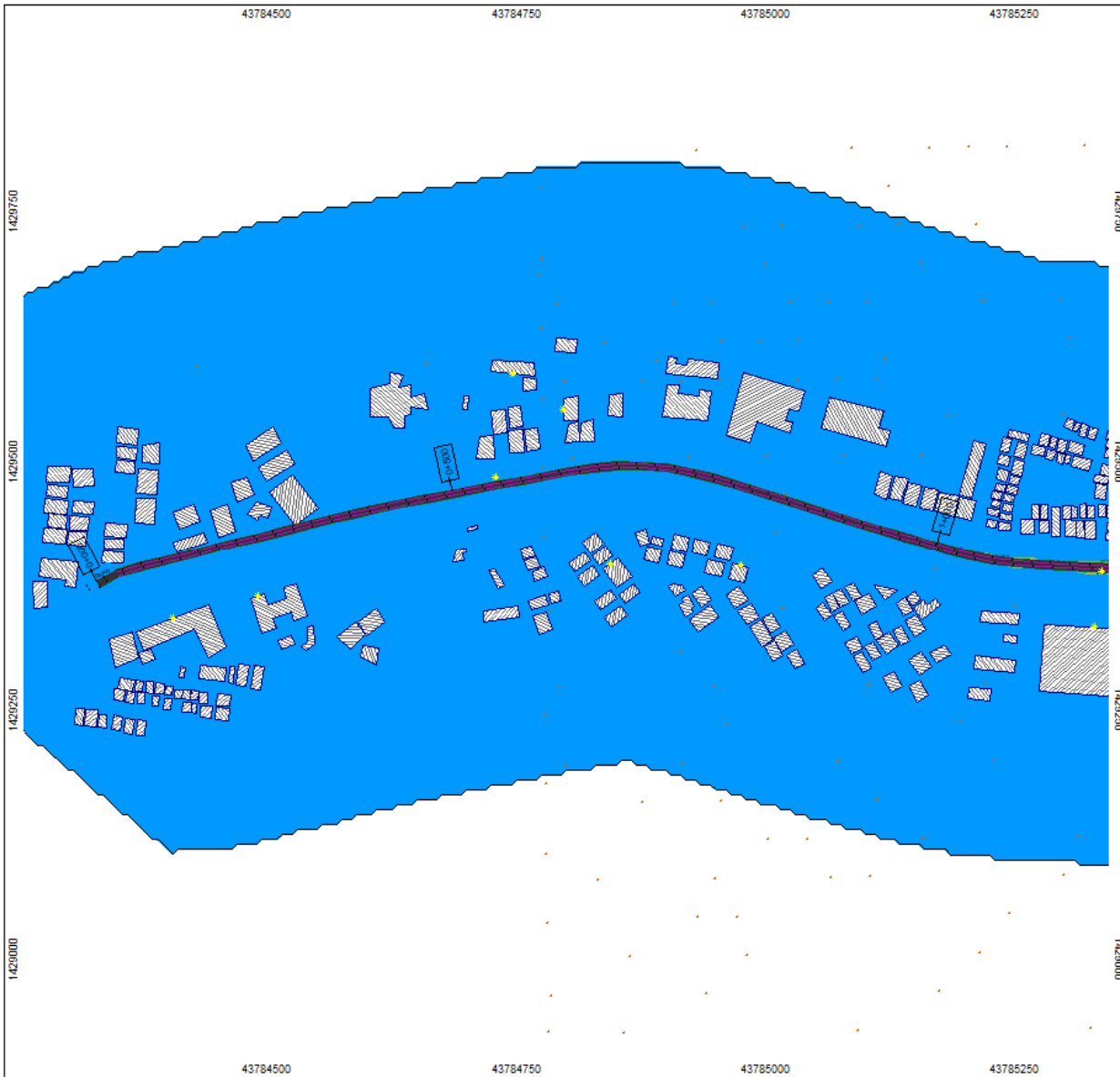
Operational Noise:
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundmap 8.1 Library and
BMRCL Rolling Stock Specification. Train schedule and
speeds from Feasibility Study.

**110 2031 2A with Parapet Wall
Noise Contour Map
Leq,d**
Calculation in 1.5 m above ground

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

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





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2031 2A with Parapet Wall Noise Contour Map
Leq,n
 Calculation in 1.5 m above ground

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

<p>Levels Leq,n in dB(A)</p> <table border="1"> <tr><td style="background-color: #0000FF; width: 15px; height: 15px;"></td><td>< 45</td></tr> <tr><td style="background-color: #008000; width: 15px; height: 15px;"></td><td>45 - 50</td></tr> <tr><td style="background-color: #FFFF00; width: 15px; height: 15px;"></td><td>50 - 55</td></tr> <tr><td style="background-color: #800000; width: 15px; height: 15px;"></td><td>55 - 60</td></tr> <tr><td style="background-color: #C0C0C0; width: 15px; height: 15px;"></td><td>60 - 65</td></tr> <tr><td style="background-color: #FFA500; width: 15px; height: 15px;"></td><td>≥ 65</td></tr> </table>		< 45		45 - 50		50 - 55		55 - 60		60 - 65		≥ 65	<p>Signs and symbols</p> <ul style="list-style-type: none"> — Wall • Construction Equip Main building ★ Point receiver +3dB(A) increase from • Point Sources — Line source Geometry bitmap — Wall — Wall • Elevation point Bodeneffekte Noise radiation area
	< 45												
	45 - 50												
	50 - 55												
	55 - 60												
	60 - 65												
	≥ 65												

Length scale 1:3887

0 30 60 120 180 240 m



"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

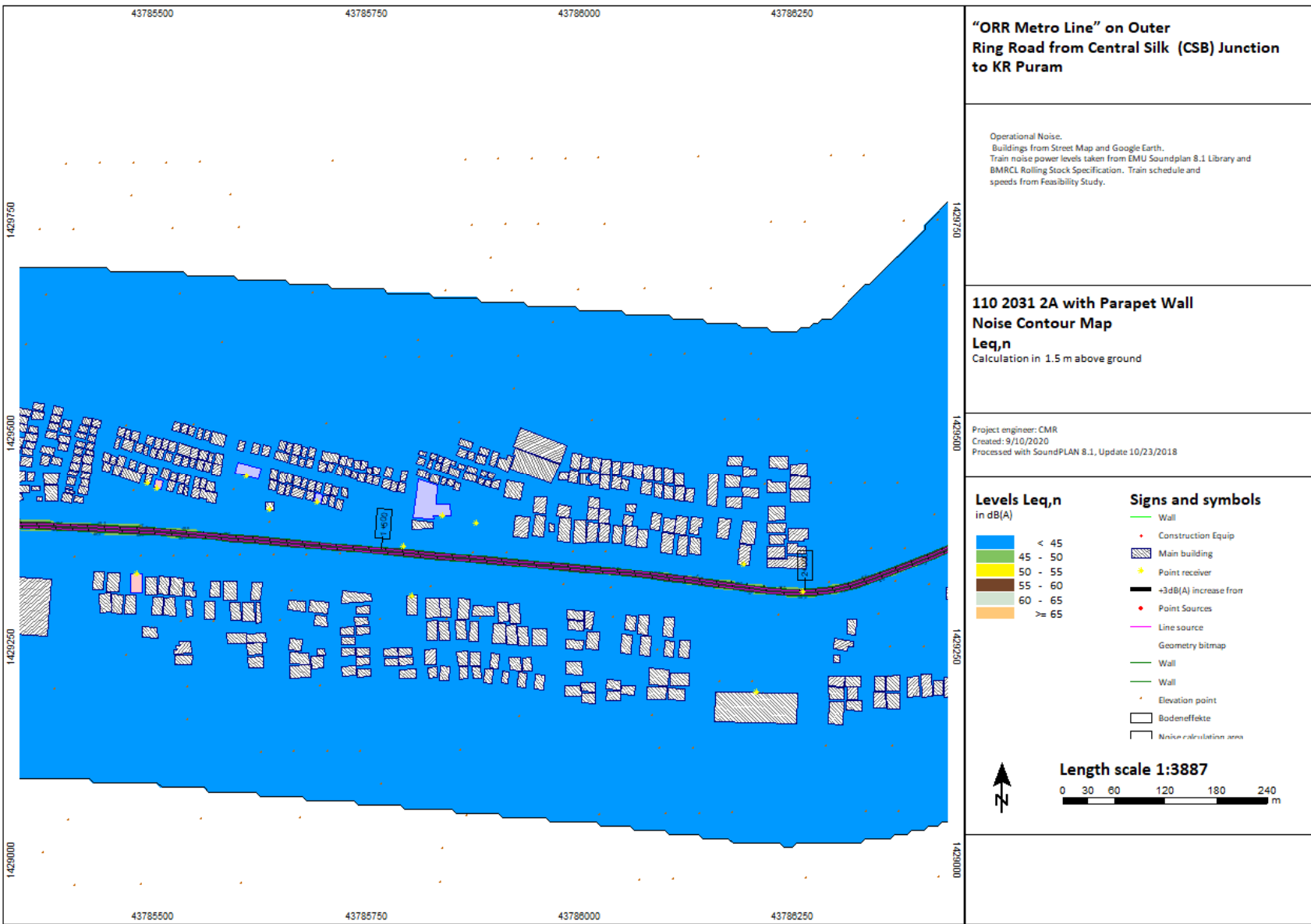
**110 2031 2A with Parapet Wall
 Noise Contour Map
 Leq,d**
 Calculation in 1.5 m above ground

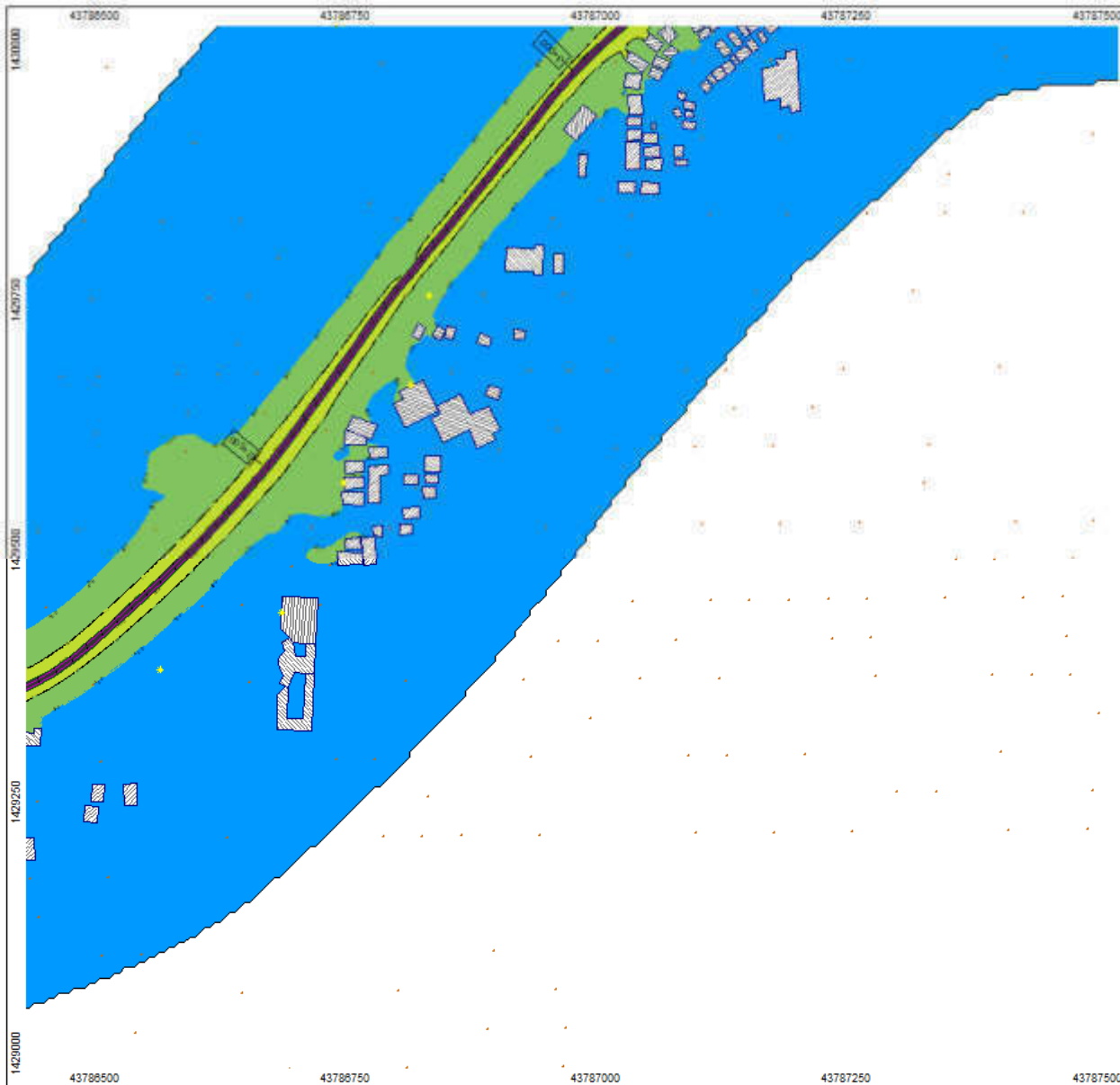
Project engineer: CMR
 Created: 9/10/2020
 Processed with SoundPLAN 8.1, Update 10/23/2018

<p>Levels Leq,d in dB(A)</p> <ul style="list-style-type: none"> <math>45</math> - <math>50</math> <math>50</math> - <math>55</math> <math>55</math> - <math>60</math> <math>60</math> - <math>65</math> >math>65</math> 	<p>Signs and symbols</p> <ul style="list-style-type: none"> Wall Construction Equip Main building Point receiver <math>43</math>dB(A) increase from Point sources Line source Geometry library Wall Wall Elevation points Road offset Noise calculation area
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Length scale 1:3887

0 30 60 120 180 240 m





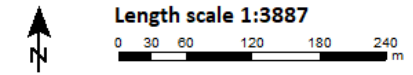
"ORR Metro Line" on Outer Ring Road from Central Silk Junction to KR Puram

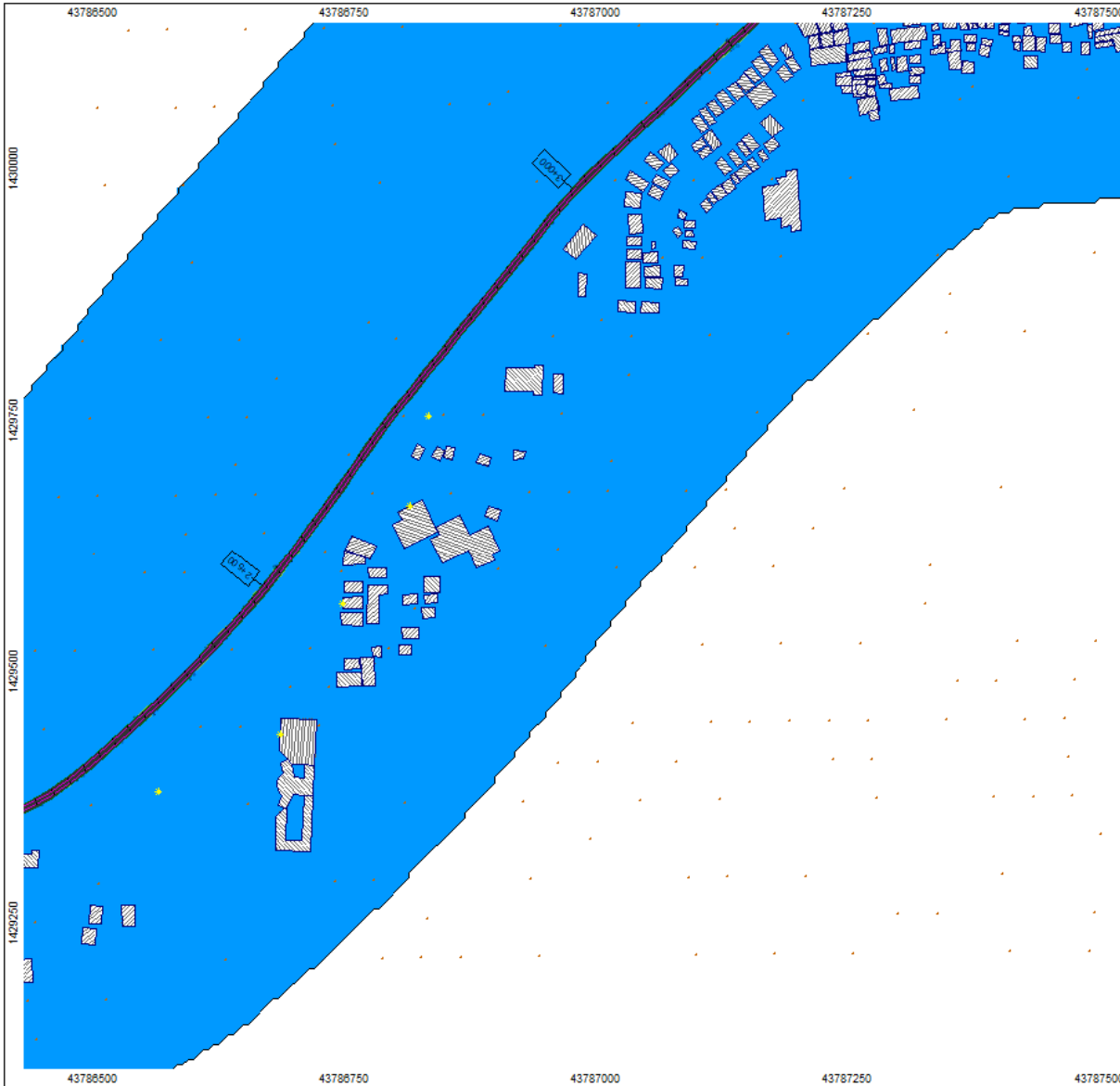
Operational Noise:
 Buildings from Screen Map and Google Earth.
 Train noise power levels taken from DMU Soundplan 8.1 Library and
 DMRC Rolling Stock Specification. Train schedule and
 speeds from Feasibility Study.

**110 2031 2A with Parapet Wall
 Noise Contour Map
 Leq,d**
 Calculation in 1.5 m above ground

Project engineer: CNR
 Created: 9/10/2020
 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
	Elevation point
	Bodeneffekte
	Noise calculation area





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

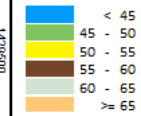
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2031 2A with Parapet Wall
Noise Contour Map**

Leq,n
Calculation in 1.5 m above ground

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

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

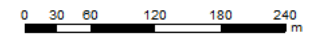


Signs and symbols

- 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 1:3887





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

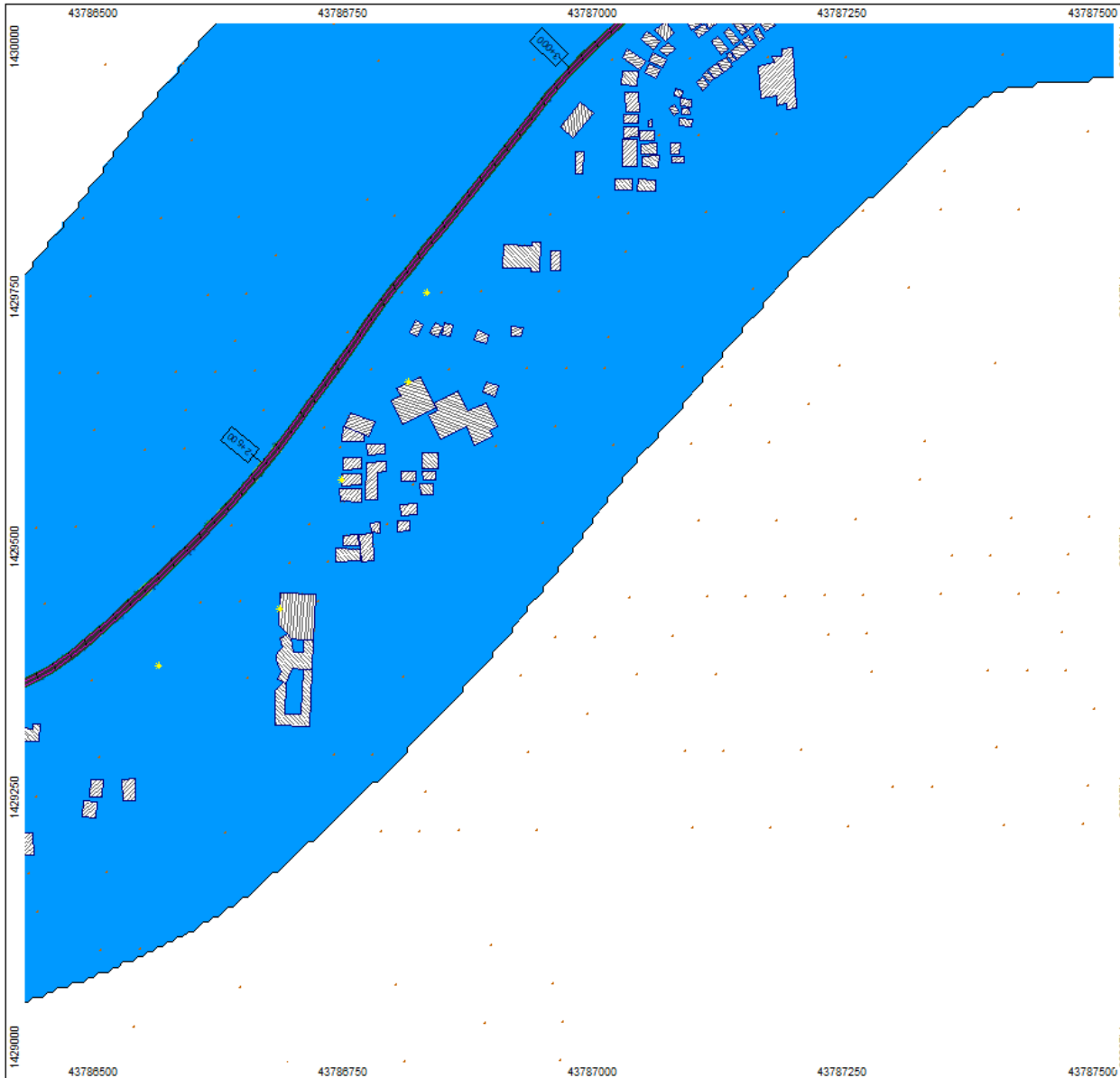
110 2031 2A with Parapet Wall
Noise Contour Map
Leq,d
 Calculation in 1.5 m above ground

Project engineer: CMB
 Created: 9/10/2018
 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
	Elevation point
	Bodeneffekte
	Noise calculation area

Length scale 1:3887

0 30 60 120 180 240 m



"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2031 2A with Parapet Wall
Noise Contour Map
Leq,n**
Calculation in 1.5 m above ground

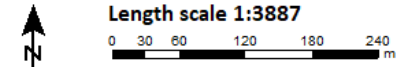
Project engineer: CMR
Created: 9/10/2020
Processed with SoundPLAN 8.1, Update 10/23/2018

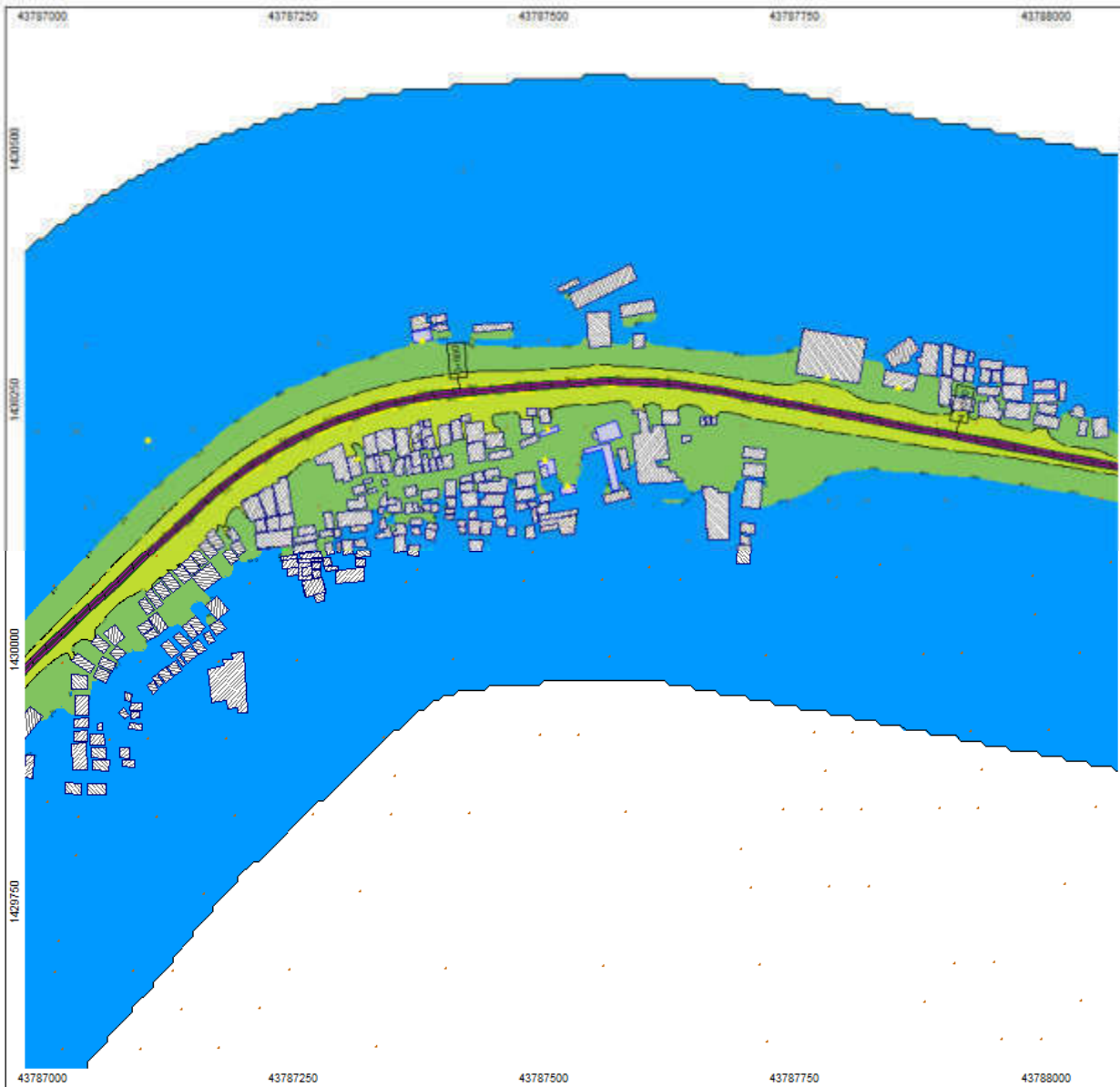
Levels Leq,n in dB(A)

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

Signs and symbols

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





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

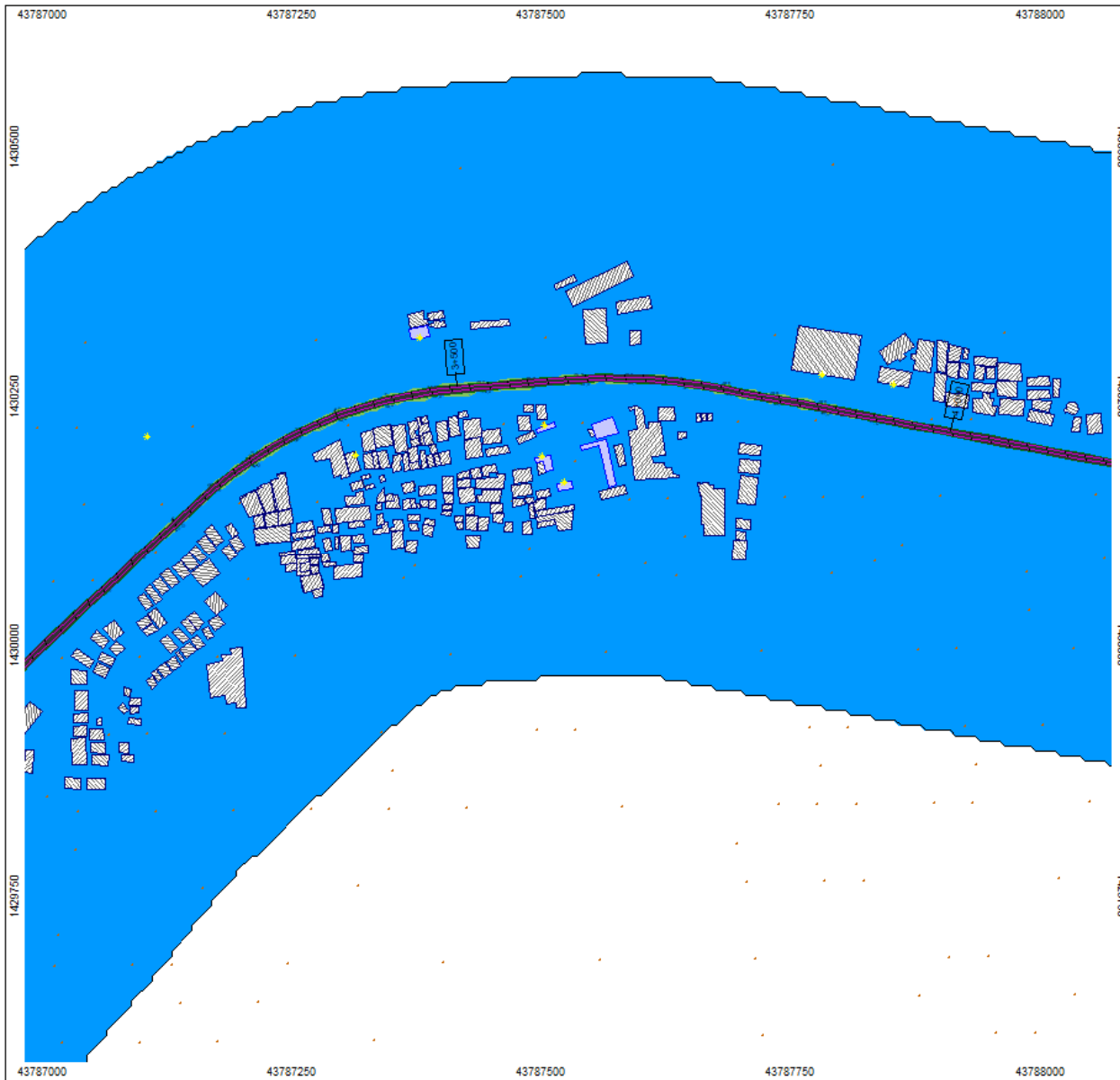
Operational Noise
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.2 Library and
 8MRC Rolling Stock Specifications. Train schedule and
 speeds from Feasibility Study.

**110 2031 2A with Parapet Wall
 Noise Contour Map
 Leq,d**
 Calculation in 1.5 m above ground

Project engineer: CMK
 Created: 9/10/2020
 Processed with SoundPLAN 8.1.1 (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
	Elevation point
	Bodeneffekte
	Noise calculation area

Length scale 1:3887



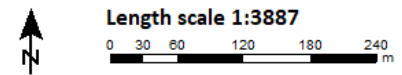
“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

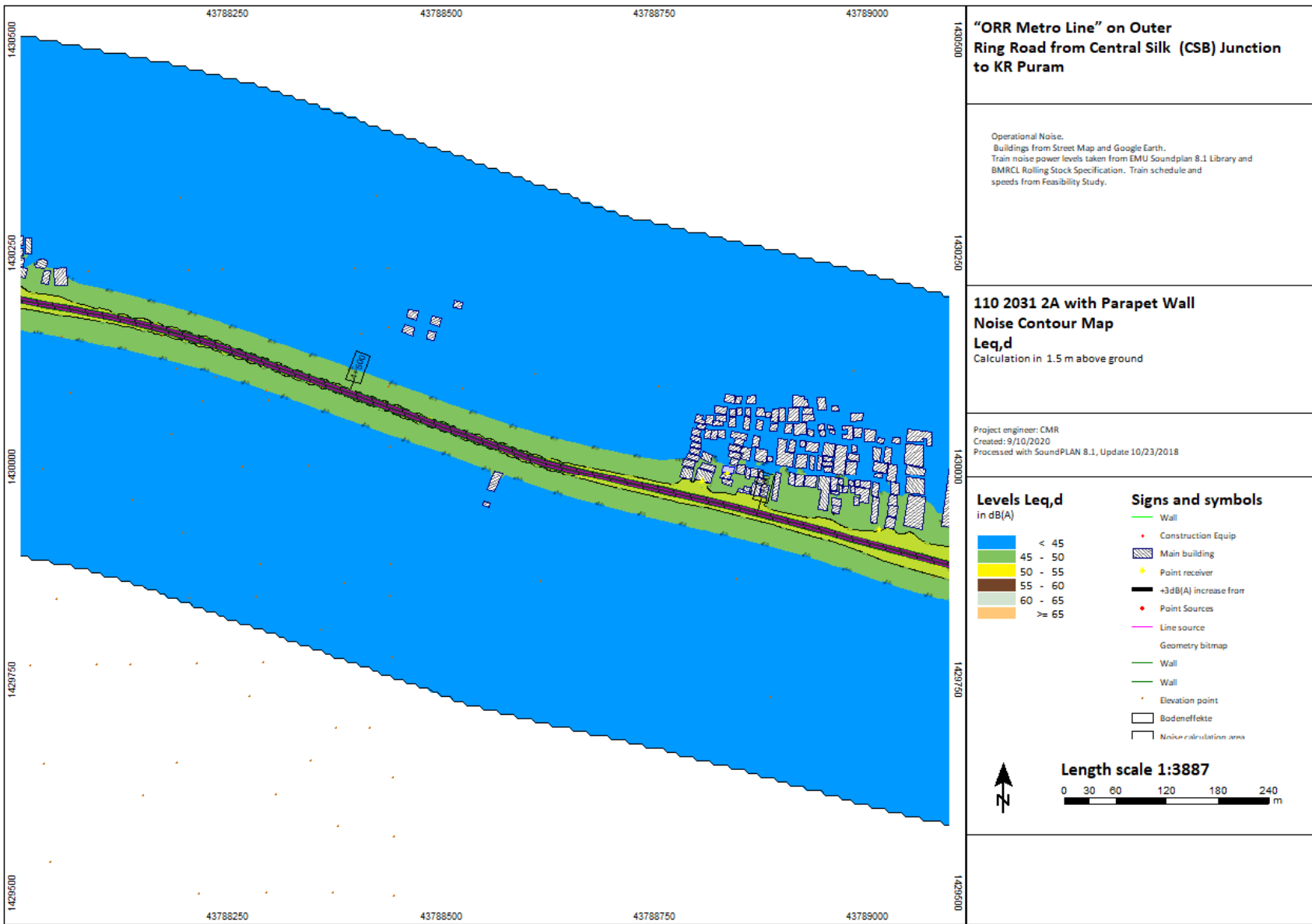
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2031 2A with Parapet Wall
Noise Contour Map
Leq,n**
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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





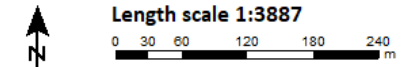
"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

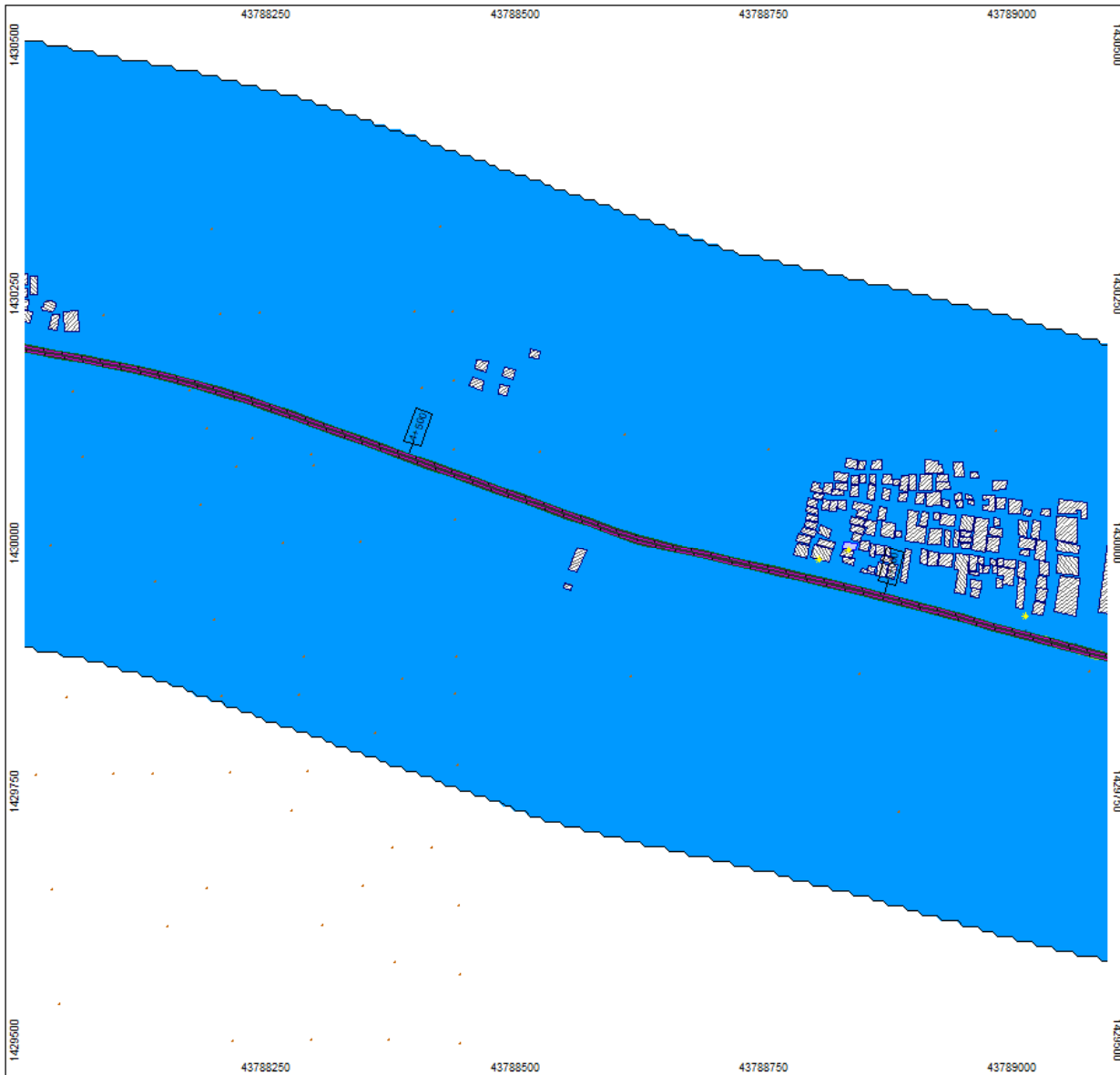
Operational Noise.
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

110 2031 2A with Parapet Wall Noise Contour Map
Leq,d
 Calculation in 1.5 m above ground

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

Levels Leq,d in dB(A)	Signs and symbols
<ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 ≥ 65 	<ul style="list-style-type: none"> 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





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

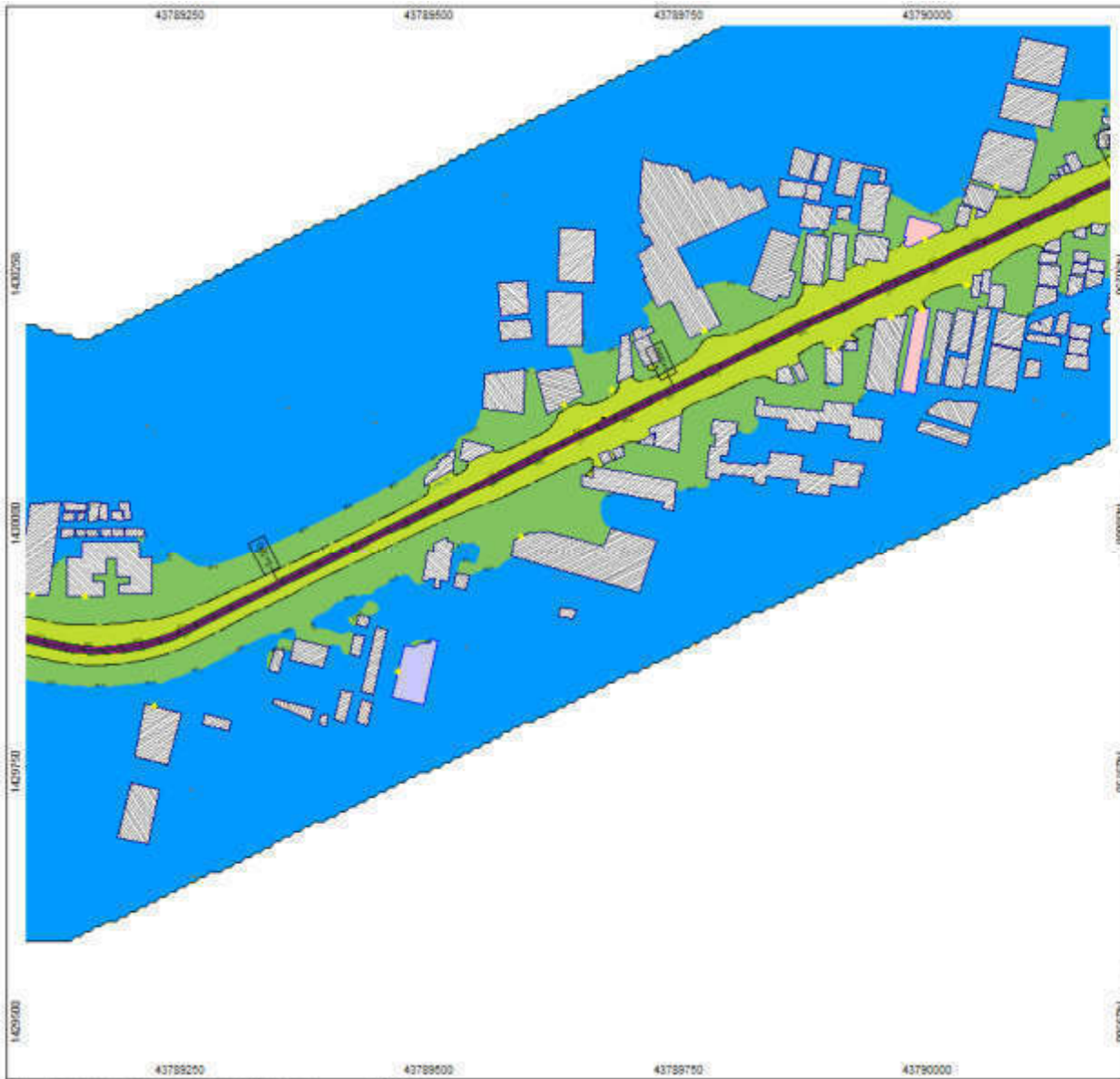
Operational Noise.
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2031 2A with Parapet Wall
 Noise Contour Map
 Leq,n**
 Calculation in 1.5 m above ground

Project engineer: CMR
 Created: 9/10/2020
 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 1:3887
 0 30 60 120 180 240 m



"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

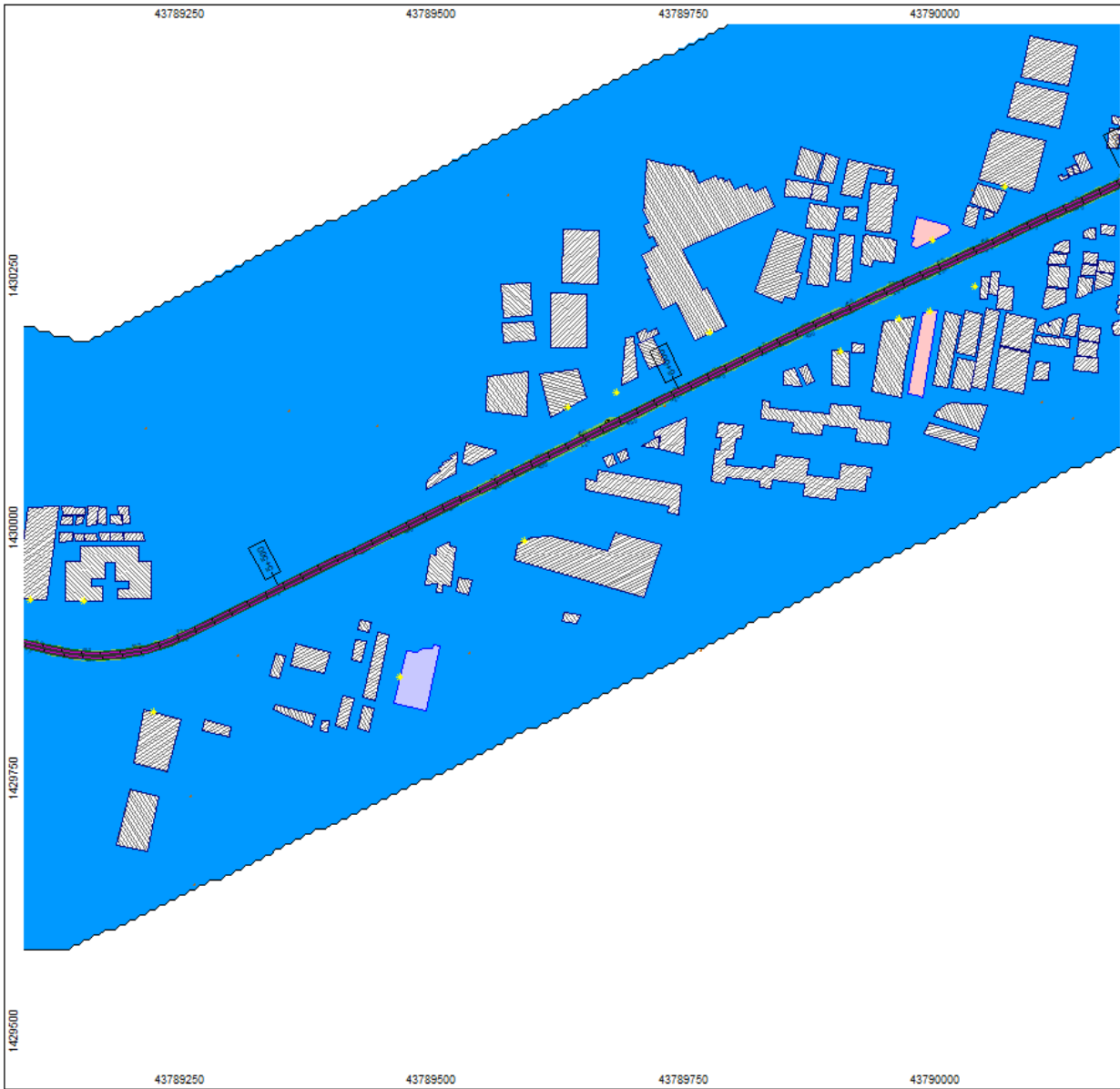
Operational Noise:
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.2 Library and BMRL Building Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2031 2A with Parapet Wall
 Noise Contour Map
 Leq,d**
 Calculation in 1.5 m above ground

Project engineer: CMR
 Created: 9/10/2020
 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 number
60 - 65	+3dB(A) increase from
>= 65	Point Sources
	Line source
	Geometry building
	Wall
	Wall
	Deviation point
	Buffer/offset
	Buffer/calculation area





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2031 2A with Parapet Wall
Noise Contour Map**

Leq,n
Calculation in 1.5 m above ground

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

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

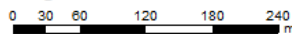
- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- ≥ 65

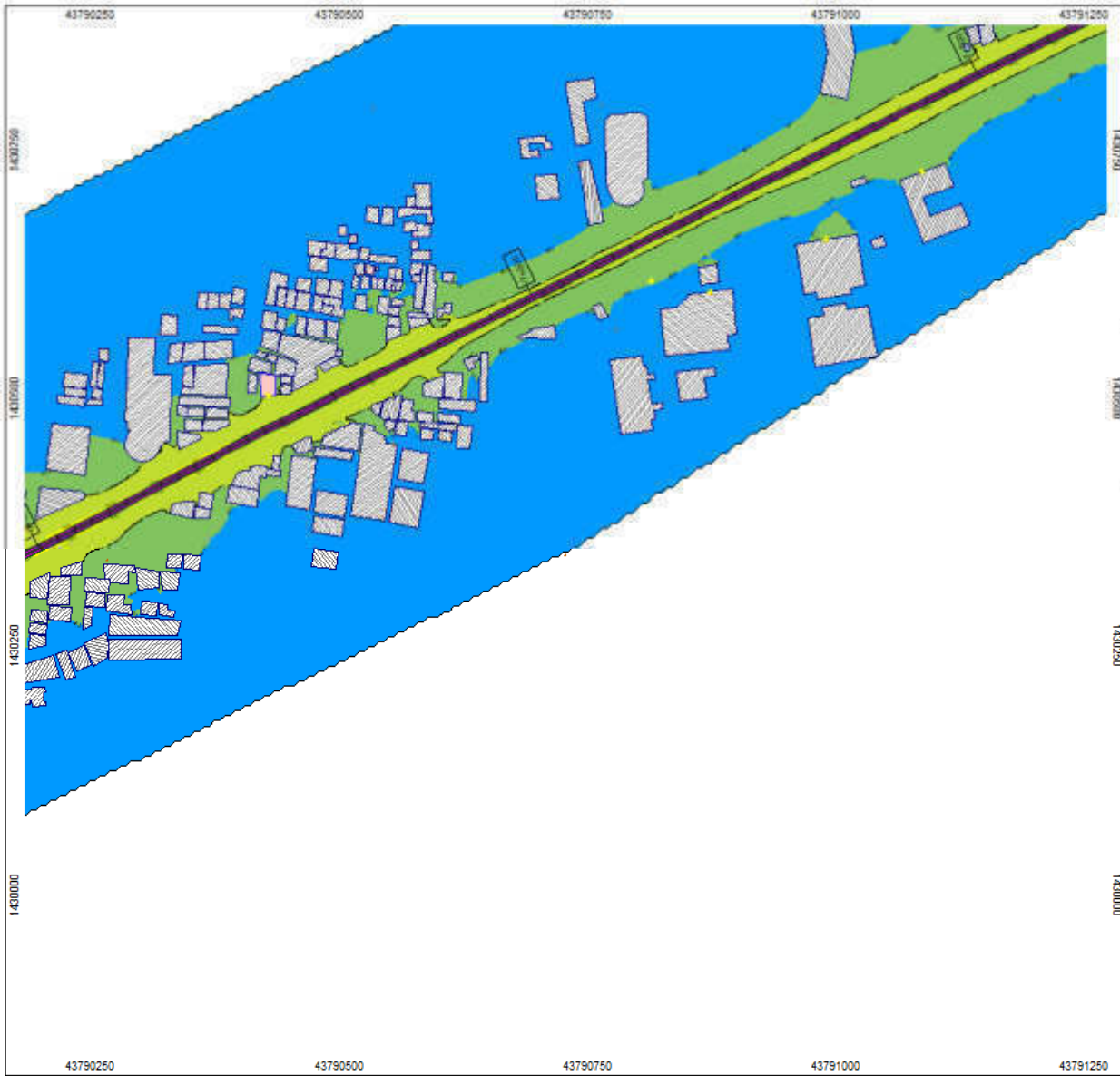
Signs and symbols

- 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 1:3887





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2031 2A with Parapet Wall
Noise Contour Map
Leq,d**

Calculation in 1.5 m above ground

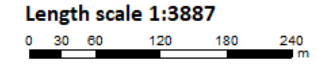
Project engineer: CMR
Created: 9/10/2020
Processed with SoundPLAN 8.1, Update 10/23/2018

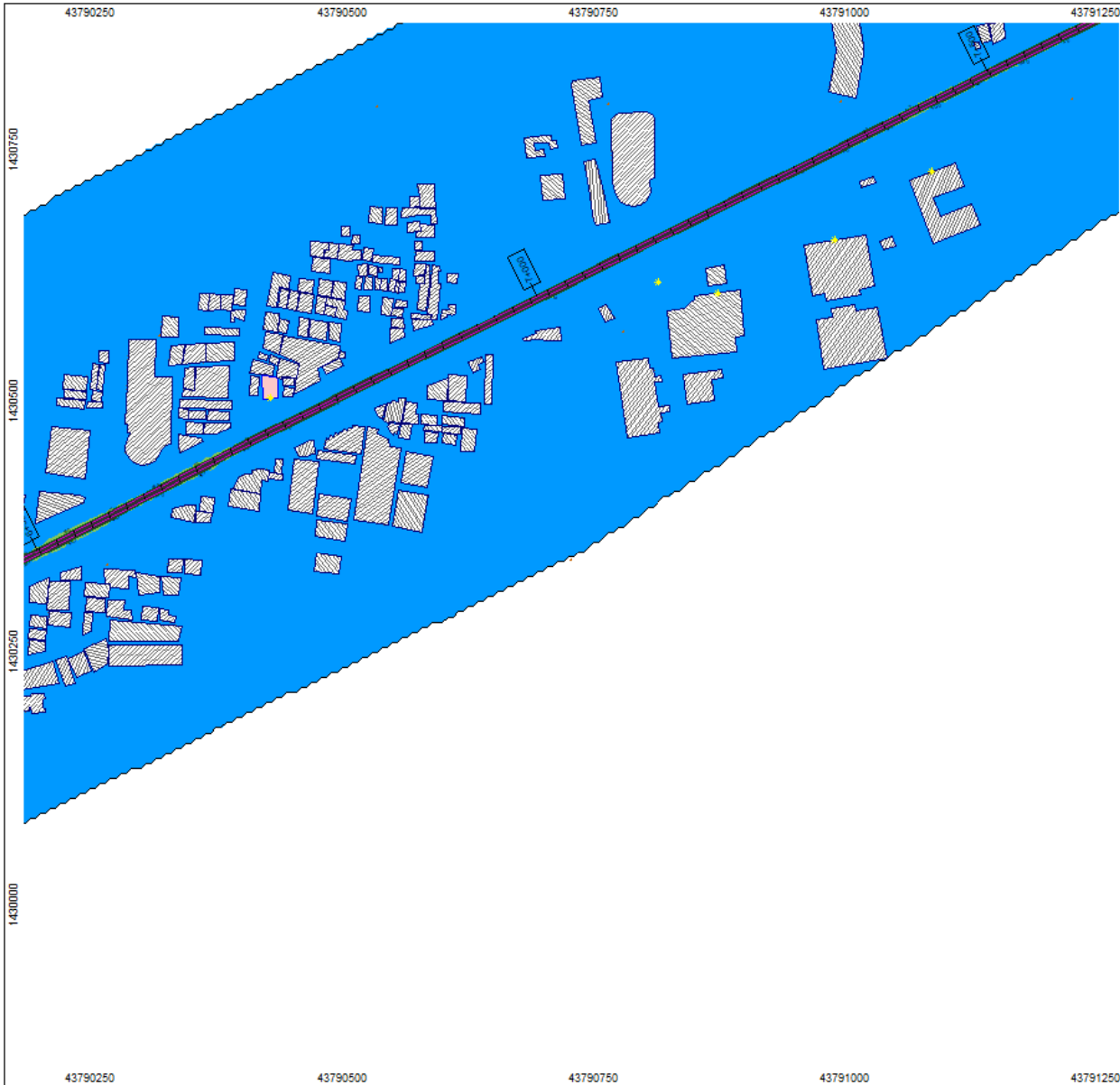
**Levels Leq,d
in dB(A)**

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





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

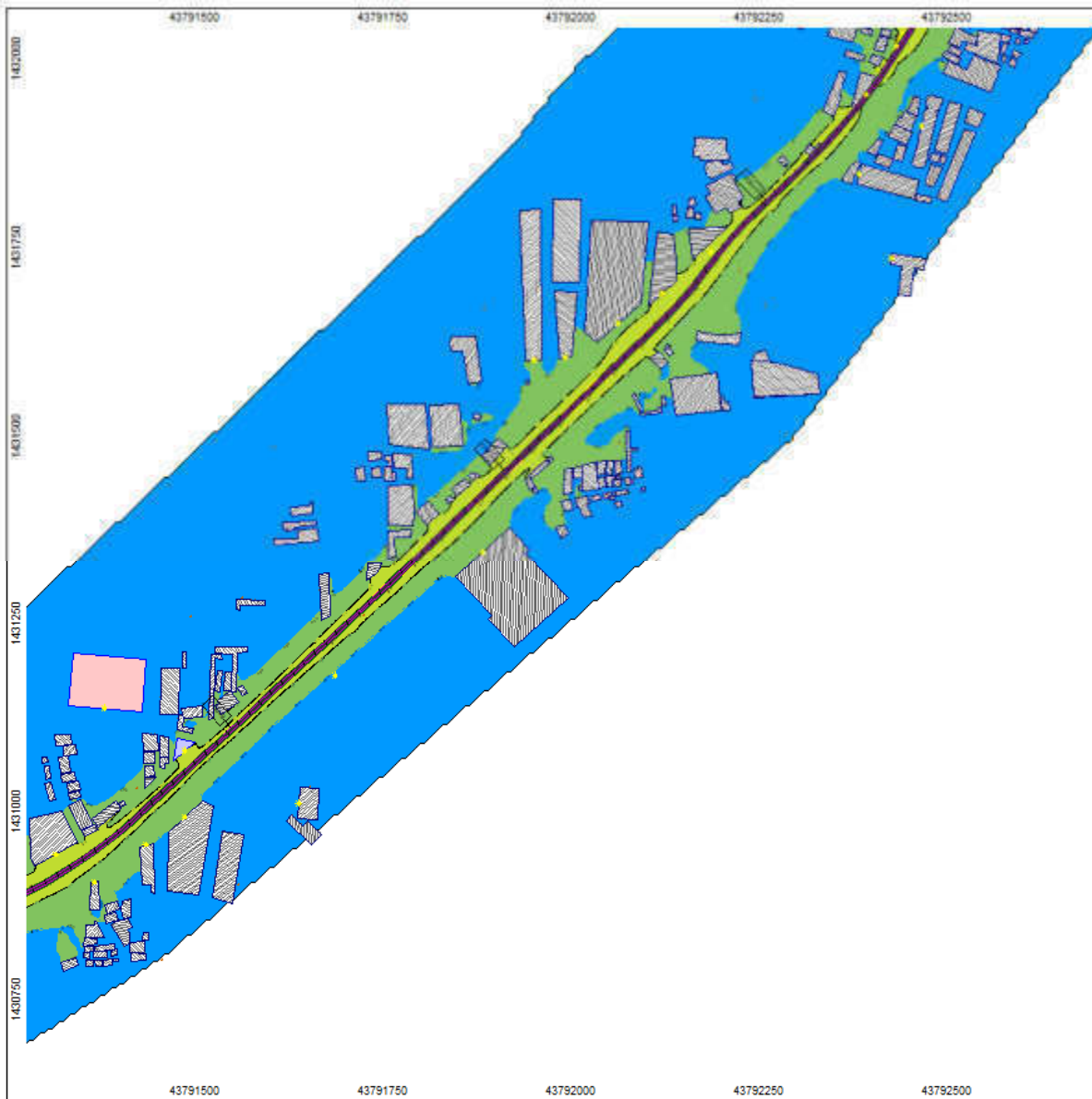
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

110 2031 2A with Parapet Wall
Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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 1:3887
0 30 60 120 180 240 m



"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

Operational Noise:
 Buildings: from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.3 Library and
 BMACC Rolling Stock Specifications. Train schedule and
 speeds: from Feasibility Study.

**110 2031 2A with Parapet Wall
 Noise Contour Map
 Leq,d**

Calculation in 1.5 m above ground

Project engineer: CMR
 Created: 5/10/2020
 Processed with SoundPLAN 8.3, Update 10/23/2018

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

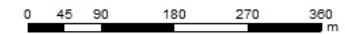
Blue	< 45
Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Grey	60 - 65
Orange	>= 65

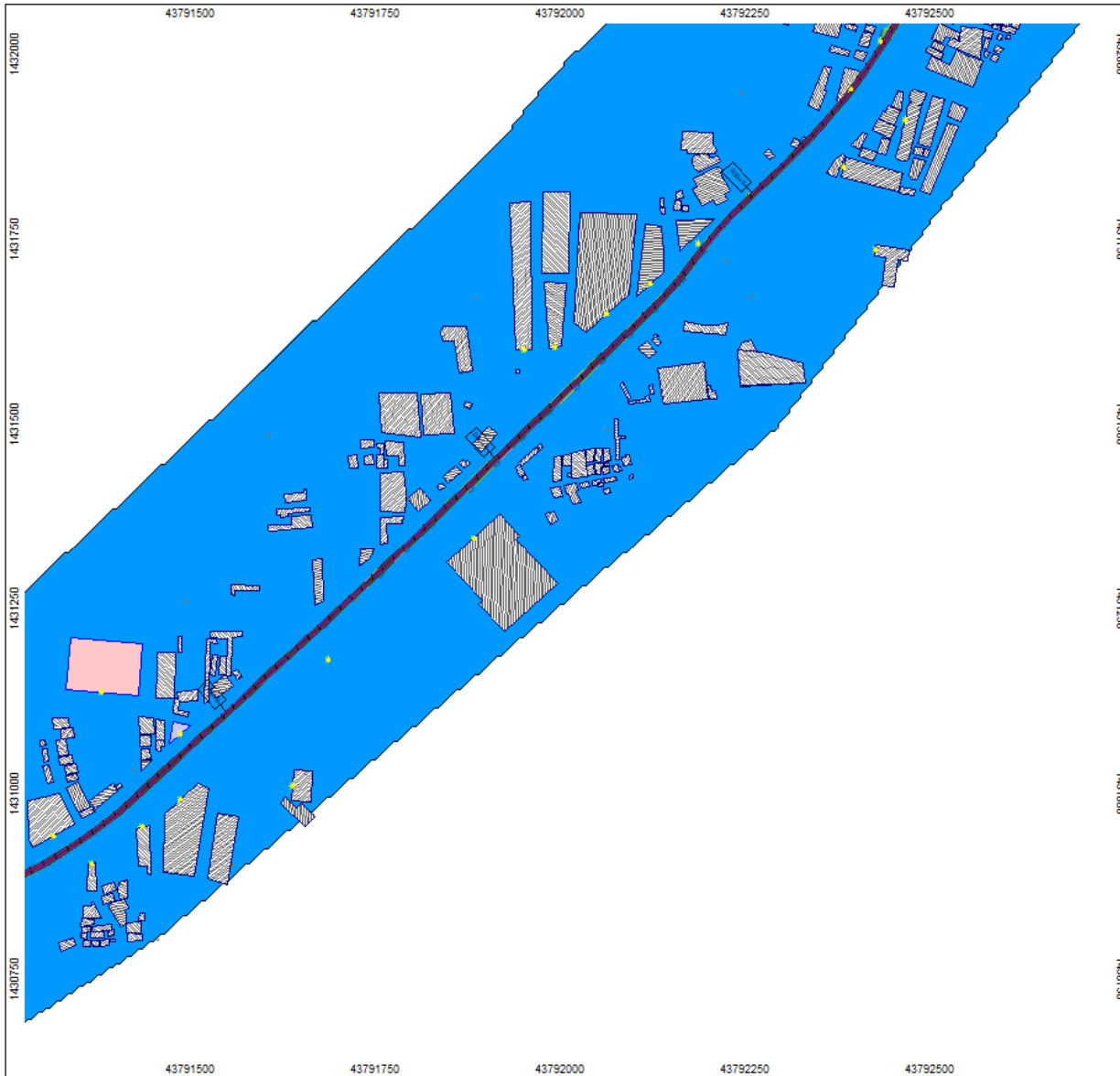
Signs and symbols

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



Length scale 1:5245





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2031 2A with Parapet Wall
Noise Contour Map
Leq,n**

Calculation in 1.5 m above ground

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

Levels Leq,n in dB(A)

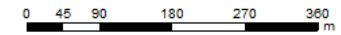
Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	>= 65

Signs and symbols

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



Length scale 1:5245





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

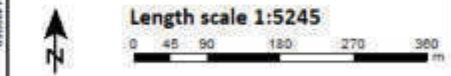
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

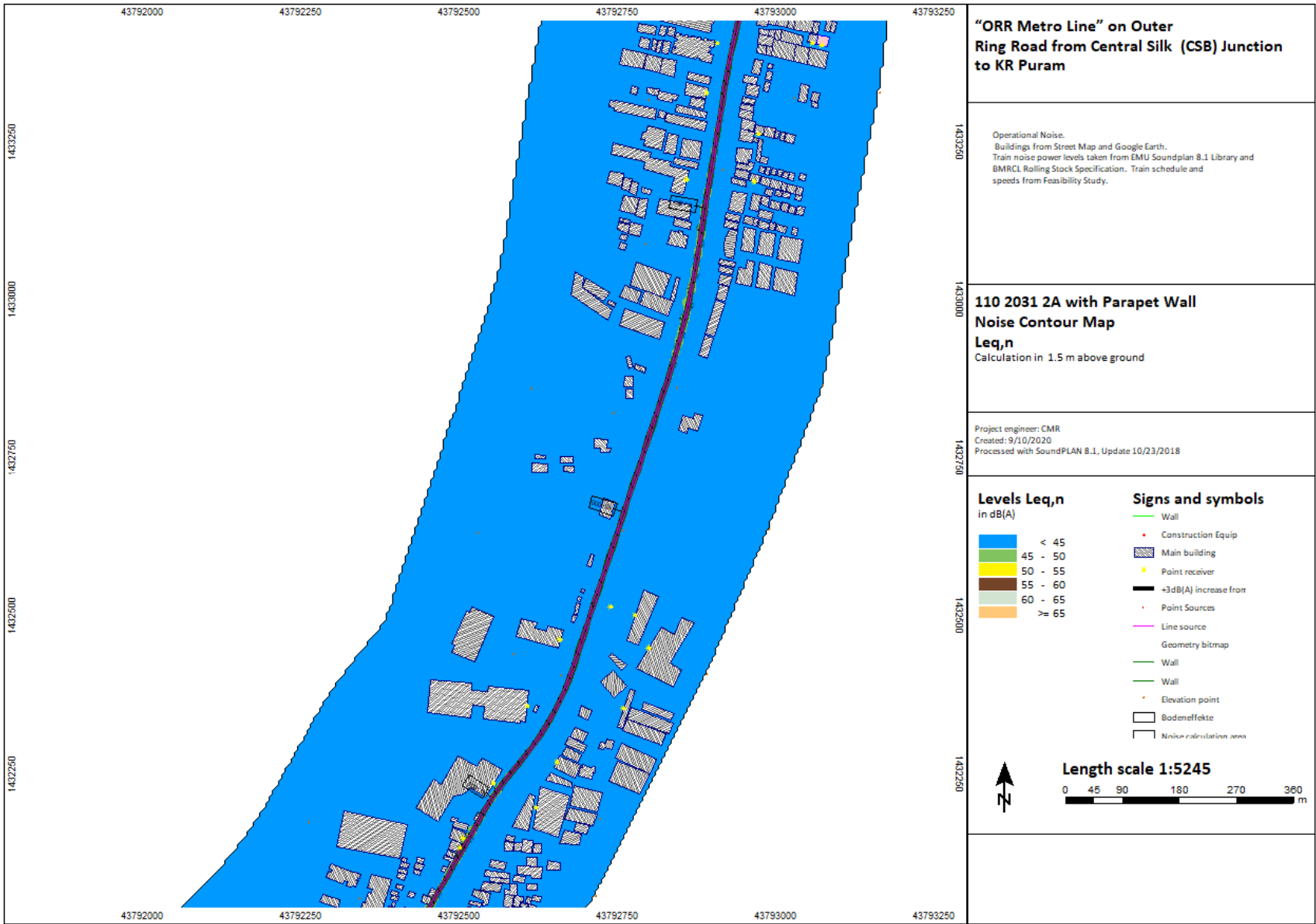
**110 2031 2A with Parapet Wall
Noise Contour Map
Leq,d**

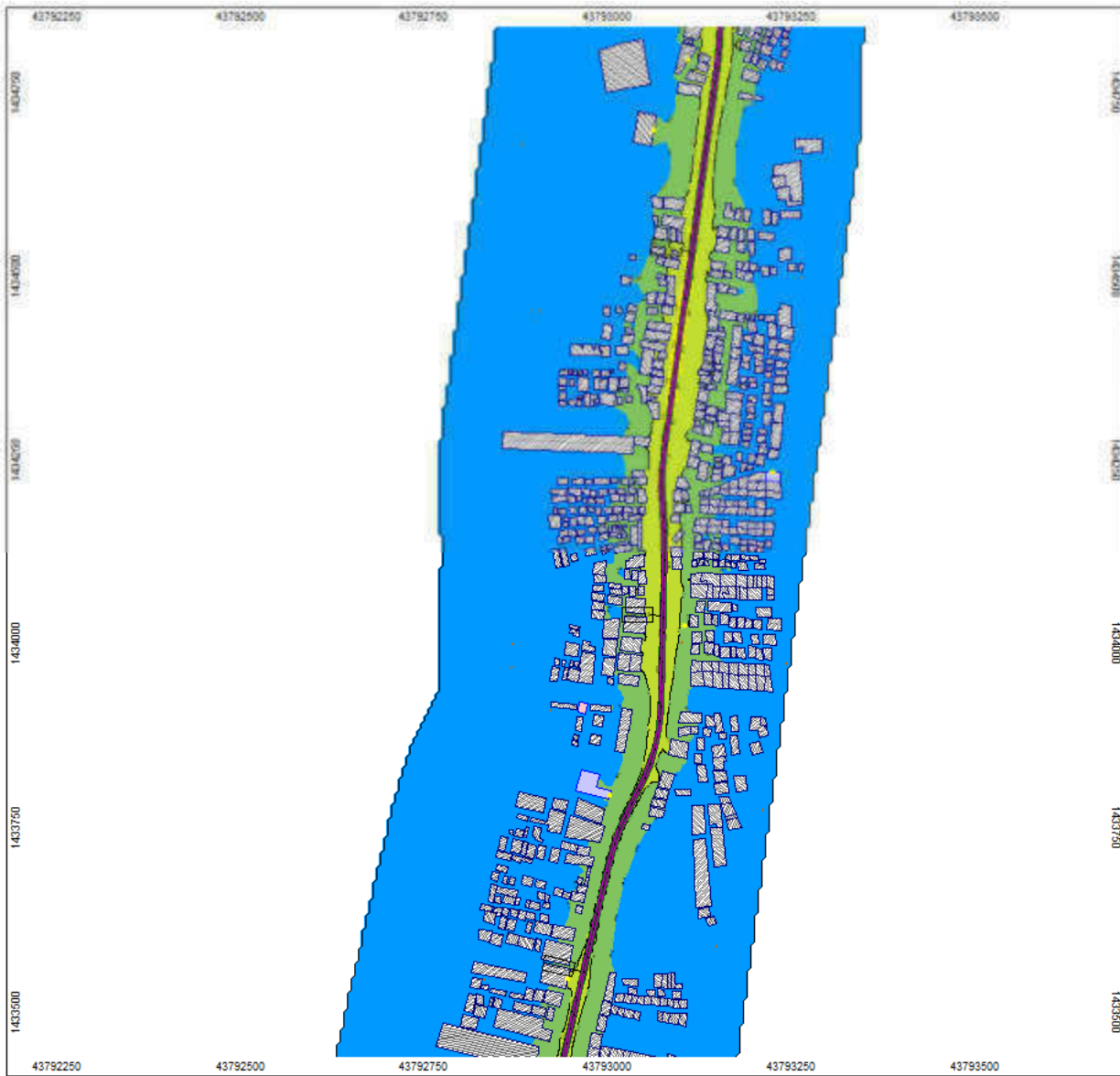
Calculation in 1.5 m above ground

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

<p>Levels Leq,d in dBA)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 >= 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> Wall Construction Equip. Main building Point receiver +dB(A) increase from Point Source Line source Geometry blockup Wall Wall Elevation point Boundary/edge Noise calculation area
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"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2031 2A with Parapet Wall
Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

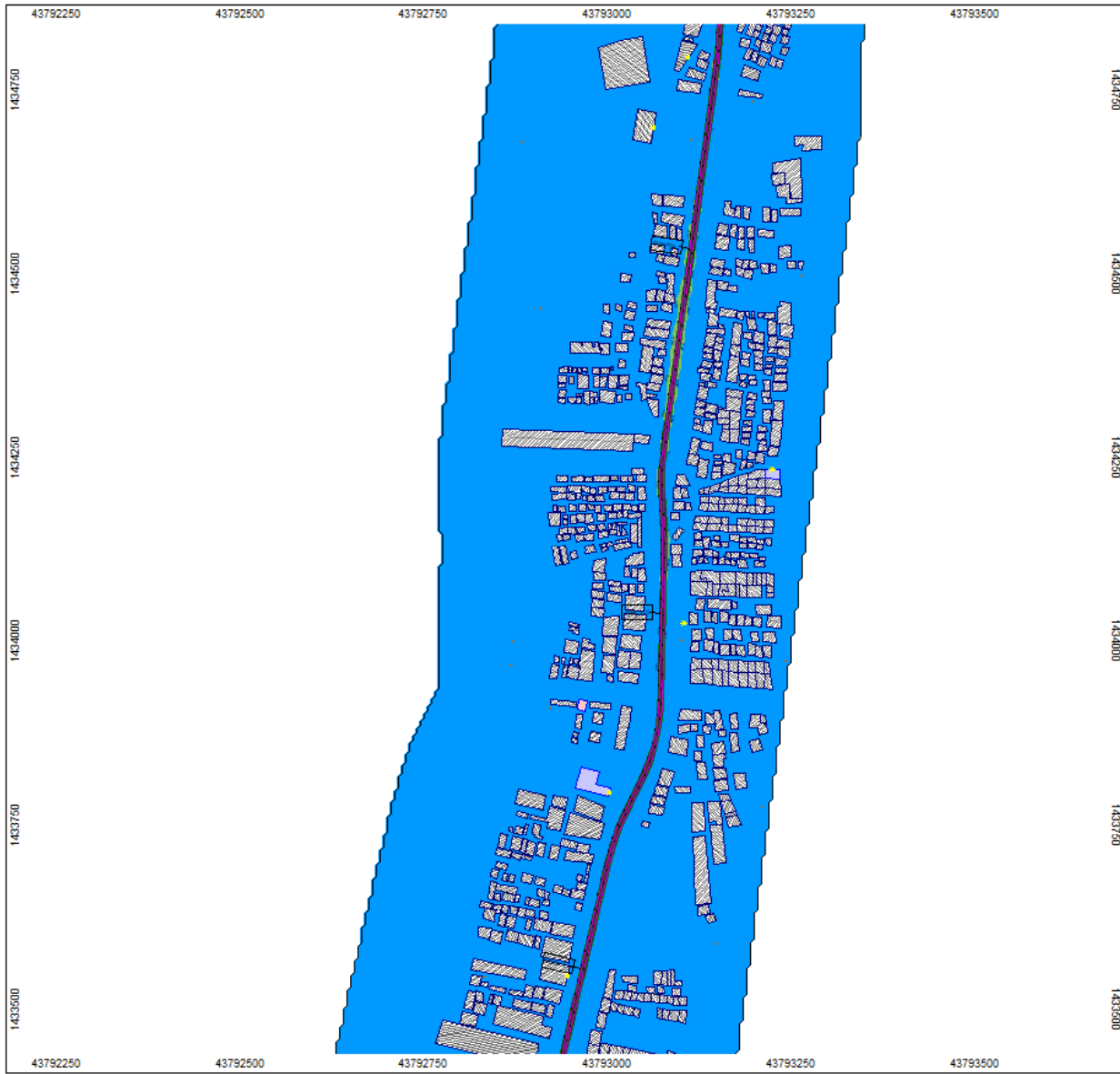
Project engineer: OMB
Created: 9/10/2018
Processed with SoundPLAN 8.1, Update 10/03/2018

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
	Elevation point
	Bodeneffekte
	Noise calculation area

Length scale 1:5245

0 45 90 180 270 360 m

North arrow pointing up.



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

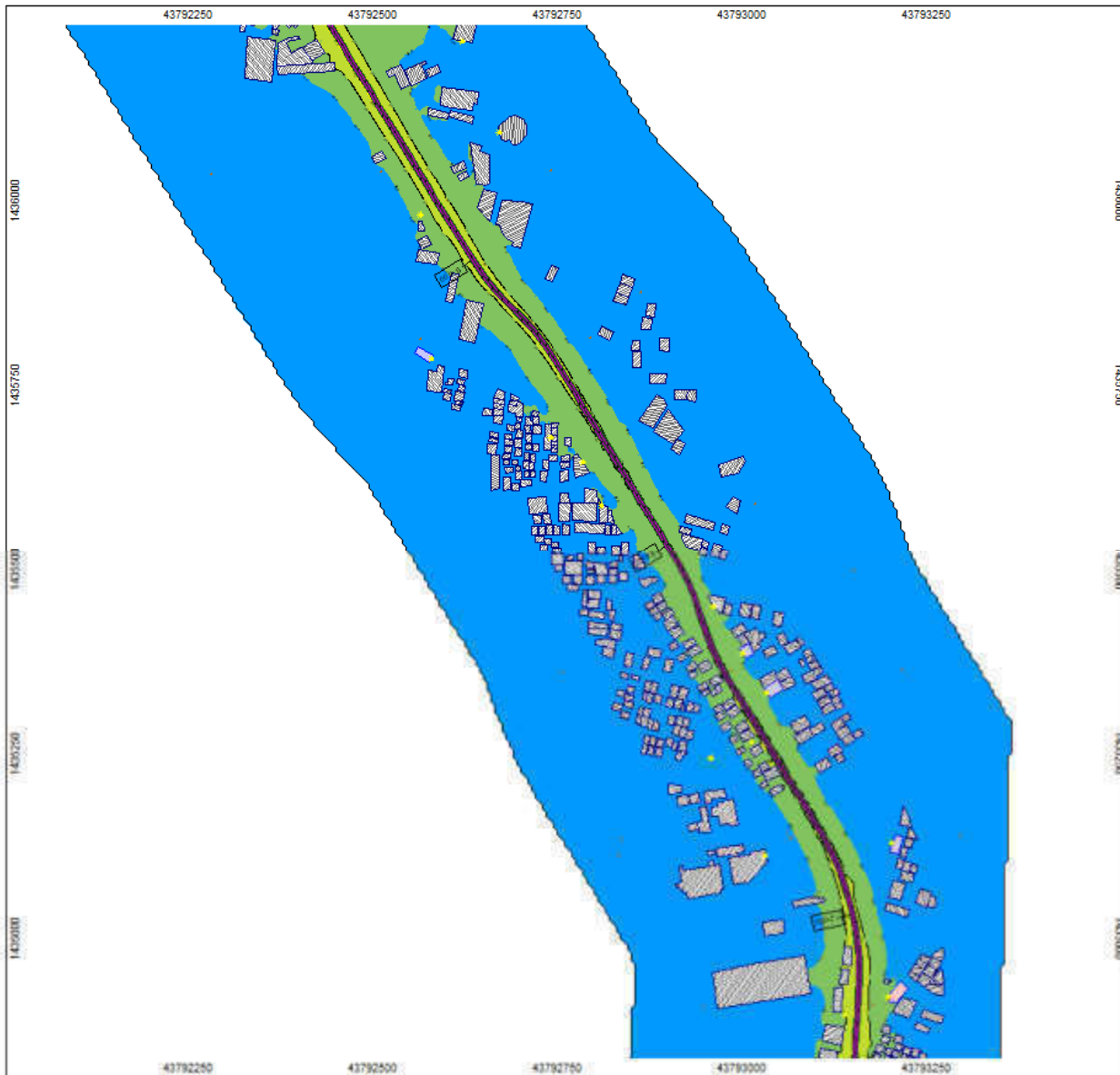
110 2031 2A with Parapet Wall Noise Contour Map
Leq,n
 Calculation in 1.5 m above ground

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

<p>Levels Leq,n in dB(A)</p> <table border="1"> <tr><td>Blue</td><td>< 45</td></tr> <tr><td>Light Green</td><td>45 - 50</td></tr> <tr><td>Yellow</td><td>50 - 55</td></tr> <tr><td>Orange</td><td>55 - 60</td></tr> <tr><td>Dark Orange</td><td>60 - 65</td></tr> <tr><td>Red</td><td>> 65</td></tr> </table>	Blue	< 45	Light Green	45 - 50	Yellow	50 - 55	Orange	55 - 60	Dark Orange	60 - 65	Red	> 65	<p>Signs and symbols</p> <ul style="list-style-type: none"> — 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
Blue	< 45												
Light Green	45 - 50												
Yellow	50 - 55												
Orange	55 - 60												
Dark Orange	60 - 65												
Red	> 65												

Length scale 1:5245

0 45 90 180 270 360 m



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

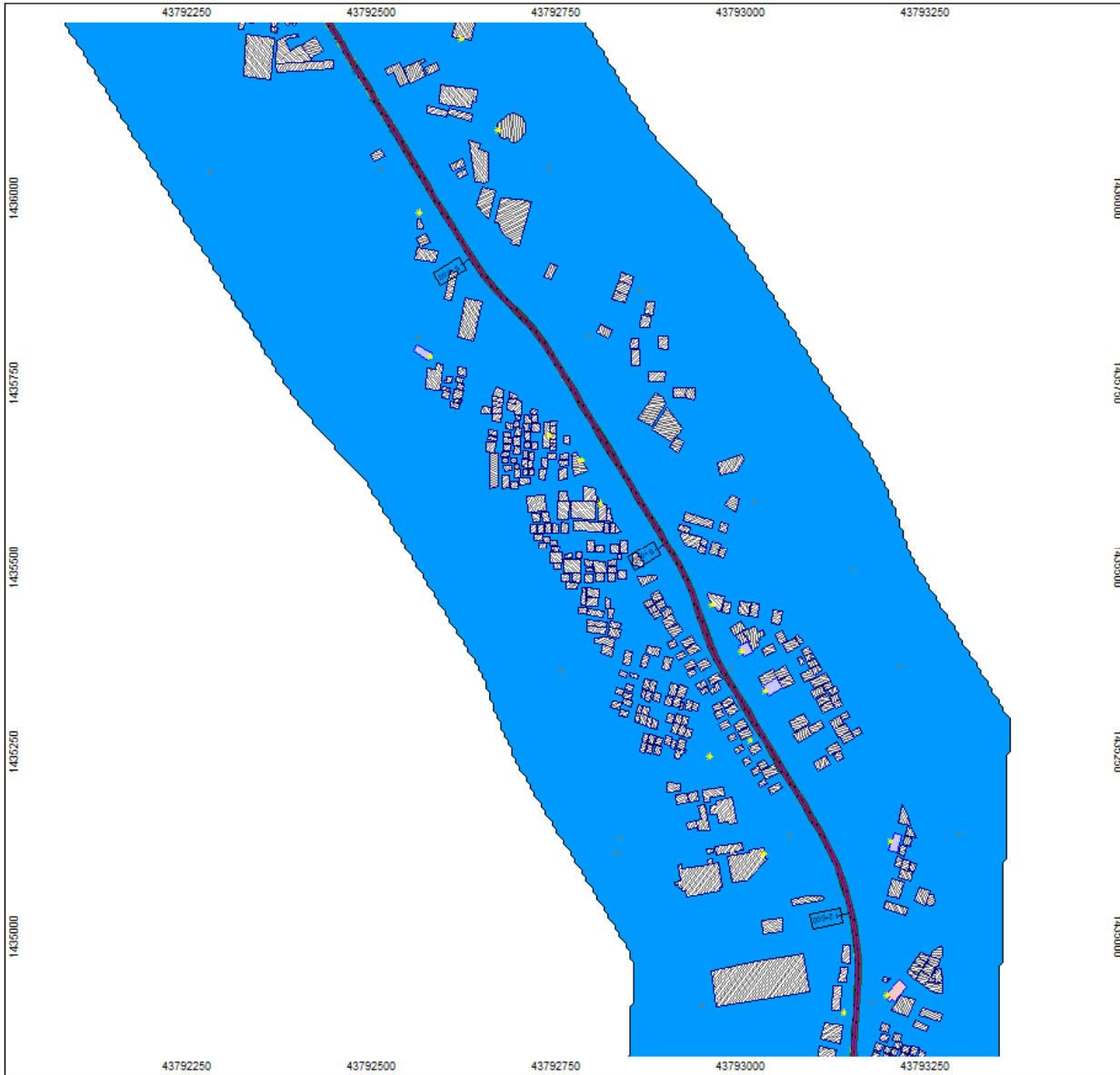
110 2031 2A with Parapet Wall Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

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

<p>Levels Leq,d in dB(A)</p> <table border="1"> <tr><td>Blue</td><td>< 45</td></tr> <tr><td>Green</td><td>45 - 50</td></tr> <tr><td>Yellow</td><td>50 - 55</td></tr> <tr><td>Brown</td><td>55 - 60</td></tr> <tr><td>Light Green</td><td>60 - 65</td></tr> <tr><td>Orange</td><td>≥ 65</td></tr> </table>	Blue	< 45	Green	45 - 50	Yellow	50 - 55	Brown	55 - 60	Light Green	60 - 65	Orange	≥ 65	<p>Signs and symbols</p> <ul style="list-style-type: none"> — Wall • Construction Equip ▒ Main building • Point receiver — +30dB(A) increase from • Point Source — Line source — Geometry Struck — Wall • Deviation point ▒ Bioeffector ▒ Medium obstructions
Blue	< 45												
Green	45 - 50												
Yellow	50 - 55												
Brown	55 - 60												
Light Green	60 - 65												
Orange	≥ 65												

Length scale 1:5245

0 45 90 180 270 360 m



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

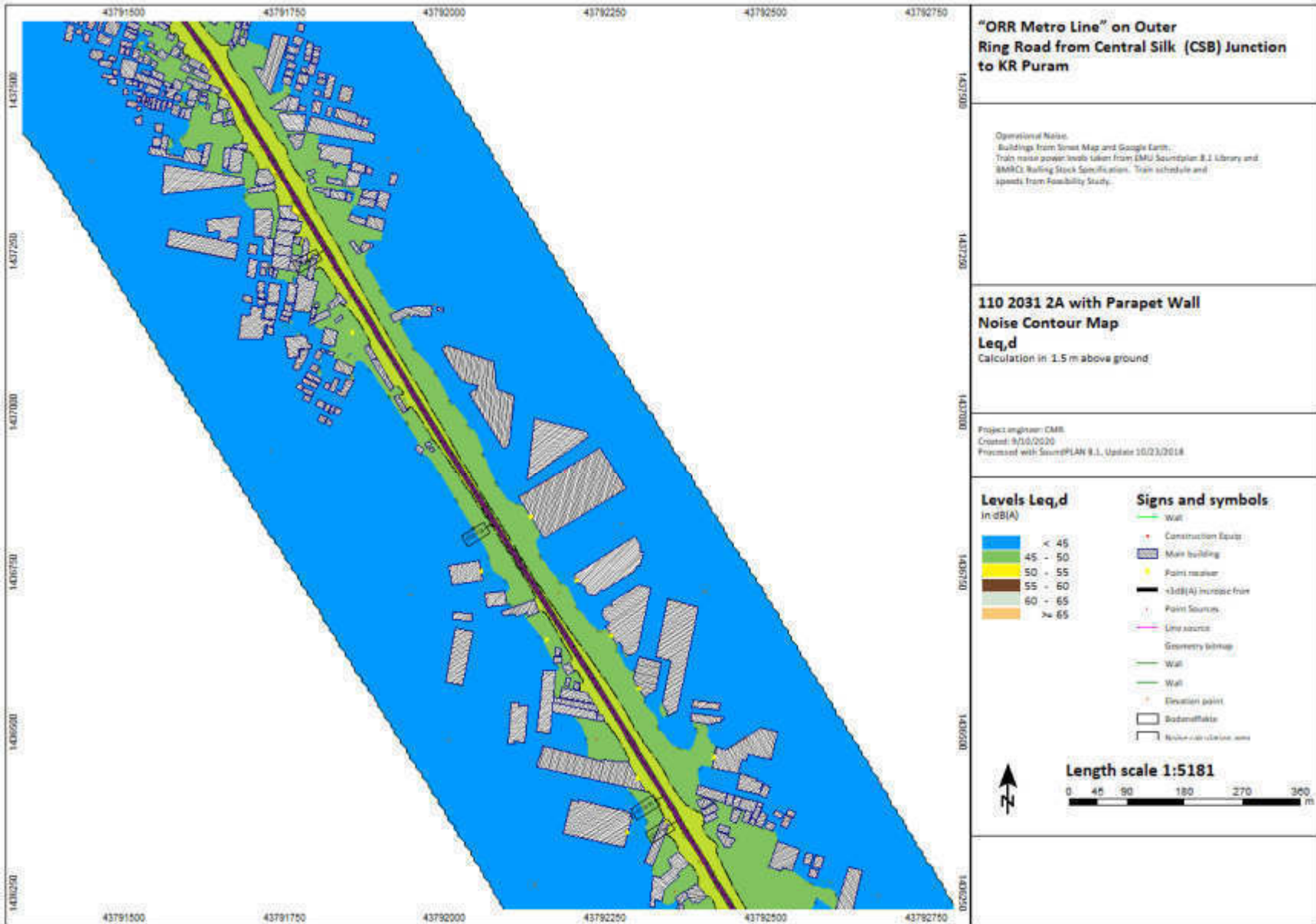
Operational Noise.
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

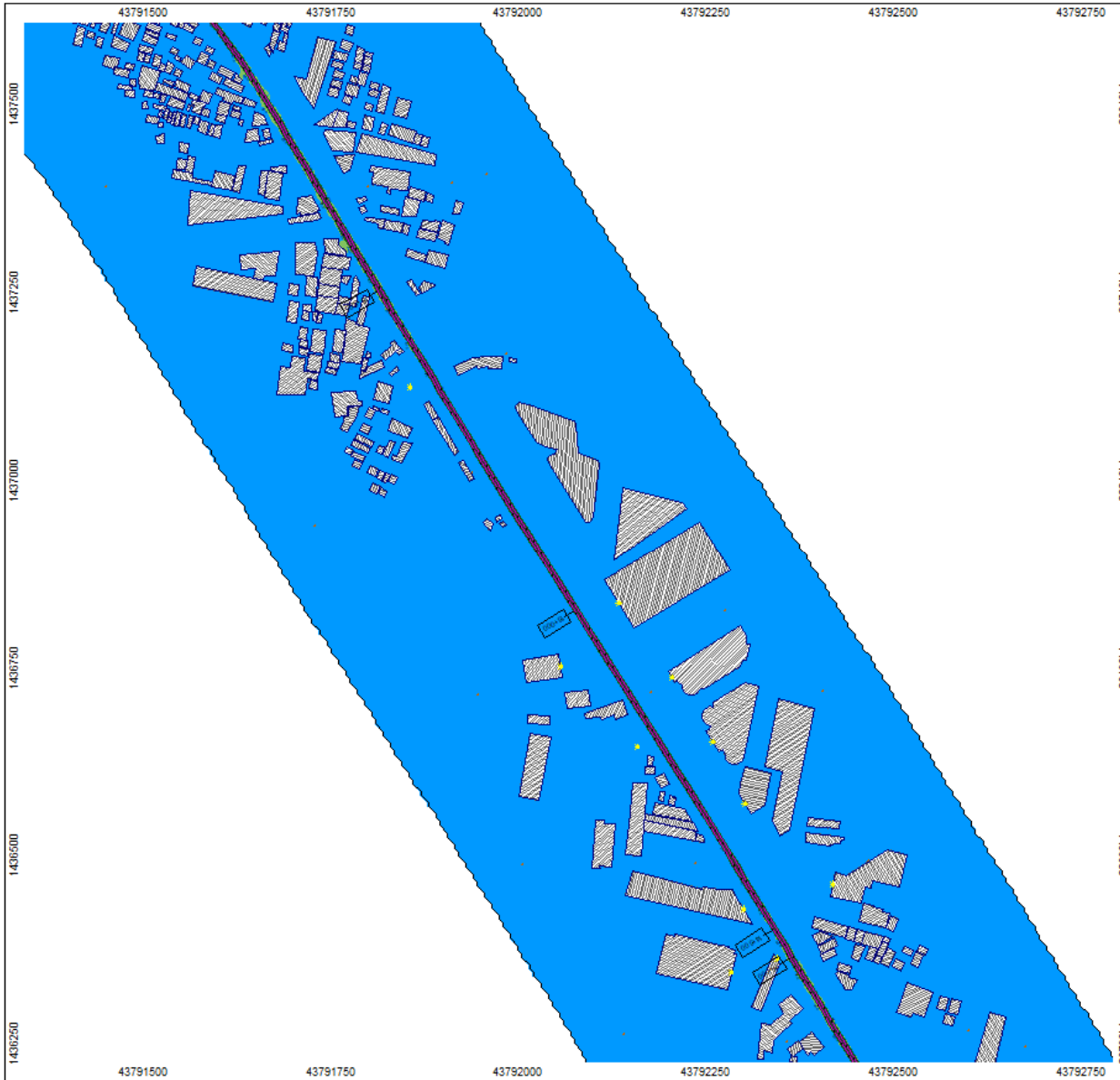
110 2031 2A with Parapet Wall Noise Contour Map
Leq,n
 Calculation in 1.5 m above ground

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

<p>Levels Leq,n in dB(A)</p> <table border="0"> <tr><td style="background-color: #0000FF; width: 15px; height: 10px;"></td><td>< 45</td></tr> <tr><td style="background-color: #008000; width: 15px; height: 10px;"></td><td>45 - 50</td></tr> <tr><td style="background-color: #FFFF00; width: 15px; height: 10px;"></td><td>50 - 55</td></tr> <tr><td style="background-color: #FFA500; width: 15px; height: 10px;"></td><td>55 - 60</td></tr> <tr><td style="background-color: #FF4500; width: 15px; height: 10px;"></td><td>60 - 65</td></tr> <tr><td style="background-color: #FF0000; width: 15px; height: 10px;"></td><td>≥ 65</td></tr> </table>		< 45		45 - 50		50 - 55		55 - 60		60 - 65		≥ 65	<p>Signs and symbols</p> <ul style="list-style-type: none"> — 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
	< 45												
	45 - 50												
	50 - 55												
	55 - 60												
	60 - 65												
	≥ 65												

Length scale 1:5245





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

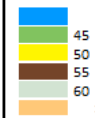
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2031 2A with Parapet Wall
Noise Contour Map**

Leq,n
Calculation in 1.5 m above ground

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

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

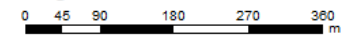


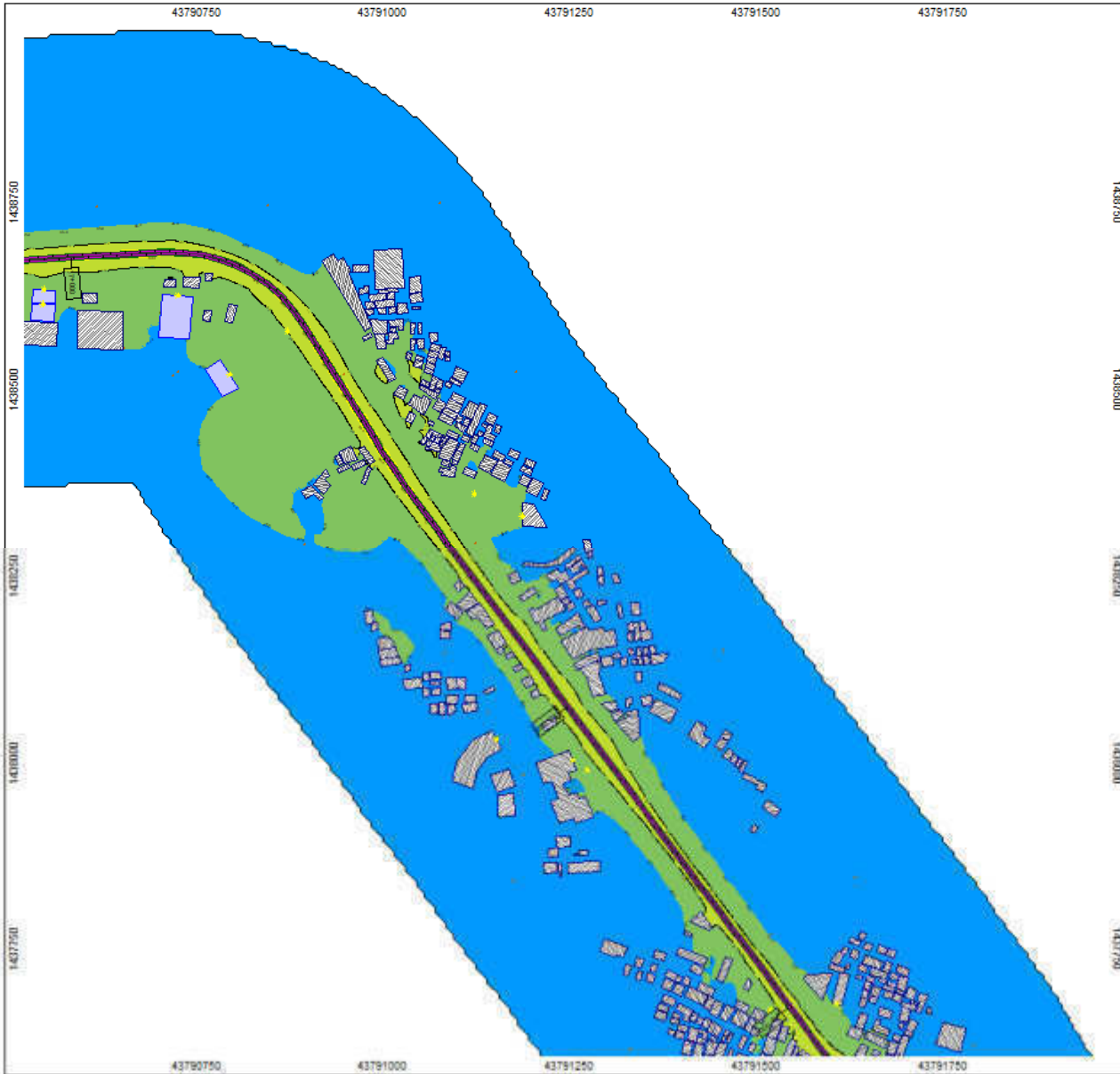
Signs and symbols

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



Length scale 1:5181





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2031 2A with Parapet Wall Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

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

<p>Levels Leq,d in dBA)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 >= 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> Wall Construction Equip Main building Point receiver +3dB(A) increase from Point Source Uncertainty Geometry blocks Wall Wall Elevation point Suction of noise Noise propagation area
--	---

Length scale 1:5181

0

45

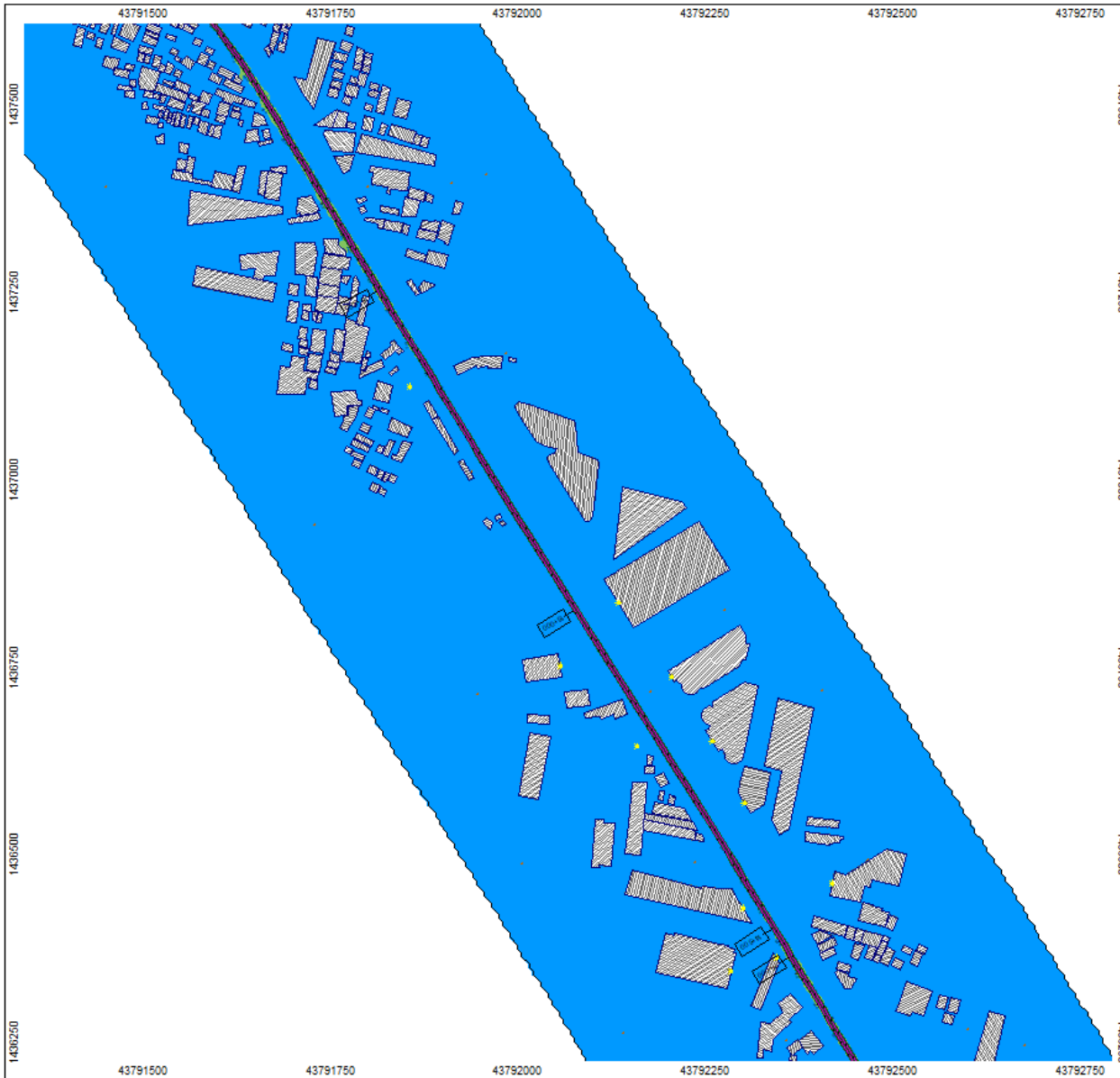
90

180

270

360

m



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

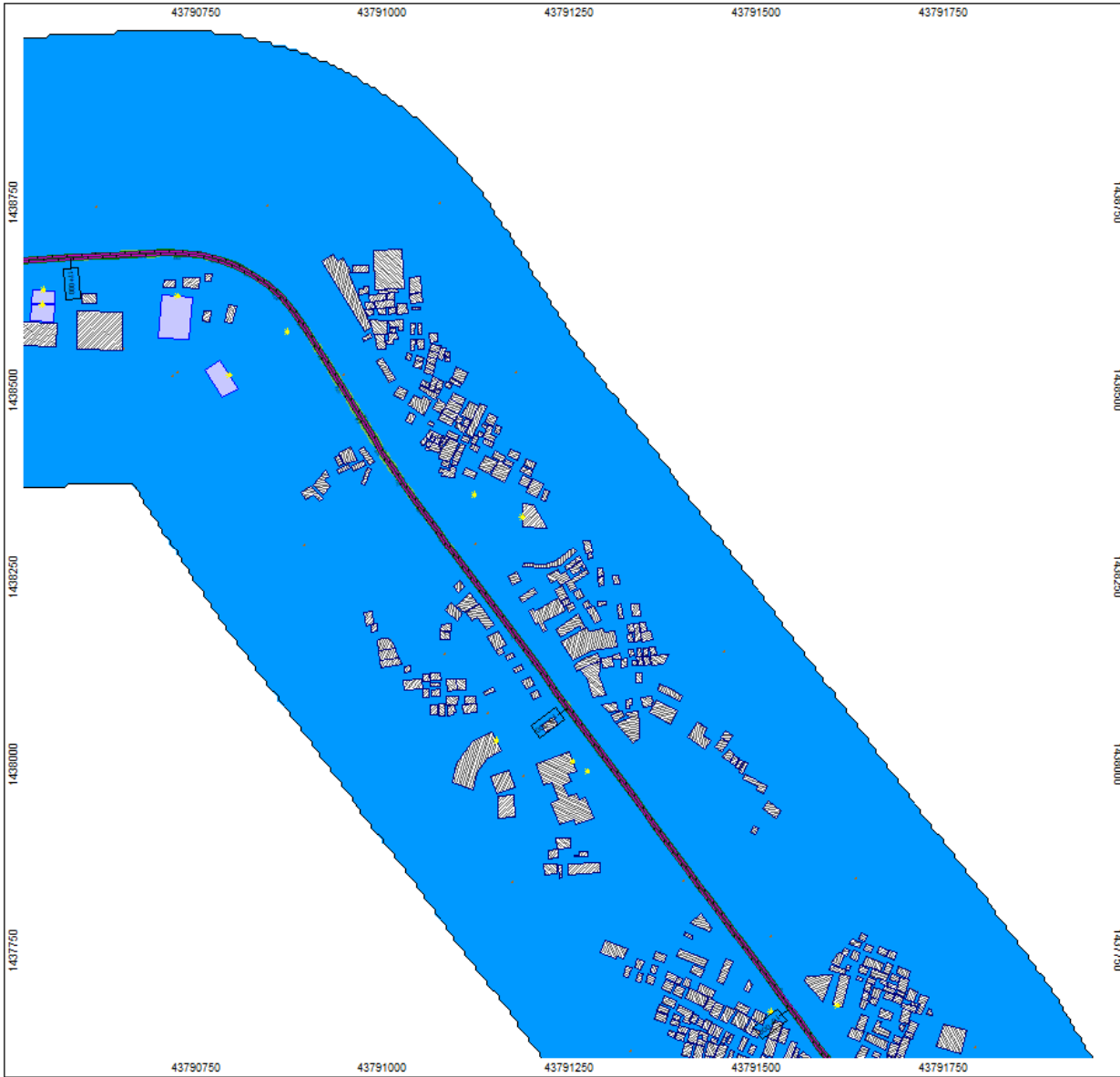
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

110 2031 2A with Parapet Wall
Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

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

Levels Leq,n in dB(A)		Signs and symbols	
Blue	< 45	Green line	Wall
Light Green	45 - 50	Red star	Construction Equip
Yellow	50 - 55	Hatched rectangle	Main building
Orange	55 - 60	Yellow star	Point receiver
Dark Orange	60 - 65	Black line	+3dB(A) increase from
Red	>= 65	Red dot	Point Sources
		Pink line	Line source
		Green rectangle	Geometry bitmap
		Green line	Wall
		Green line	Wall
		Red dot	Elevation point
		White rectangle	Bodeneffekte
		Black outline	Noise calculation area

Length scale 1:5181
0 45 90 180 270 360 m



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

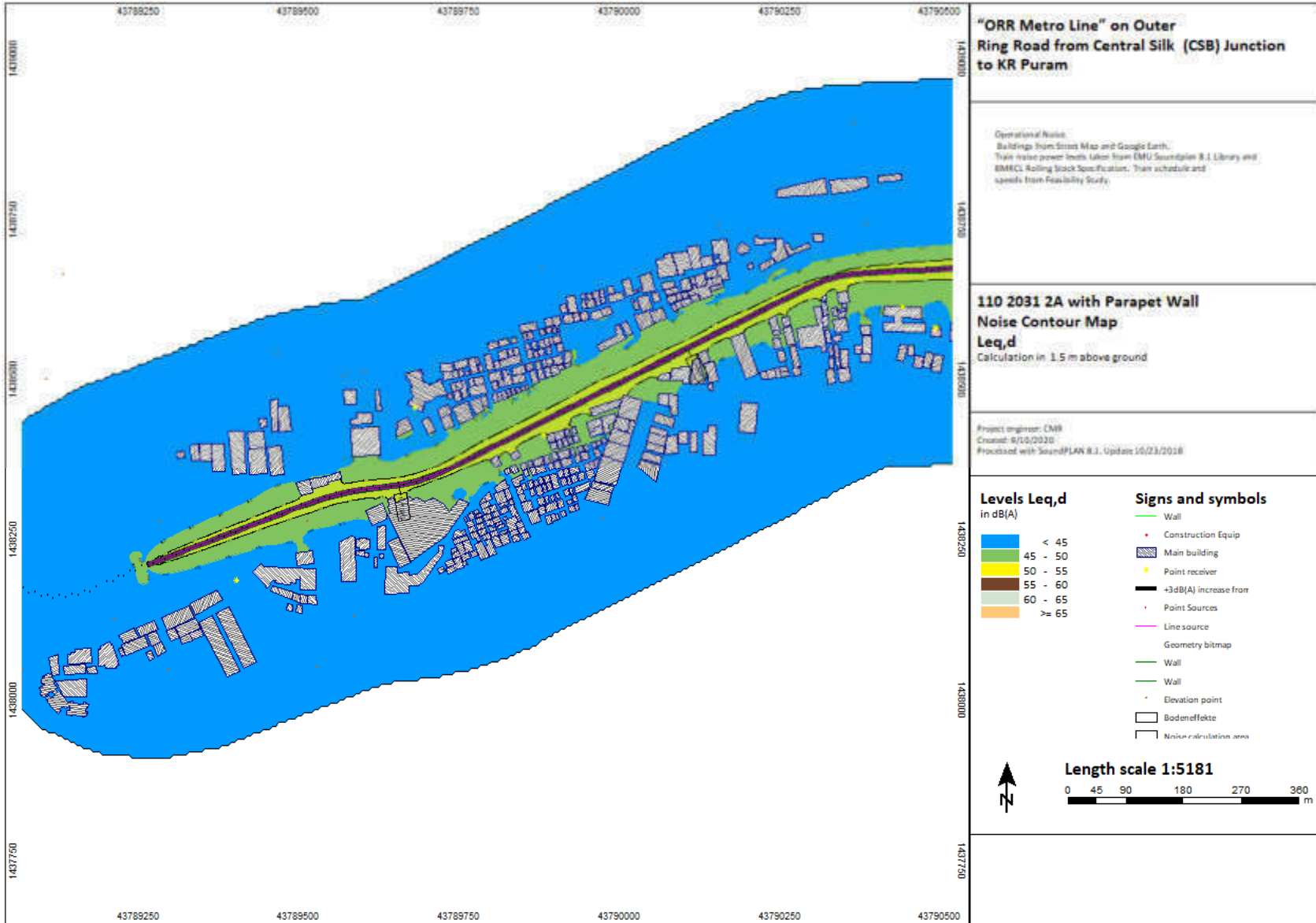
110 2031 2A with Parapet Wall
Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

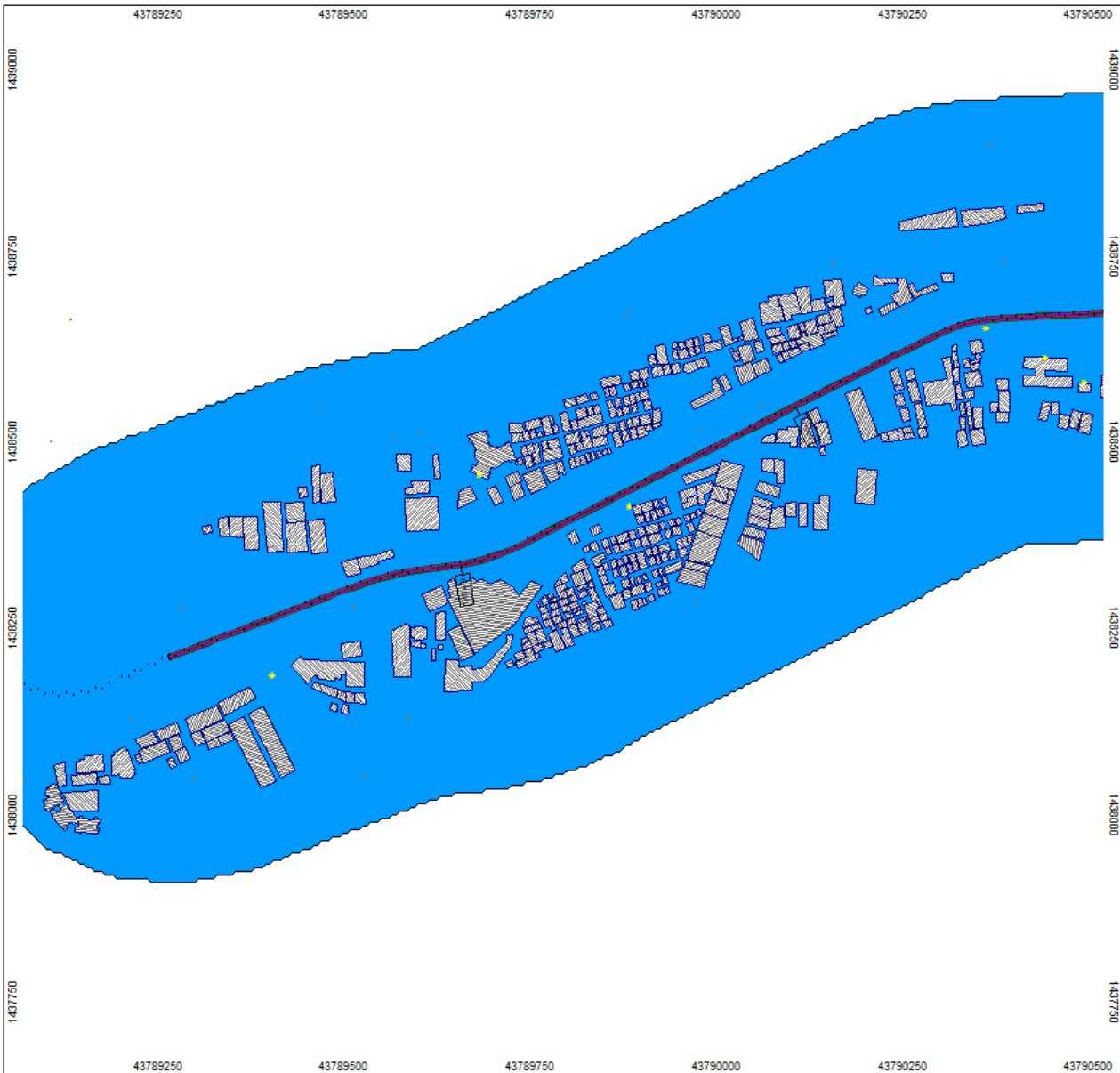
Project engineer: CMR
Created: 9/10/2020
Processed with SoundPLAN 8.1, Update 10/23/2018

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 1:5181
0 45 90 180 270 360 m

North arrow pointing up.





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

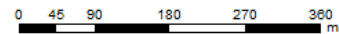
110 2031 2A with Parapet Wall
Noise Contour Map
Leq,n
 Calculation in 1.5 m above ground

Project engineer: CMR
 Created: 9/10/2020
 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 1:5181





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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

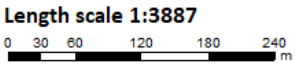
**110 2041 2A with Parapet Wall
 Noise Contour Map
 Leq,d**
 Calculation in 1.5 m above ground

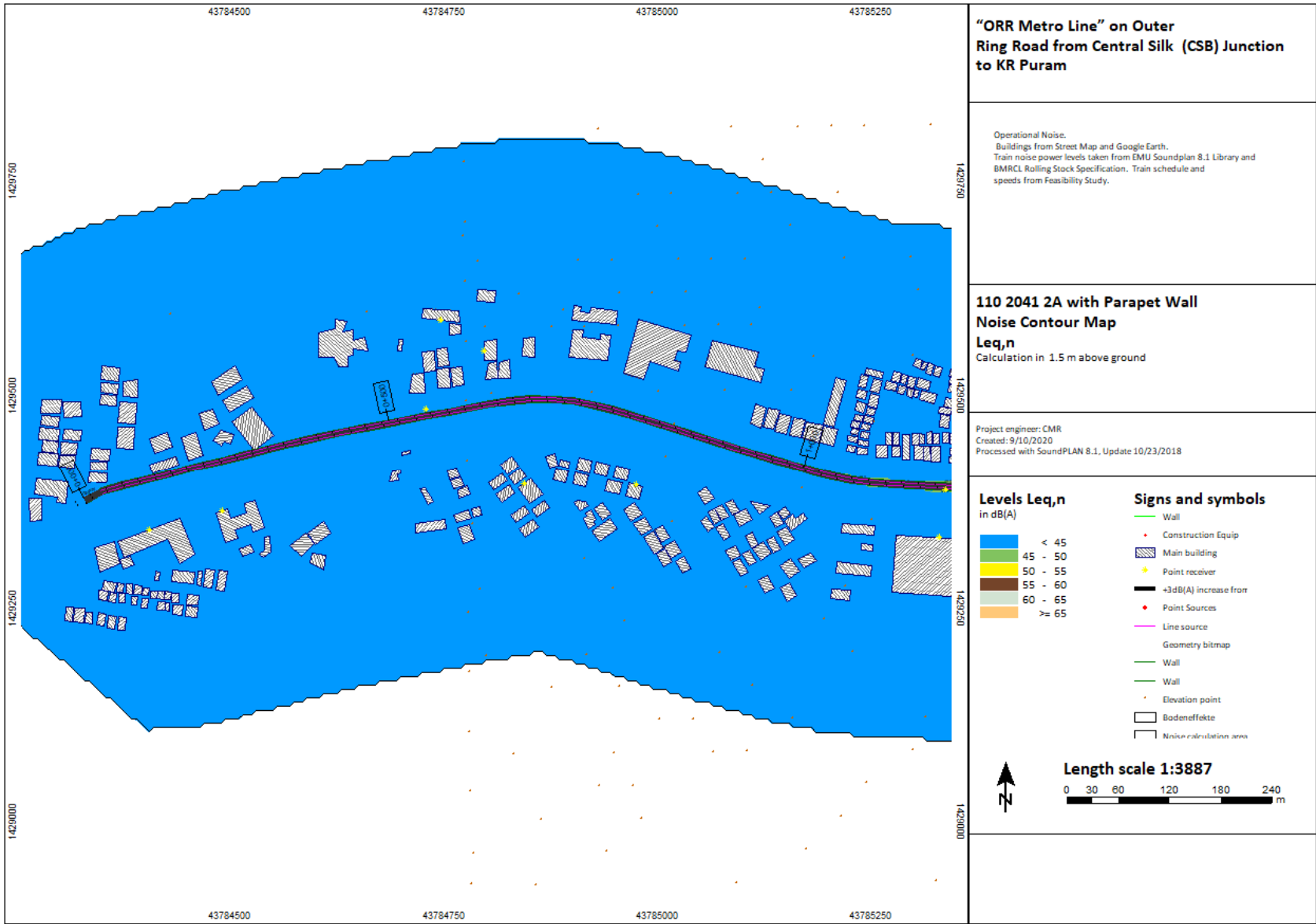
Project engineer: CMR
 Created: 9/16/2020
 Processed with SoundPLAN 8.1, Update 10/23/2018

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
 - ▭ Bodeneffekte
 - ▭ Noise calculation area







"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

**110 2041 2A with Parapet Wall
 Noise Contour Map
 Leq,d**

Calculation in 1.5 m above ground

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

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

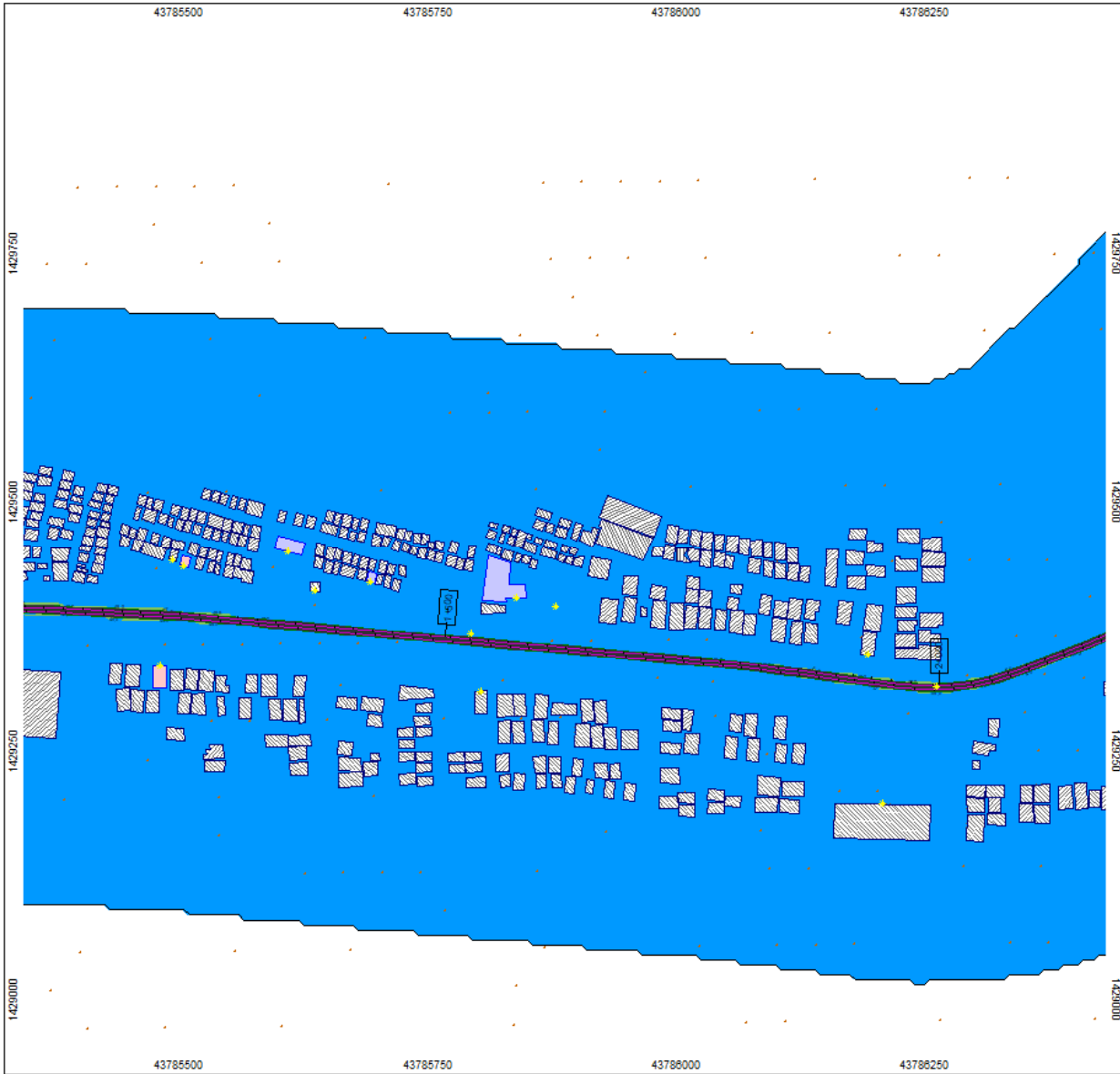
Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Orange	55 - 60
Red	60 - 65
Dark Red	>= 65

Signs and symbols

- Wall
- Construction Equip
- Main building
- Paved road
- +5dB(A) increase from
- Paved surfaces
- Line source
- Geometry cleanup
- Wall
- Wall
- Elevation point
- Soundeffektor
- Acoustic insulation area

Length scale 1:3887





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

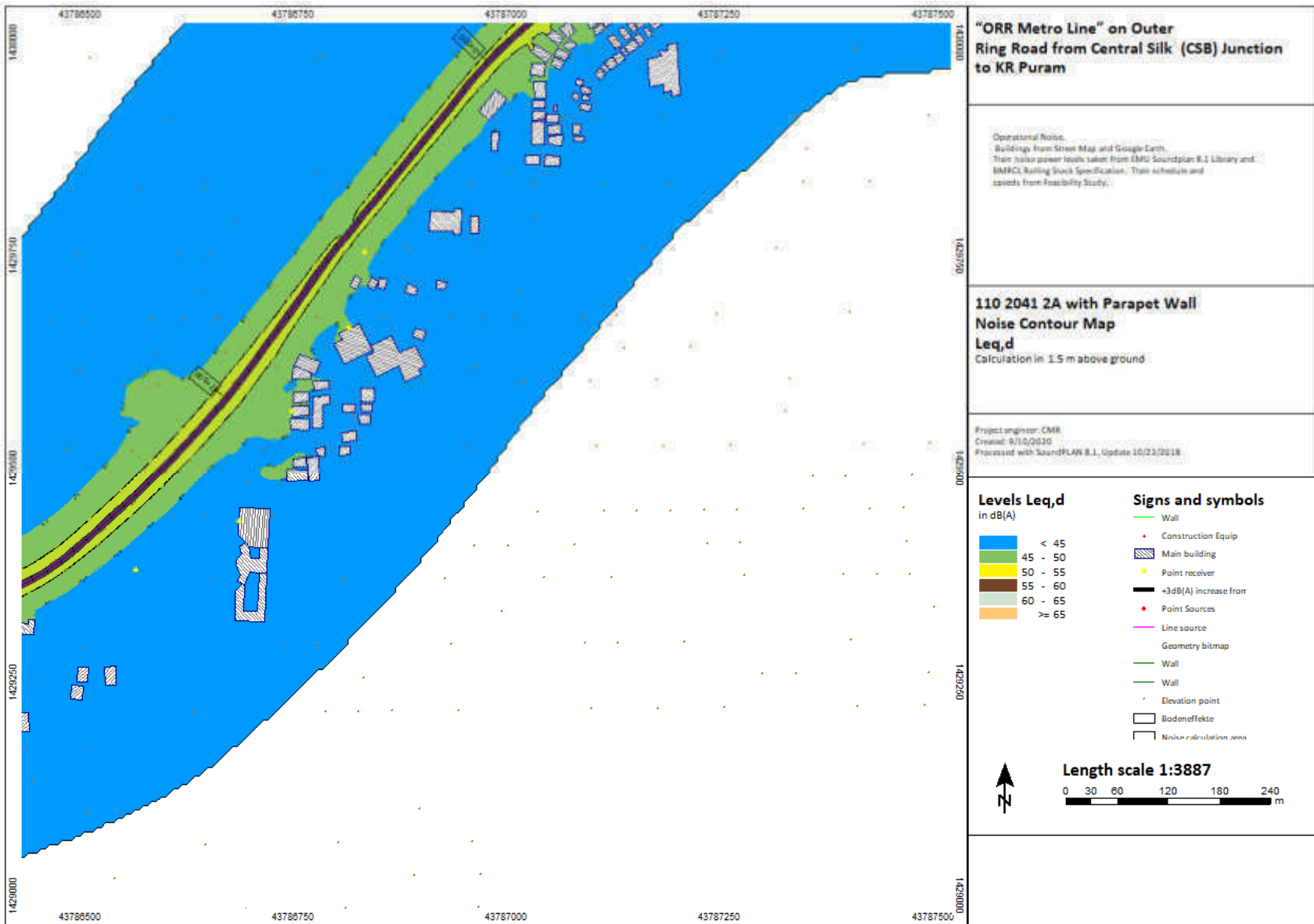
110 2041 2A with Parapet Wall Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

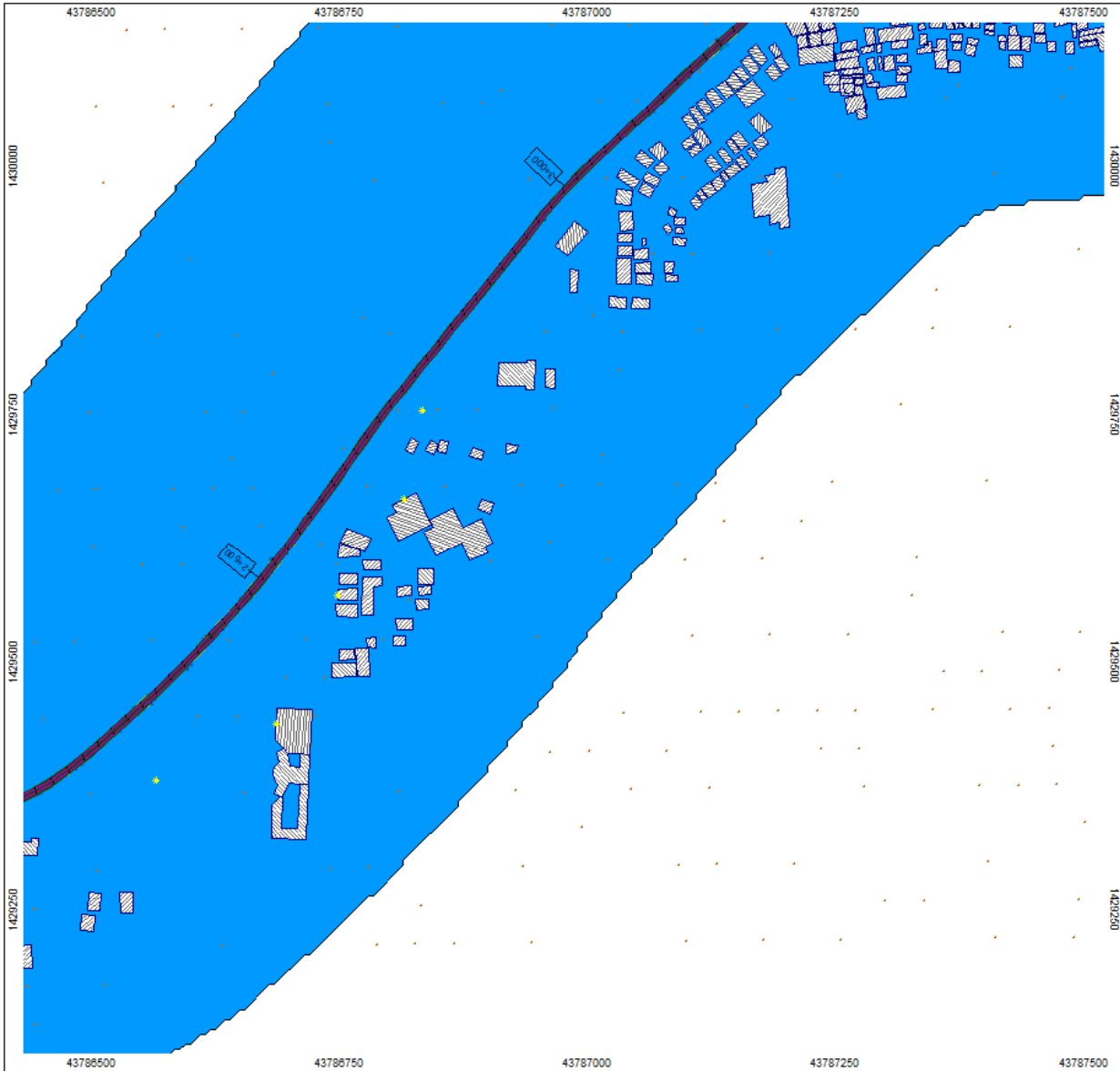
Project engineer: CMR
Created: 9/10/2020
Processed with SoundPLAN 8.1, Update 10/23/2018

<p>Levels Leq,n in dB(A)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 > 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> 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 1:3887

0 30 60 120 180 240 m





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2041 2A with Parapet Wall Noise Contour Map
Leq,n

Calculation in 1.5 m above ground

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

Levels Leq,n in dB(A)

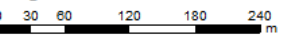
Blue	< 45
Light Green	45 - 50
Yellow	50 - 55
Brown	55 - 60
Orange	60 - 65
Dark Orange	> 65

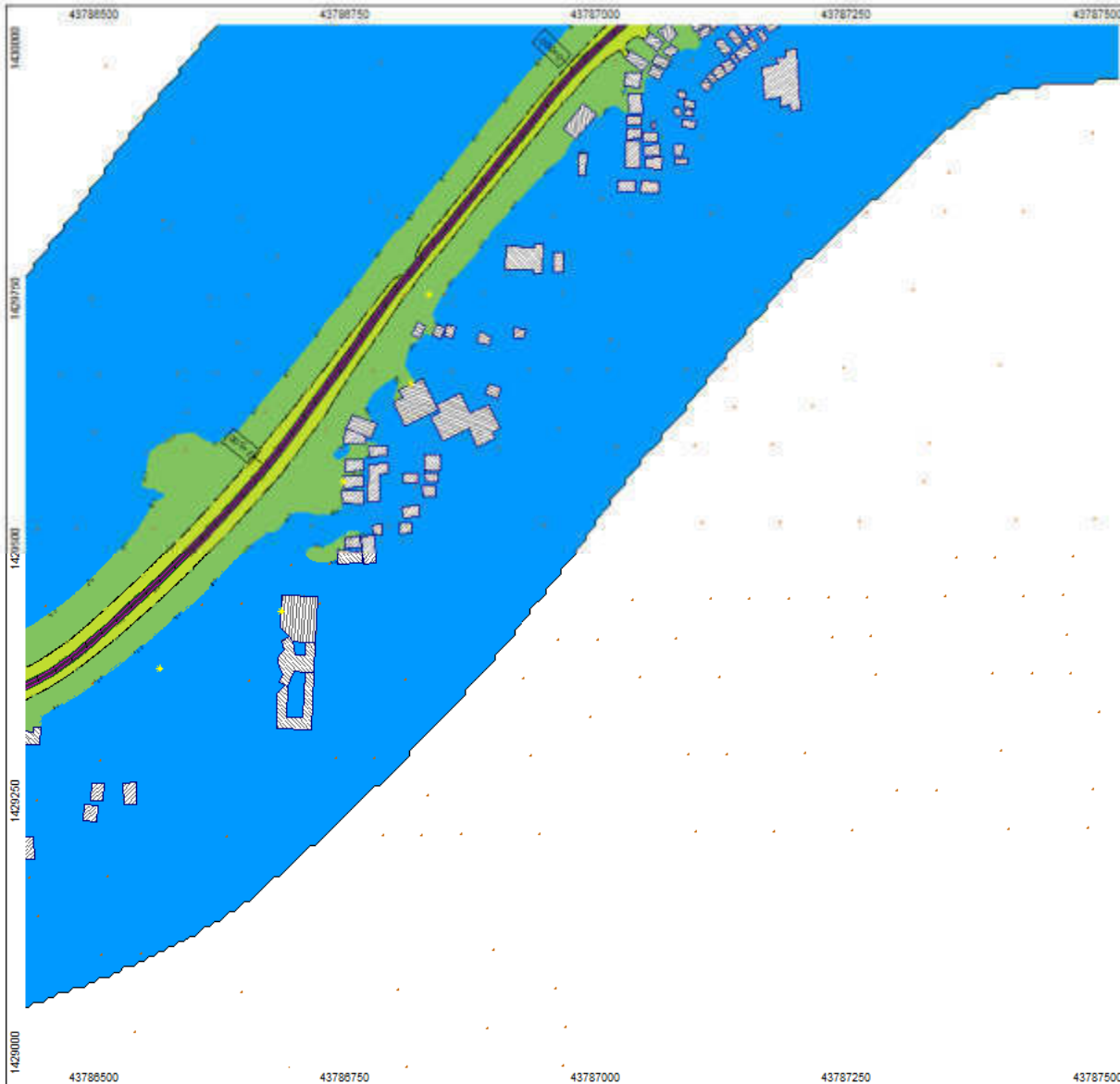
Signs and symbols

- 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 1:3887





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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

**110 2041 2A with Parapet Wall
Noise Contour Map
Leq,d**

Calculation in 1.5 m above ground

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

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

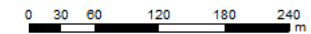
- < 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- ≥ 65

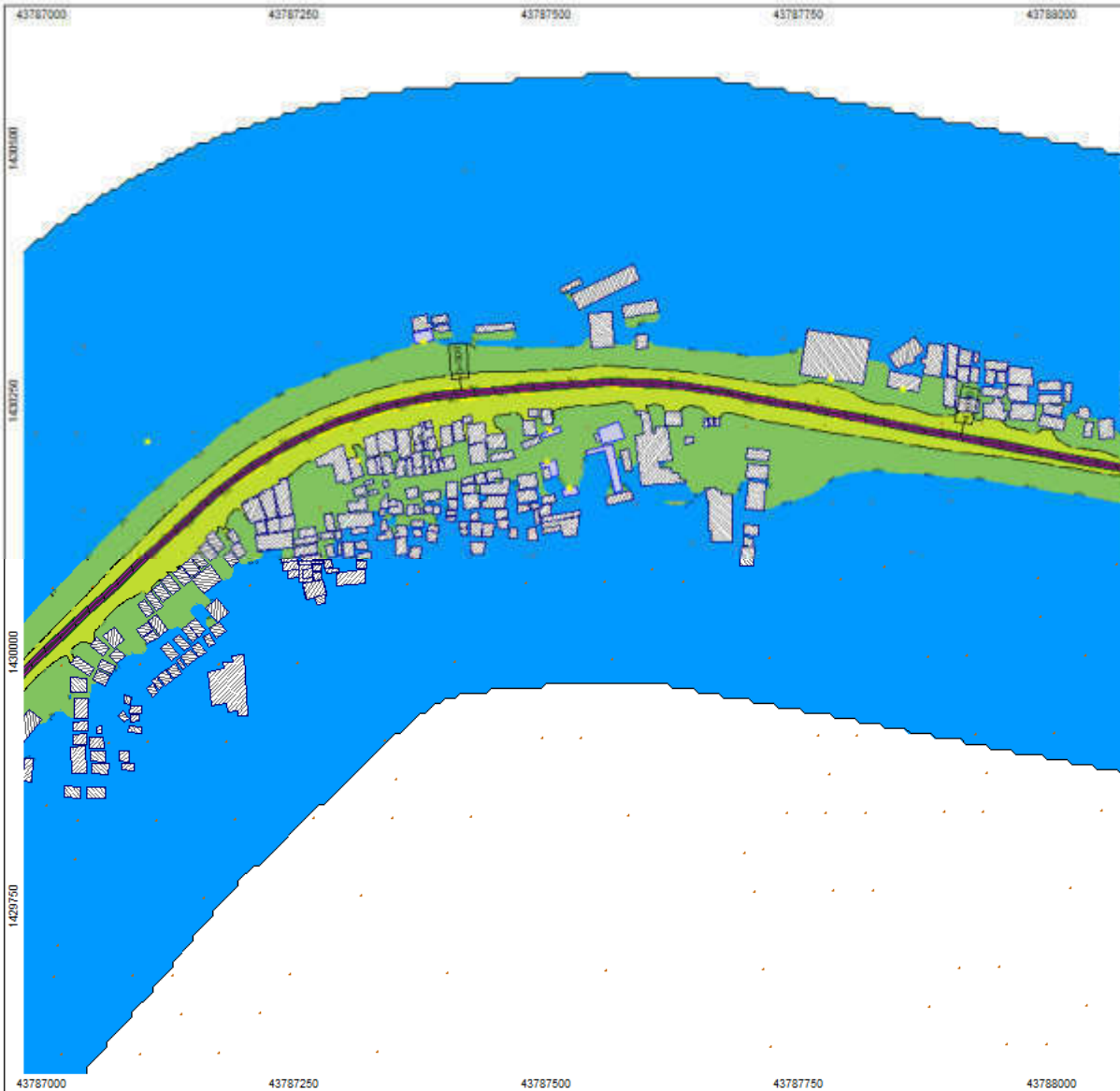
Signs and symbols

- 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



Length scale 1:3887





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

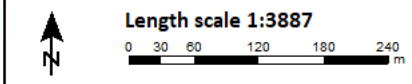
Operational Noise:
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.1 Library and
 SARNCL Rolling Stock Specification. Train schedule and
 speeds from Feasibility Study.

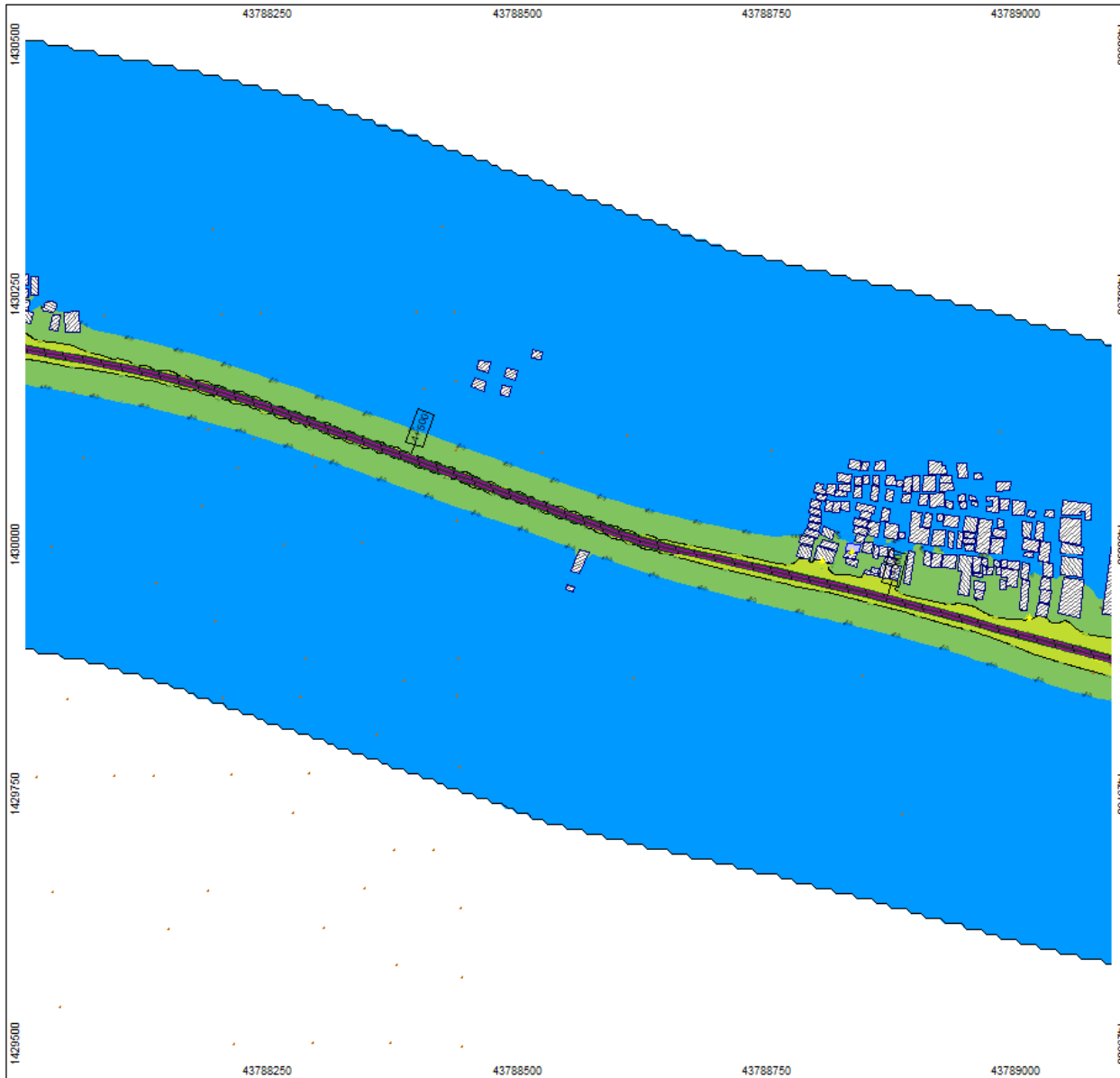
**110 2041 2A with Parapet Wall
 Noise Contour Map
 Leq,d**

Calculation in 3.5 m above ground

Project engineer: CMR
 Created: 9/10/2020
 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 |
| | Elevation point |
| | Bodeneffekte |
| | Noise calculation area |





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

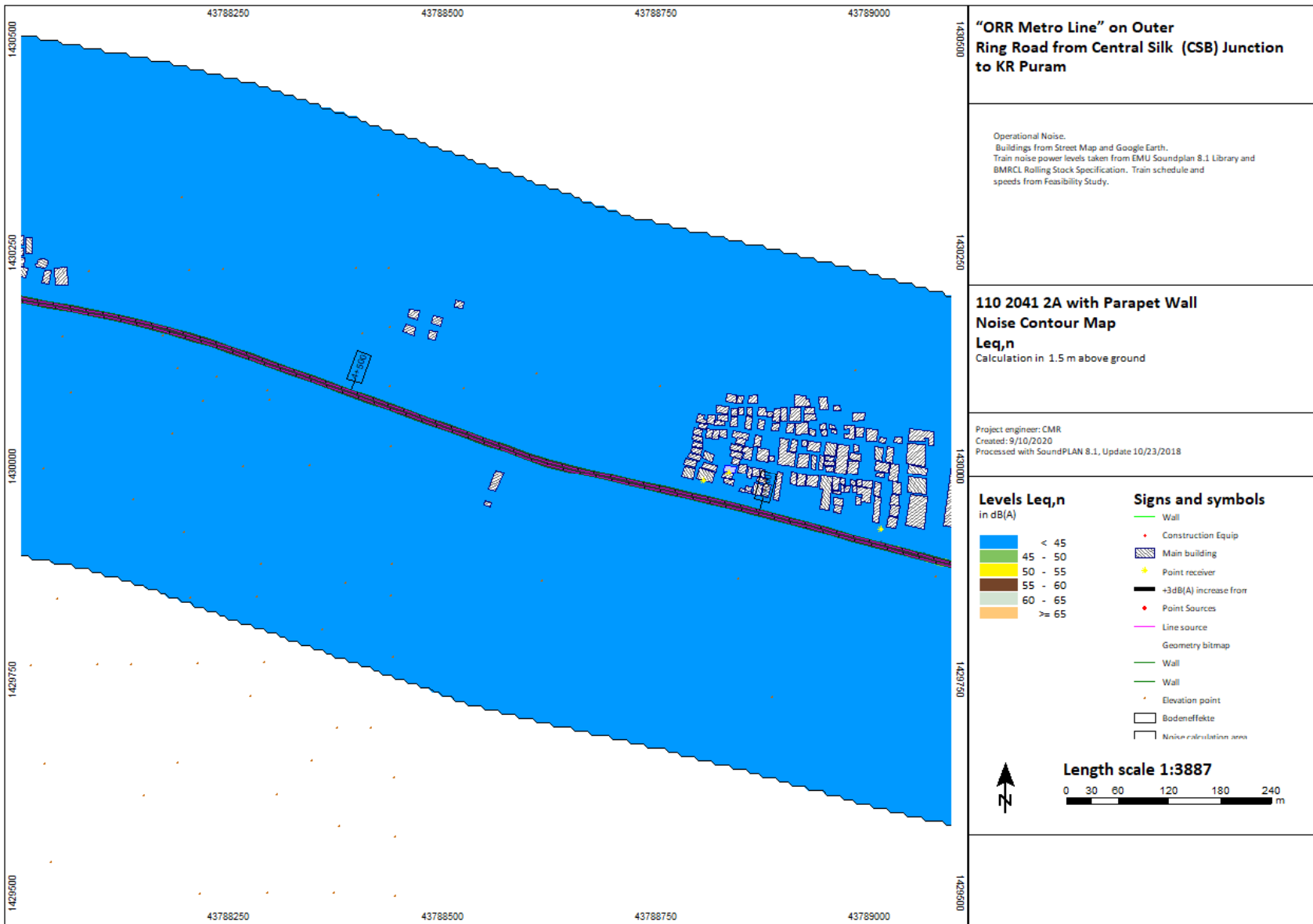
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

110 2041 2A with Parapet Wall
Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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
	Elevation point
	Bodeneffekte
	Noise calculation area

Length scale 1:3887
0 30 60 120 180 240 m





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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

**110 2041 2A with Parapet Wall
 Noise Contour Map
 Leq,d**

Calculation in 1.5 m above ground

Project engineer: CMR
 Created: 8/10/2023
 Presented with SoundPLAN 8.1, Update 10/21/2018

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



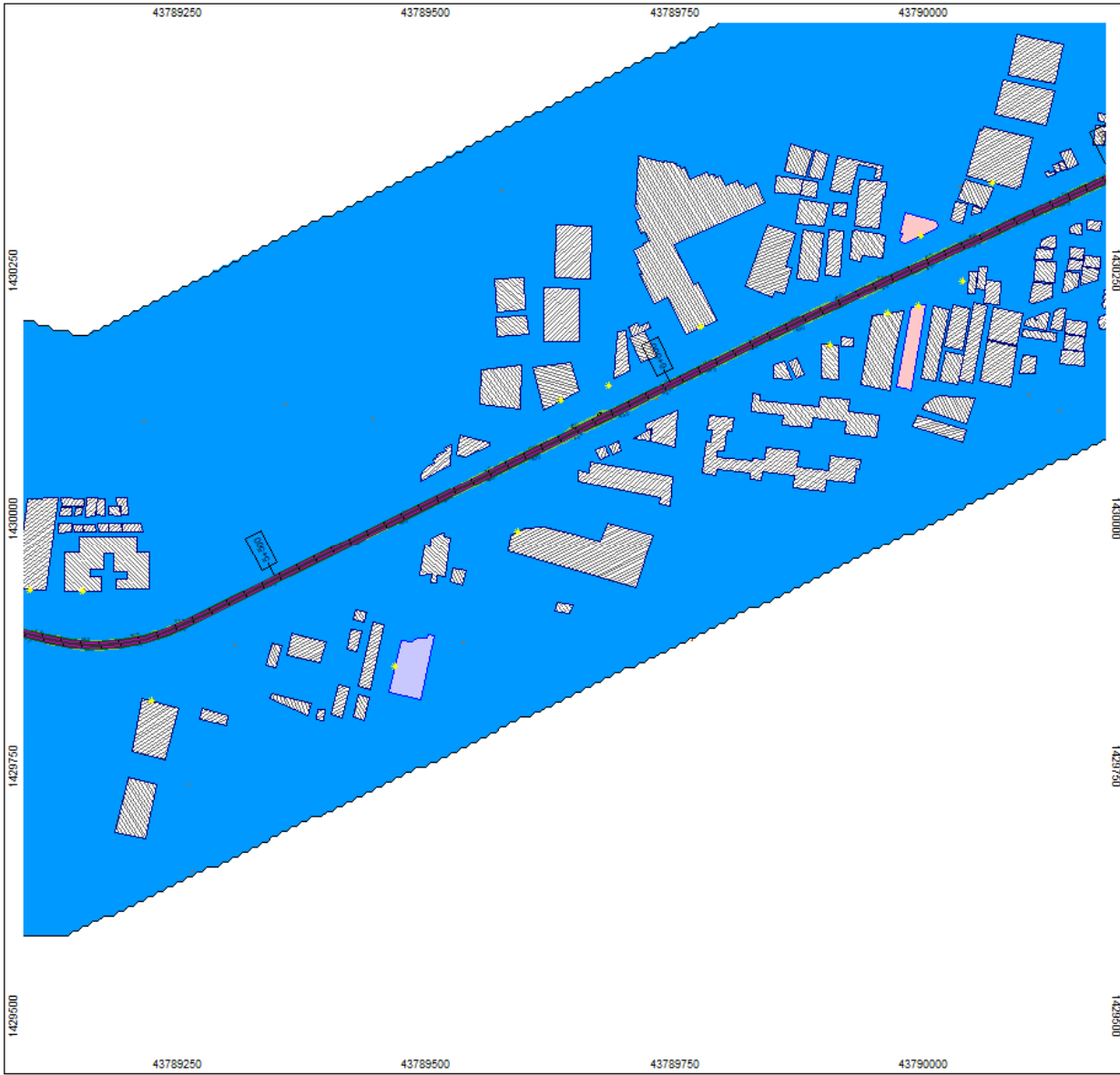
Signs and symbols

- Wall
- Construction Equip
- ▭ Main building
- Point receiver
- +dB(A) increase from
- Point Source
- Line source
- Geometry obstacle
- Wall
- Elevation point
- ▭ Bufferzone
- ▭ Noise reduction area



Length scale 1:3887





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

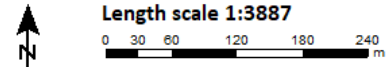
Operational Noise.
 Buildings from Street Map and Google Earth.
 Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

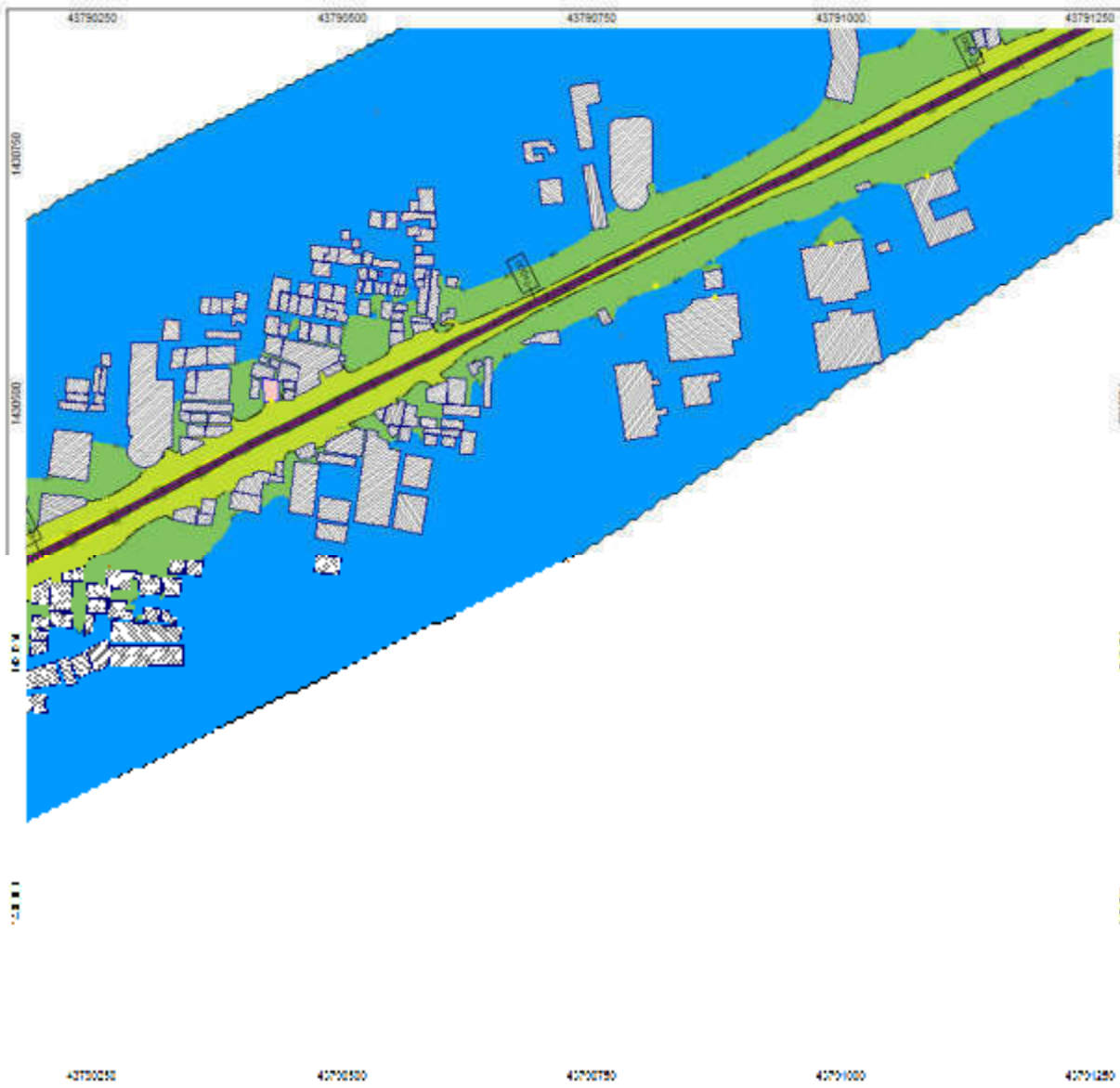
110 2041 2A with Parapet Wall Noise Contour Map

Leq,n
 Calculation in 1.5 m above ground

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

<p>Levels Leq,n in dB(A)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 > 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> 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
--	--





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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

110 2041 2A with Parapet Wall Noise Contour Map
Leq,d

Calculation in 1.5 m above ground.

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

Levels Leq,d in dB(A)

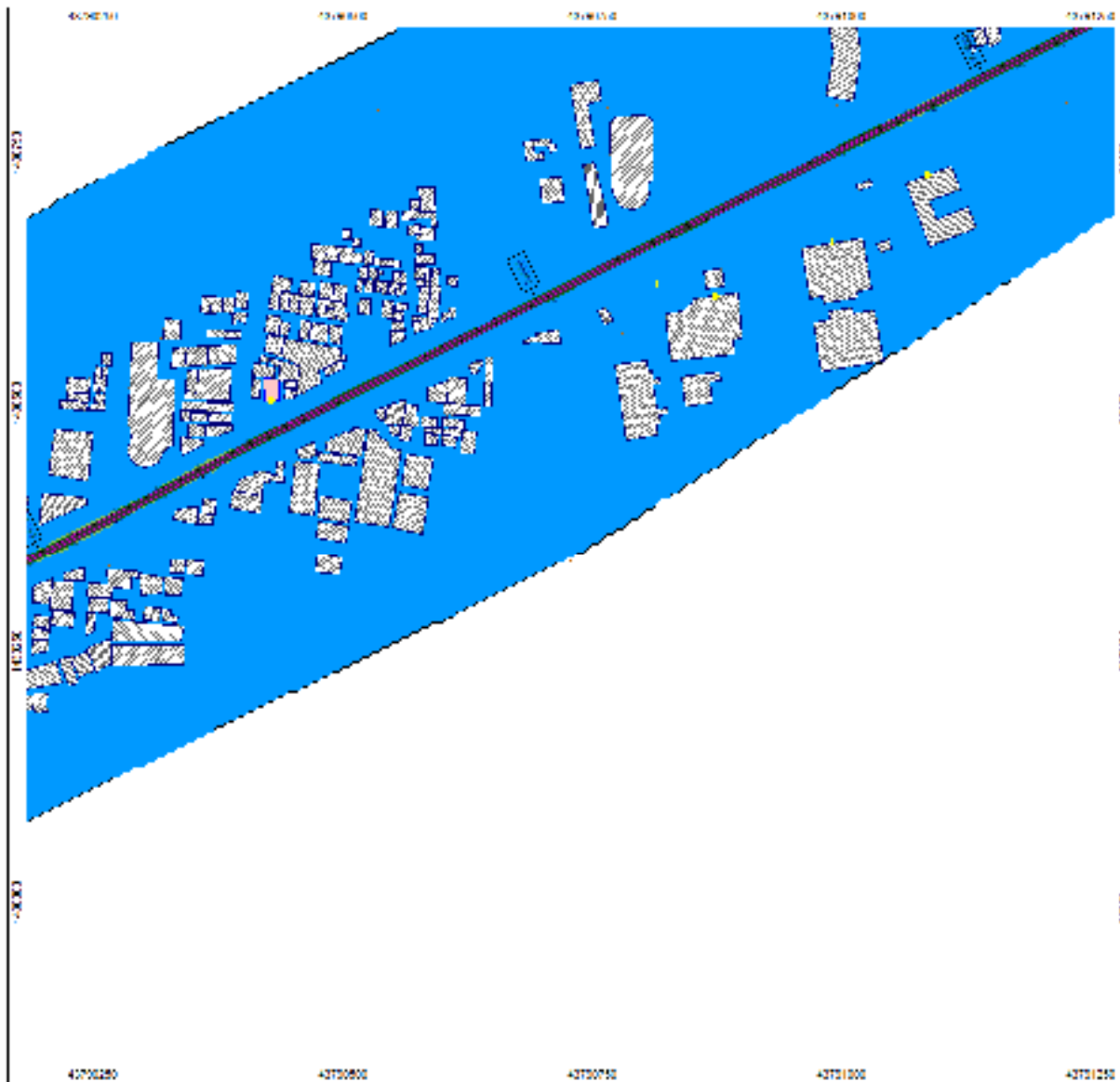
- < 44
- 40 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70

Signs and symbols

- Wall
- Characteristic by type
- Main building
- Wall structure
- (140) structure line
- Wall structure
- Structure
- Concrete structure
- Wall
- Wall
- Structure edge
- Structure edge
- Structure edge
- Structure edge

Length scale 1:3887





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

Operational Model
 Buildings from 2008 and 2009 are Single Storey
 Urban noise profile levels taken from SPM 2009 after 30.0 January and 30.07.07. Following South Specific Studies. Trade winds from east.
 based on a feasibility study.

110 2041 2A with Parapet Wall Noise Contour Map

Leq,n
 Calculation in 1.0 m above ground

Project engineer: DMR
 Created: 30.03.2010
 Projected north: 2011/03/20 10:40:00

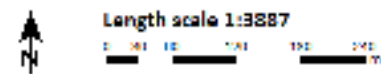
Levels Leq,n

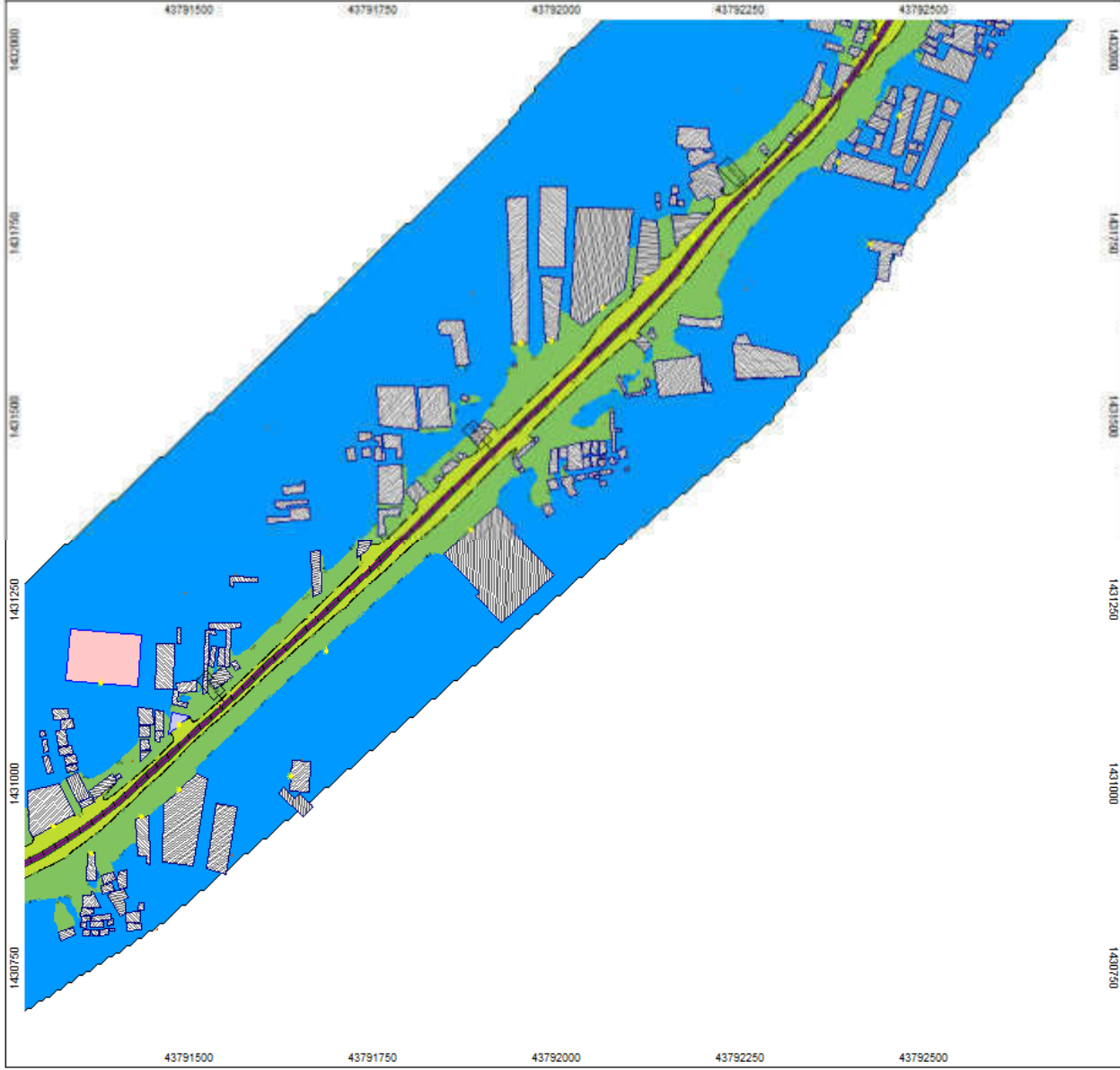
In dB(A)

Blue	40 - 50
Yellow	50 - 55
Brown	55 - 60
Grey	60 - 65
Orange	65 - 70

Signs and symbols

- Wall
- Green noise barrier
- Man walking
- Person walking
- Vertical barrier beam
- Person standing
- Person on car
- Emergency vehicle
- Wall
- Wall
- Direction paths
- Border of site
- Boundary of noise zone





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

Operational Noise:
 Buildings from Street Map and Google Earth;
 Train noise power levels taken from DMU Soundplan 8.3 Library and BMRD Rolling Stock Specification; Train schedule and speeds from Feasibility Study.

110 2041 2A with Parapet Wall
Noise Contour Map
Leq,d
 Calculation in 1.5 m above ground

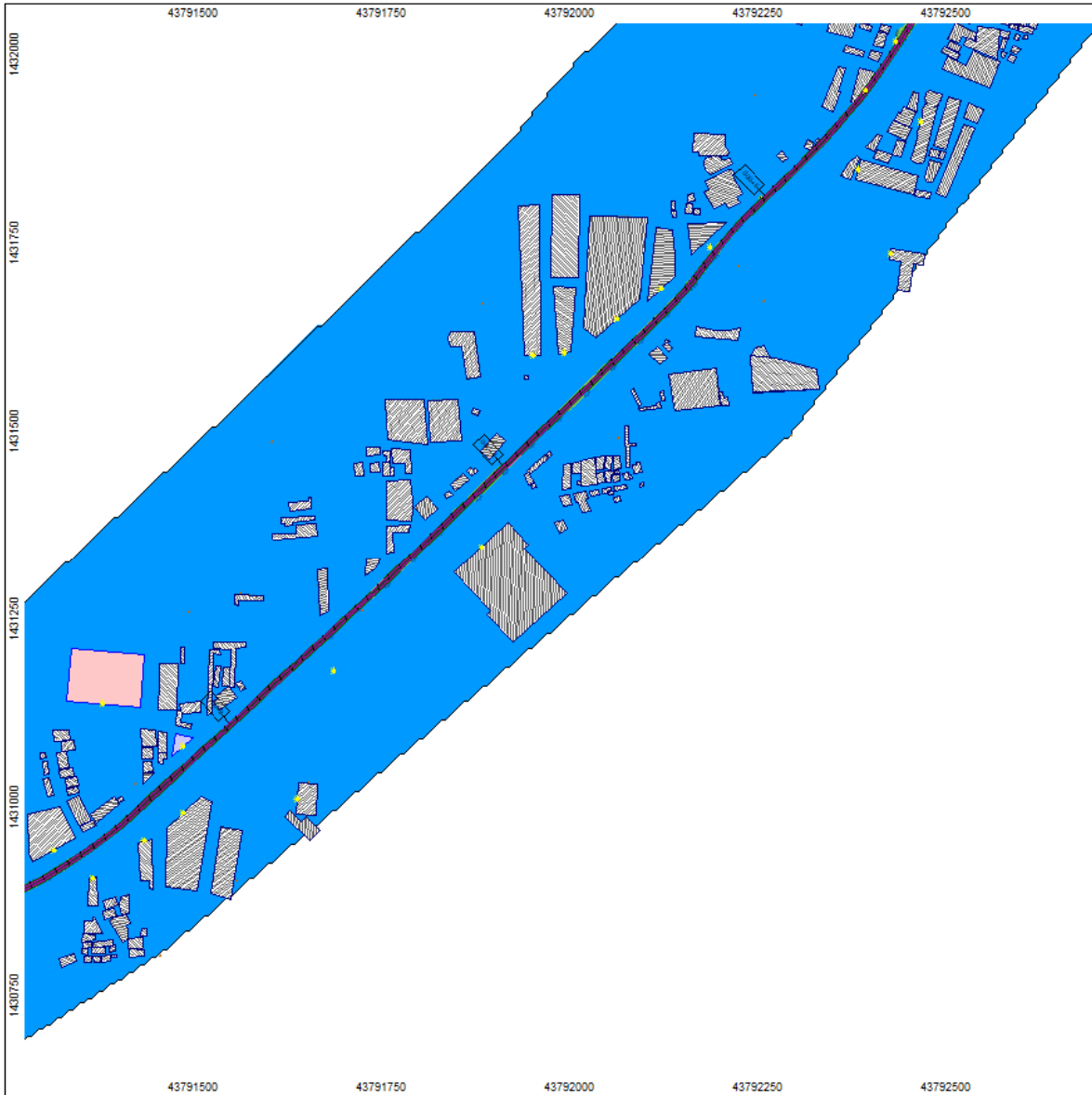
Project engineer: CNR
 Created: 9/10/2018
 Processed with SoundPLAN 8.1, Update 10/03/2018

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
	Elevation point
	Bodeneffekte
	Noise calculation area

Length scale 1:5245

 0 45 90 180 270 360 m

North arrow pointing up.



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

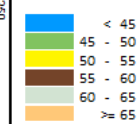
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2041 2A with Parapet Wall
Noise Contour Map
Leq,n**

Calculation in 1.5 m above ground

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

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

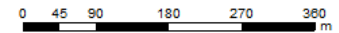


Signs and symbols

- 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 1:5245





"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

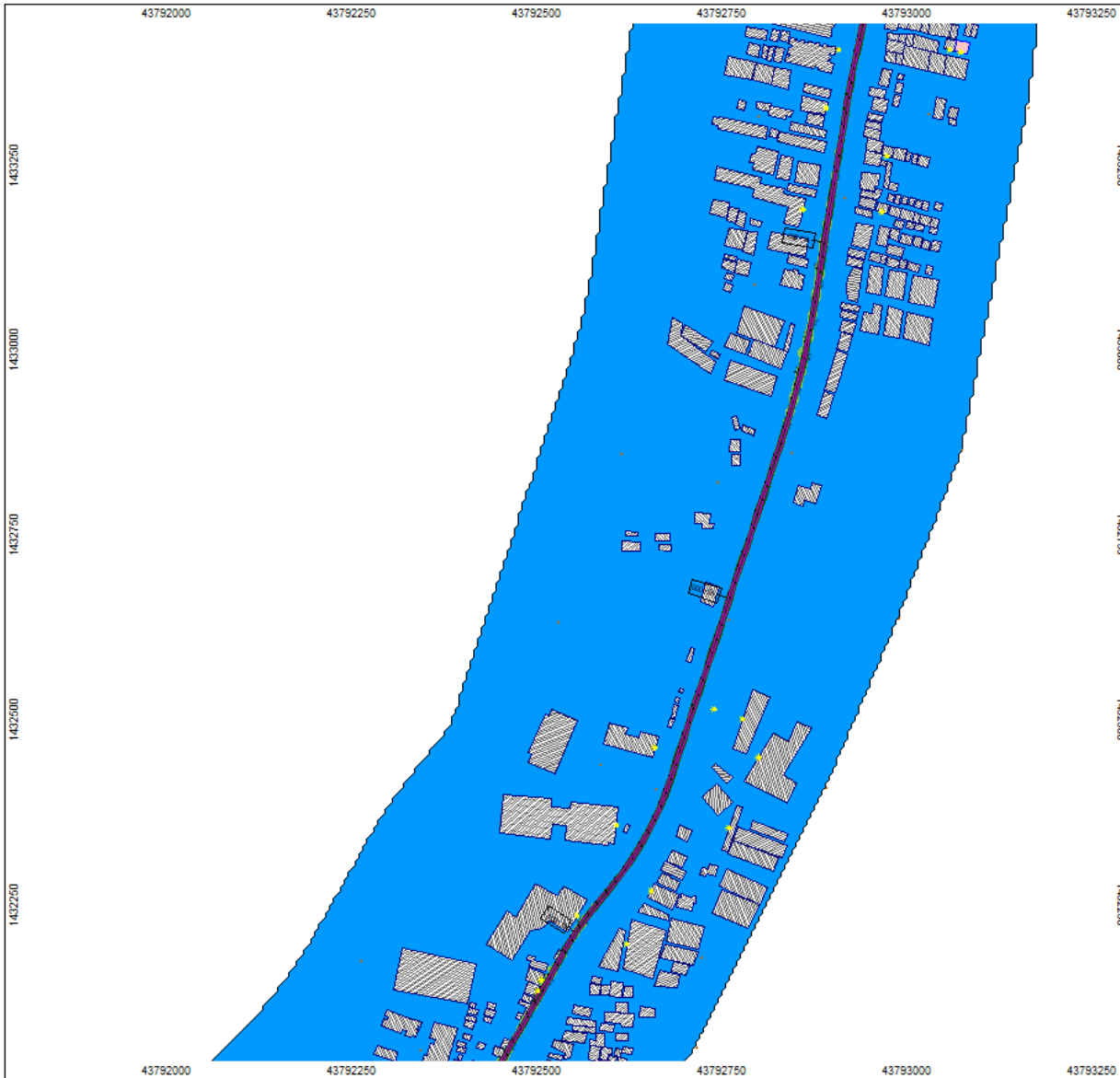
**110 2041 2A with Parapet Wall
Noise Contour Map
Leq,d**
Calculation in 1.5 m above ground

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

<p>Levels Leq,d in dB(A)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 >= 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> Wall Main building Point receiver -3dB(A) increase front Point Source Line source Geometry Skimap Wall Wall Elevation point Receiver/Emitter Station calculation area
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Length scale 1:5245

0 45 90 180 270 360 m



"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

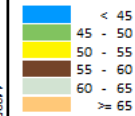
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2041 2A with Parapet Wall
Noise Contour Map
Leq,n**

Calculation in 1.5 m above ground

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

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



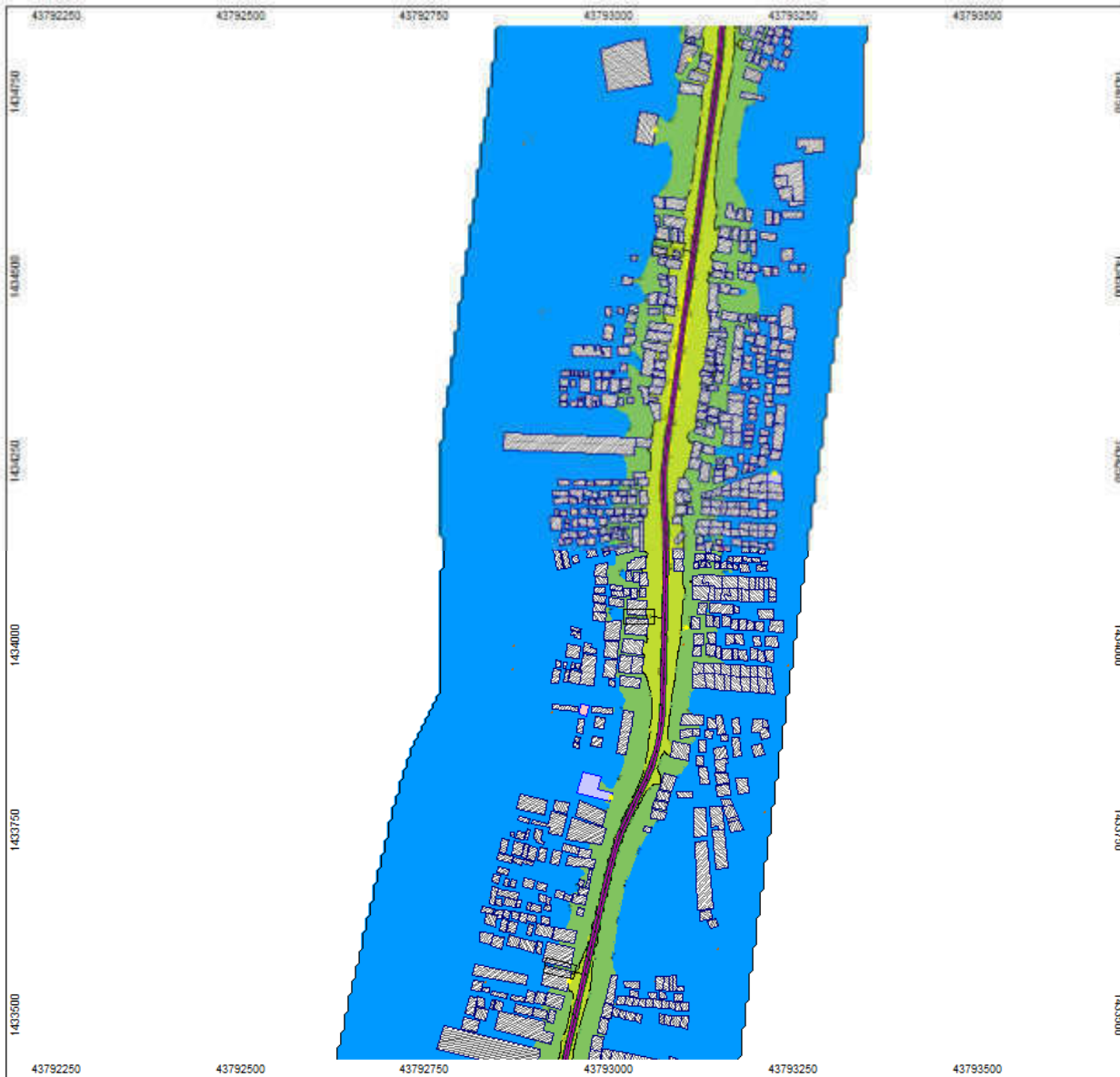
Signs and symbols

- 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 1:5245





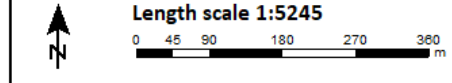
"ORR Metro Line" on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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

110 2041 2A with Parapet Wall Noise Contour Map
Leq,d
 Calculation in 1.5 m above ground

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

<p>Levels Leq,d in dB(A)</p> <table border="0"> <tr><td> < 45</td></tr> <tr><td> 45 - 50</td></tr> <tr><td> 50 - 55</td></tr> <tr><td> 55 - 60</td></tr> <tr><td> 60 - 65</td></tr> <tr><td> ≥ 65</td></tr> </table>	 < 45	 45 - 50	 50 - 55	 55 - 60	 60 - 65	 ≥ 65	<p>Signs and symbols</p> <ul style="list-style-type: none"> Wall Construction Equip Main building Point receiver +3dB(A) increase from Point Sources Line source Geometry bitmap Wall Wall Elevation point Bodeneffekte Noise radiation area
 < 45							
 45 - 50							
 50 - 55							
 55 - 60							
 60 - 65							
 ≥ 65							





“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

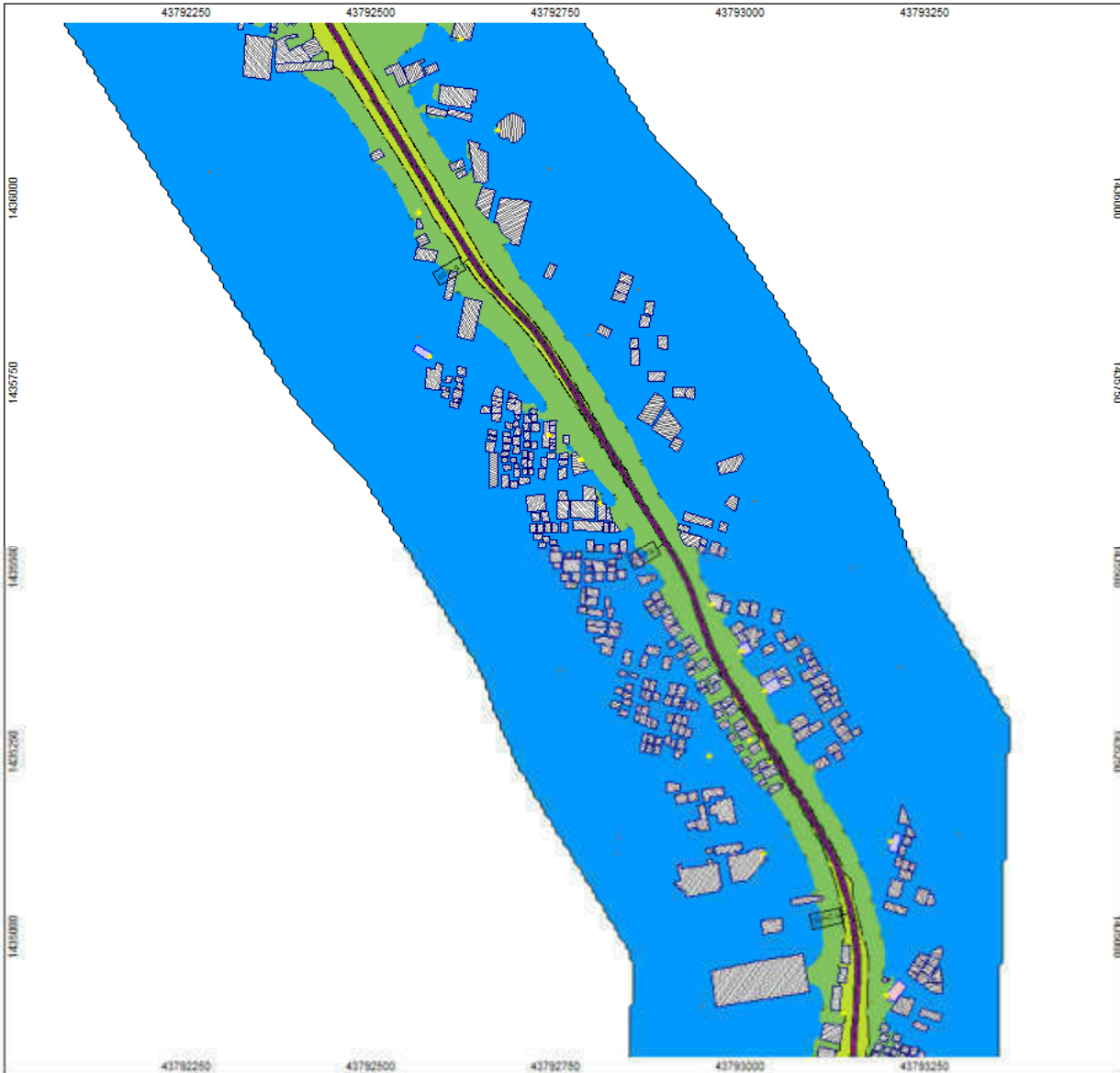
Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility Study.

**110 2041 2A with Parapot Wall
Noise Contour Map
Leq,n**
Calculation in 1.5 m above ground

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

<p>Levels Leq,n in dB(A)</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 >= 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> 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
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Length scale 1:5245



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

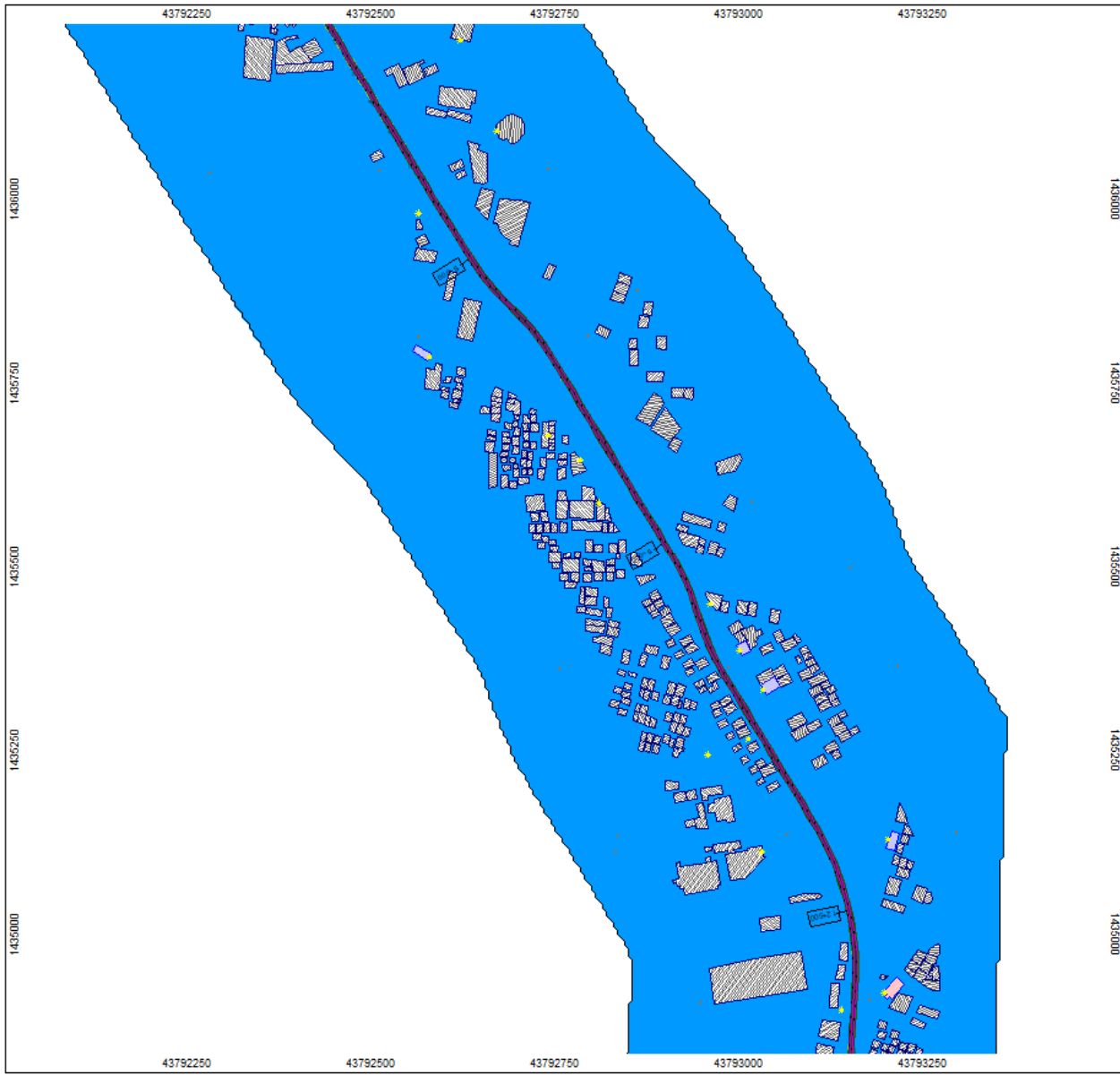
**110 2041 2A with Parapet Wall
Noise Contour Map
Leq,d**
Calculation in 1.5 m above ground

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

<p>Levels Leq,d (in dB(A))</p> <ul style="list-style-type: none"> < 45 45 - 50 50 - 55 55 - 60 60 - 65 >= 65 	<p>Signs and symbols</p> <ul style="list-style-type: none"> Wall Construction Equip Main building Point receiver +3dB(A) increase from Point Sources Line source Geometry bitmap Wall Wall Elevation point Background noise Meteorological area
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Length scale 1:5245

0 45 90 180 270 360 m



“ORR Metro Line” on Outer Ring Road from Central Silk (CSB) Junction to KR Puram

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.

110 2041 2A with Parapet Wall
Noise Contour Map
Leq,n
Calculation in 1.5 m above ground

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

Levels Leq,n in dB(A)	Signs and symbols

Length scale 1:5245
0 45 90 180 270 360 m

