Environmental Impact Assessment

October 2020

India: Bengaluru Metro Rail Project

Phase 2A (Outer Road Ring Metro Line)

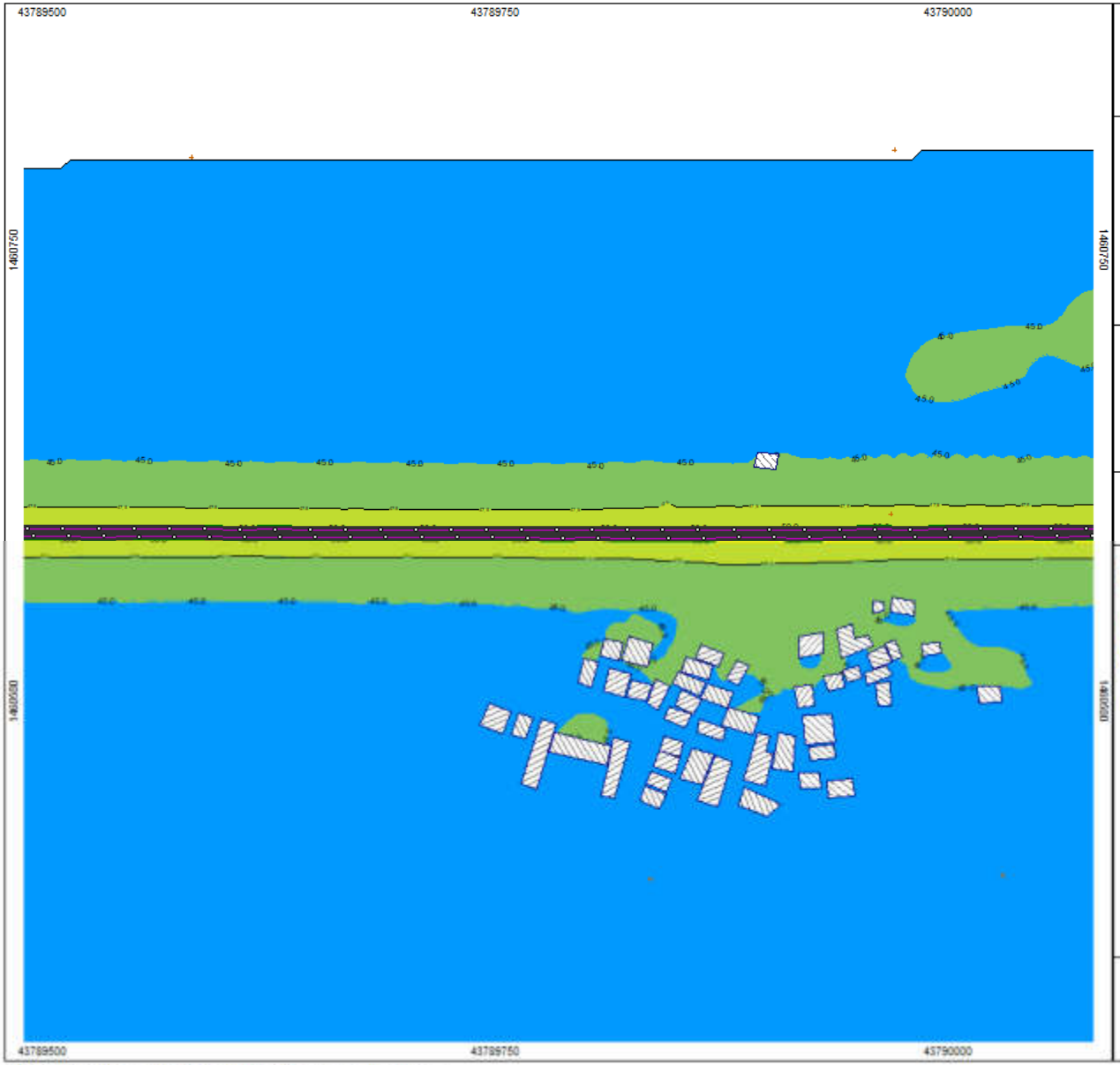
Volume 10
Annex 5

Prepared by Bangalore Metro Rail Corporation Ltd. (BMRCL), India for the Asian Development Bank.

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.



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

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

Levels Leq,d
in dB(A)

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

Signs and symbols

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

N

Length scale 1:2109
0 20 40 80 120

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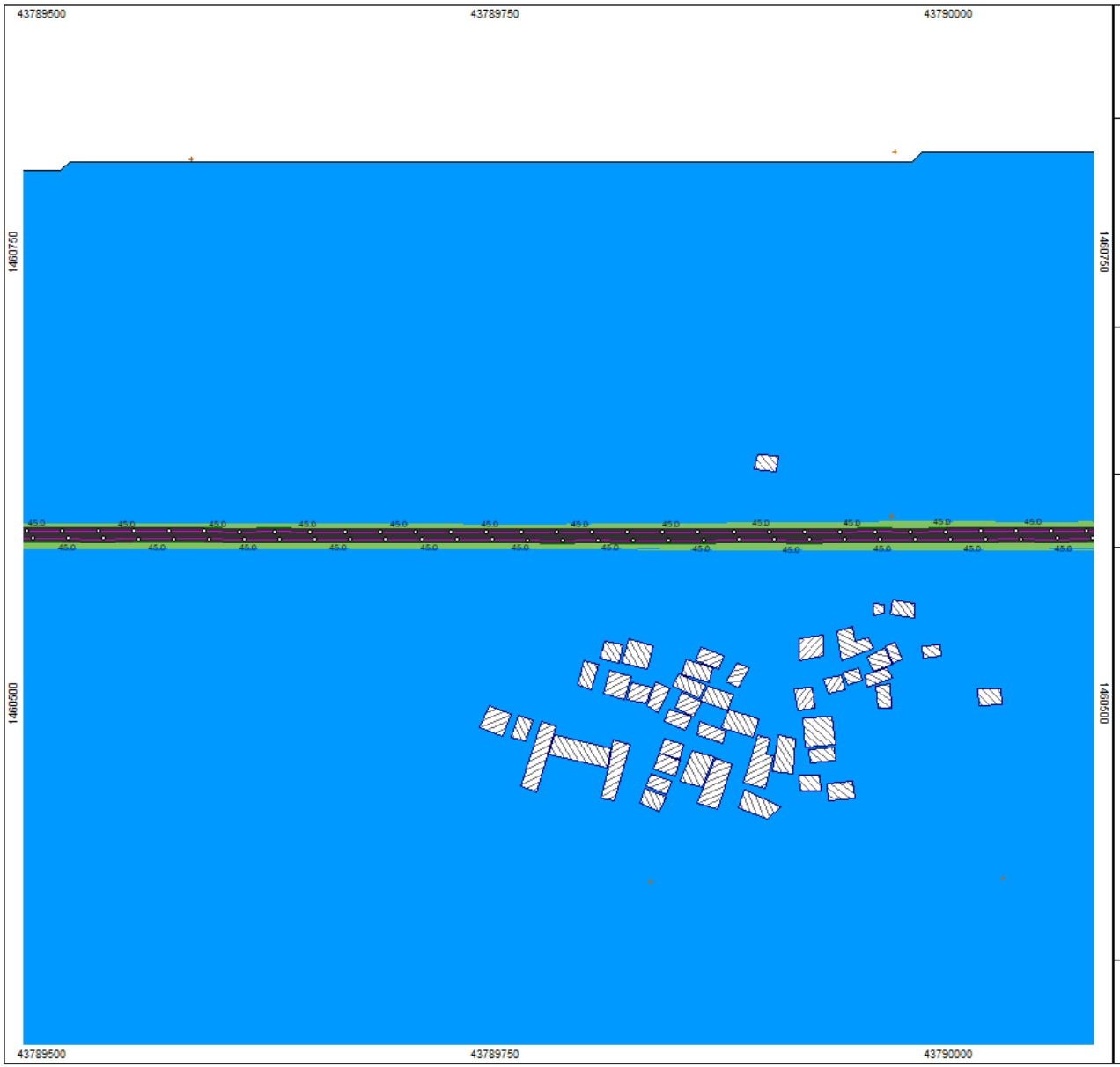

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Length scale 1:2109
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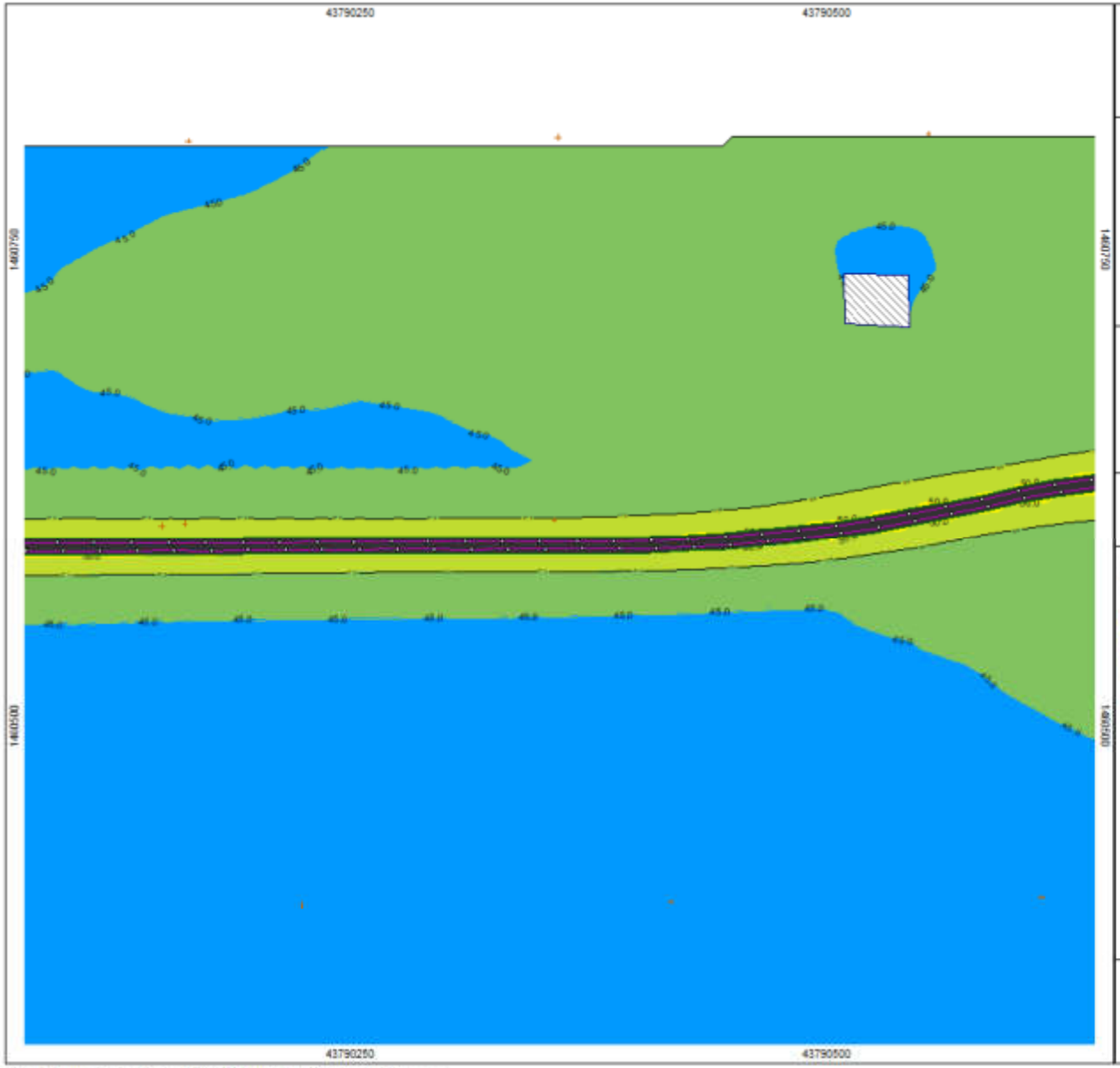

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Length scale 1:2006

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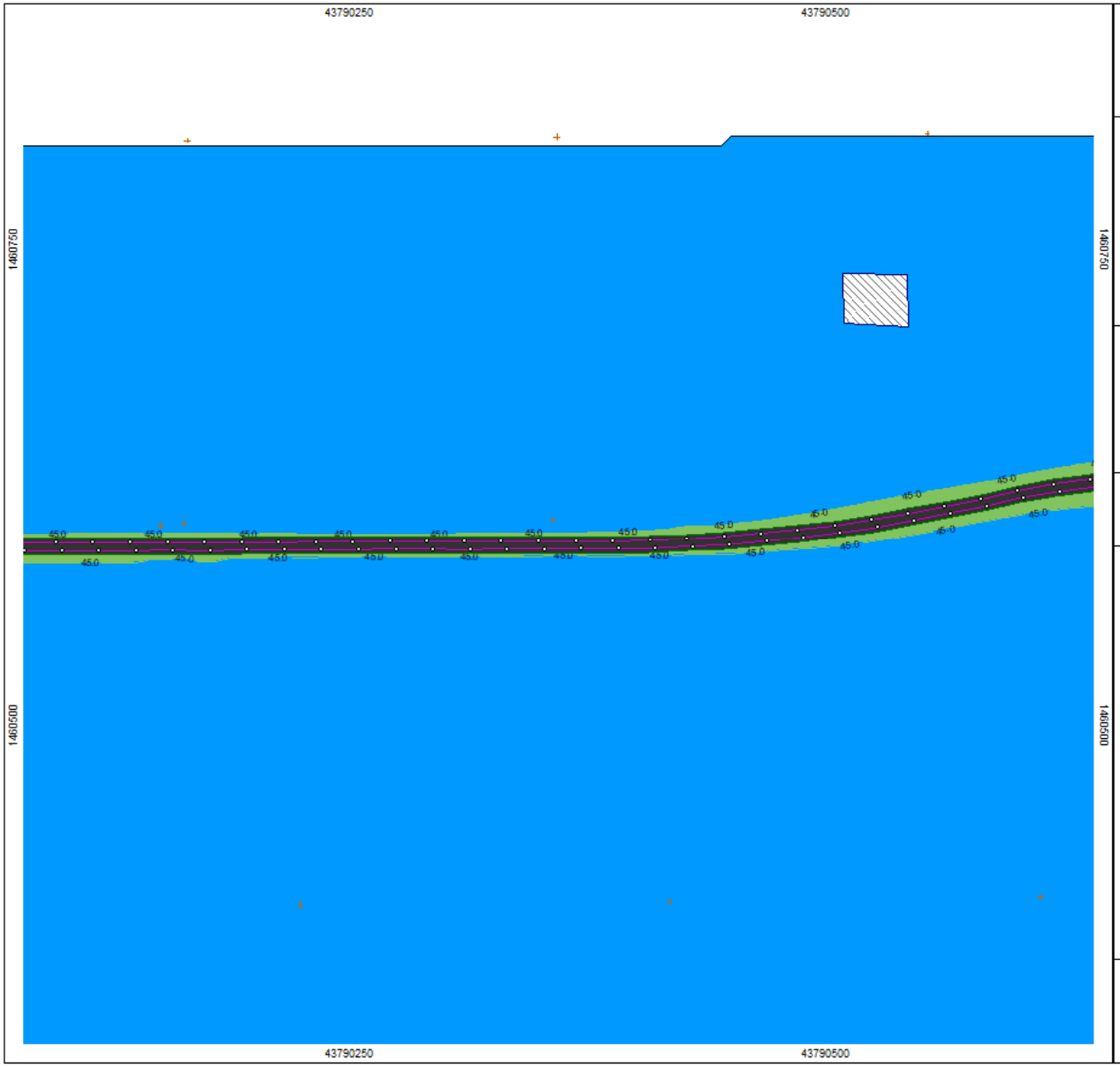

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Length scale 1:2006

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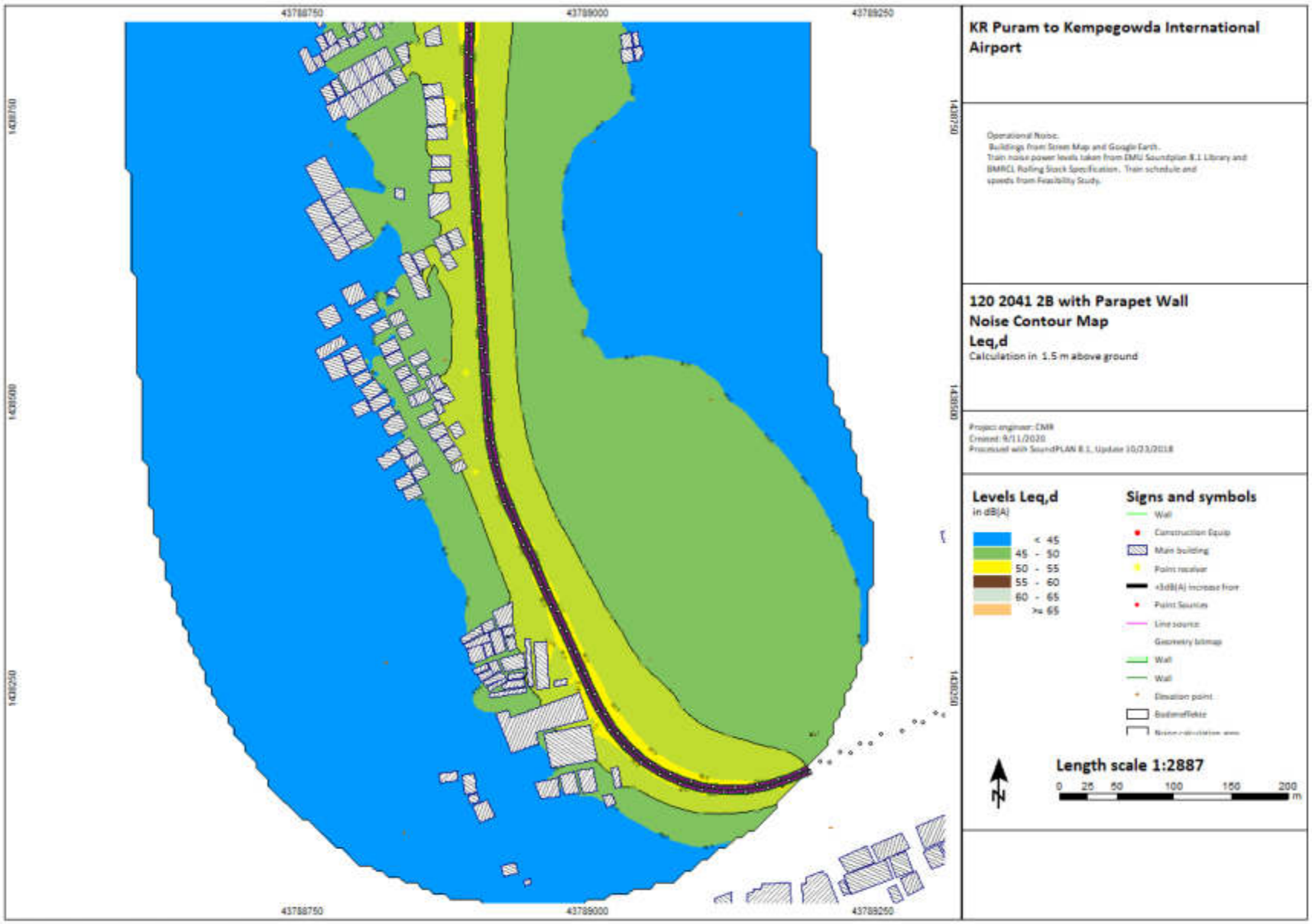

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Length scale 1:2887

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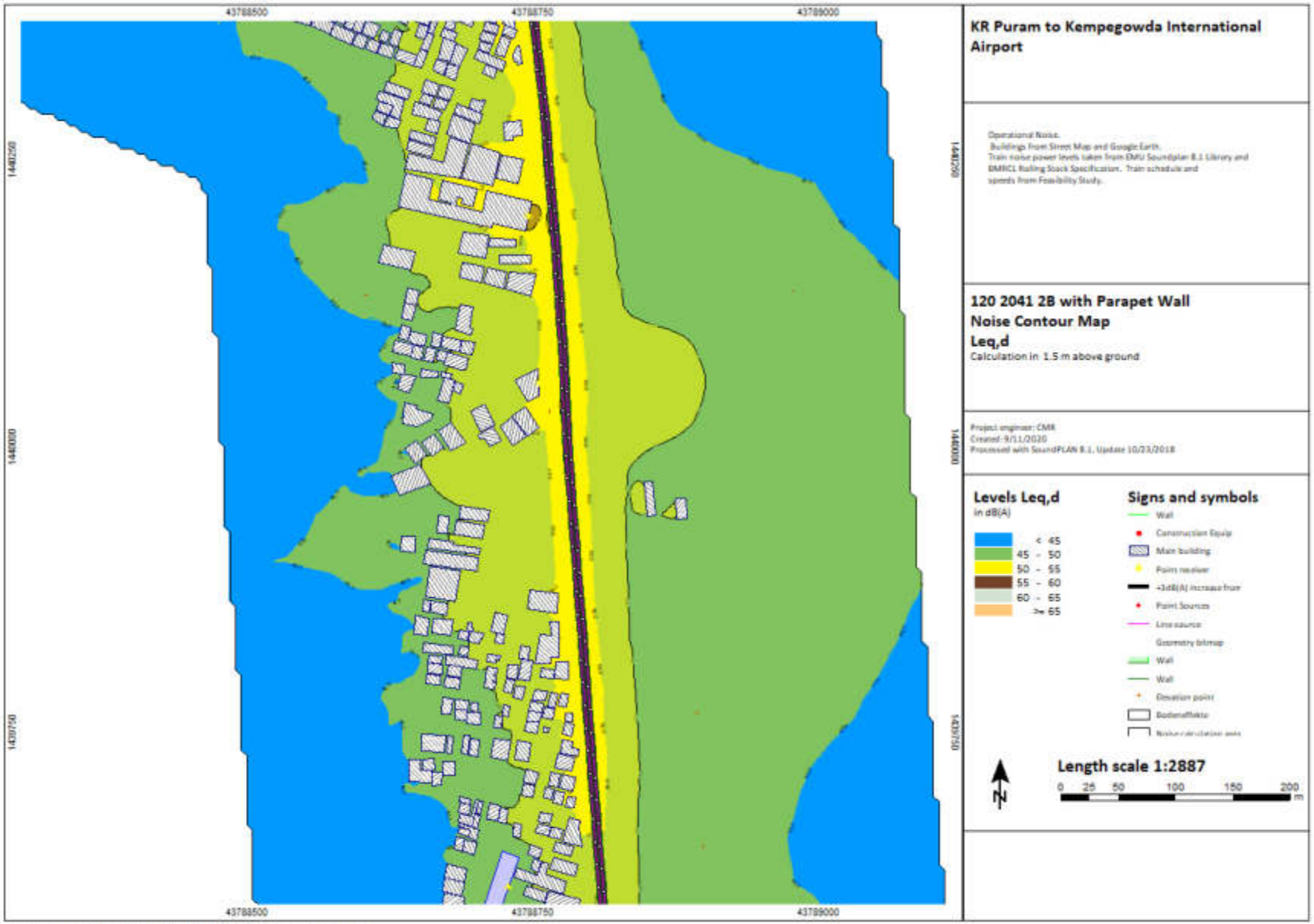
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43788750
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Point Sources
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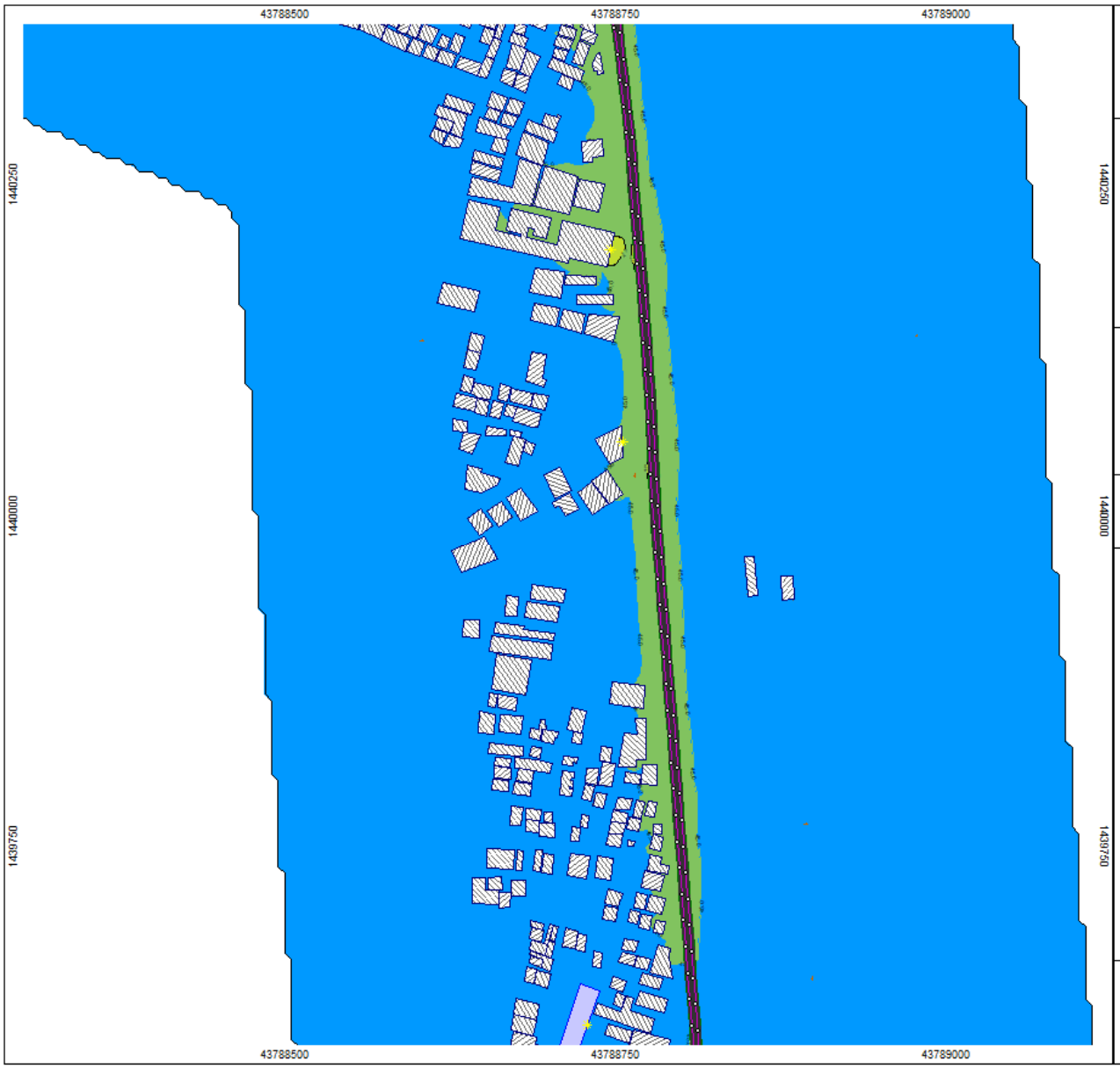

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- Bodeneffekte
- Noise calculation area

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Length scale 1:2887

0 25 50 100 150 200 m

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Signs and symbols

- Wall
- Construction Equip
- Main building
- Point receiver
- <3dB(A) increase front
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Buildingblock

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Length scale 1:3101

0 25 50 100 150 200 m

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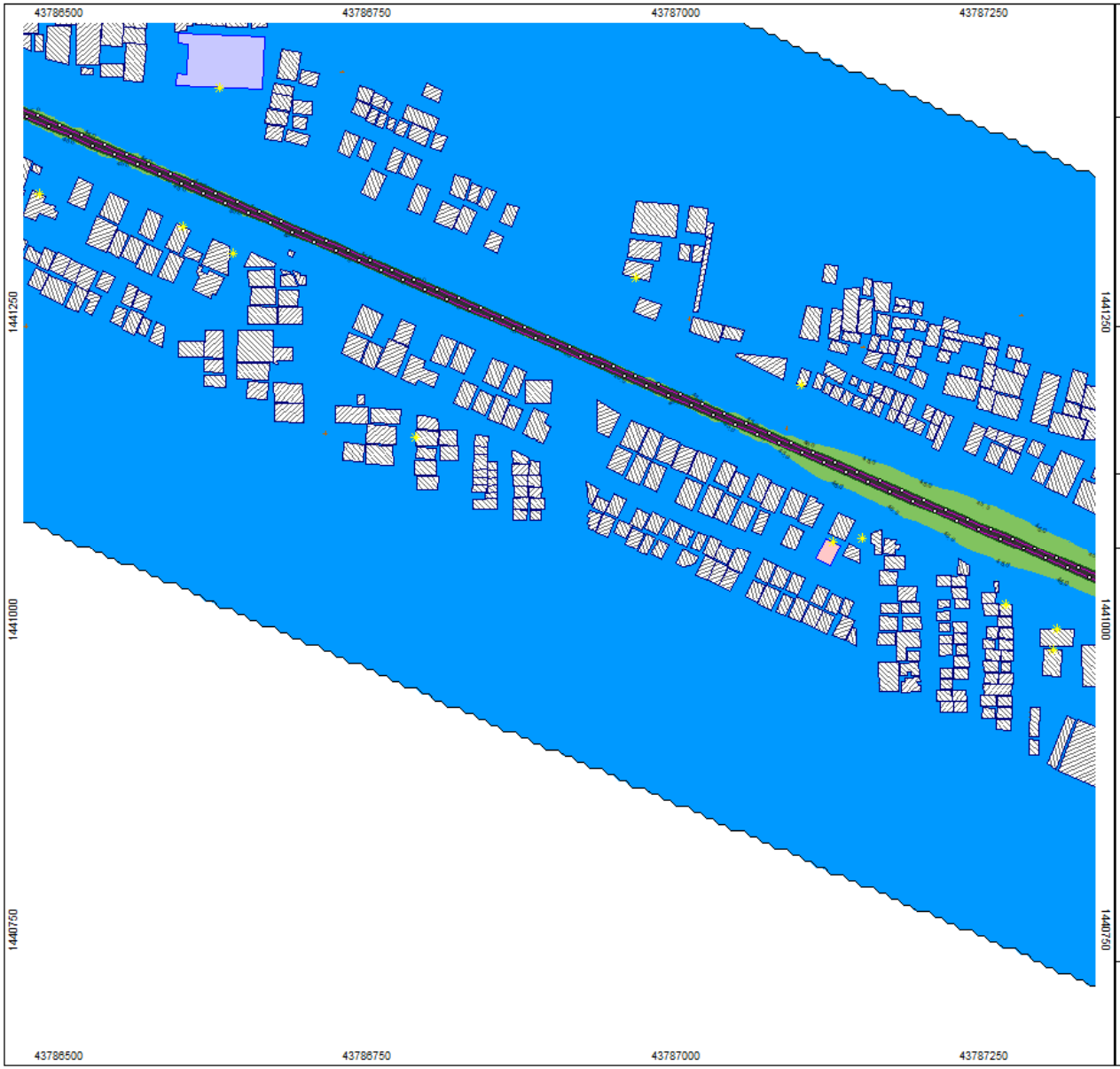

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- Noise calculation area

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Length scale 1:3101

0 25 50 100 150 200 m

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Operational Noise.
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120 2041 2B with Parapet Wall Noise Contour Map

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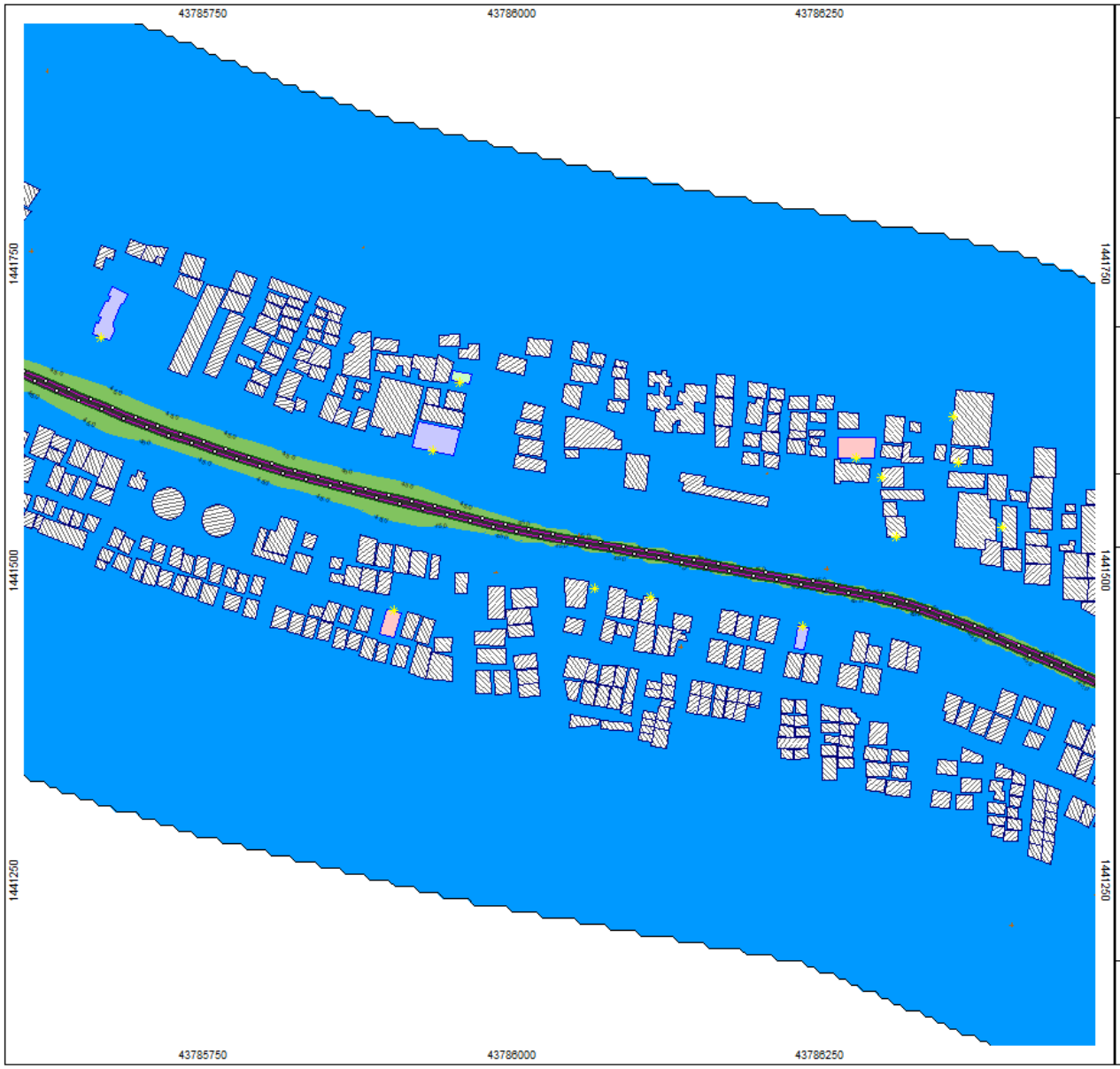

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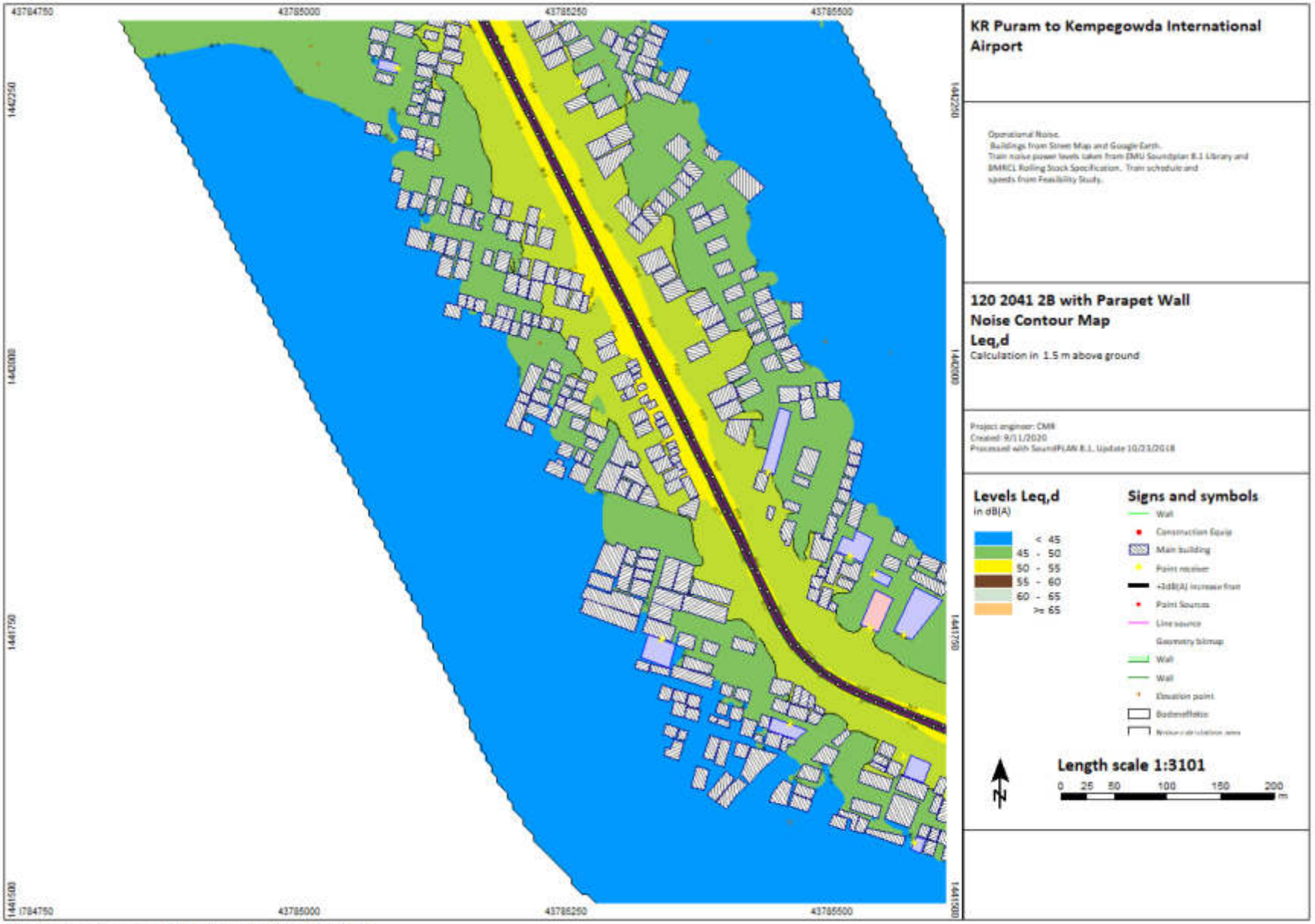

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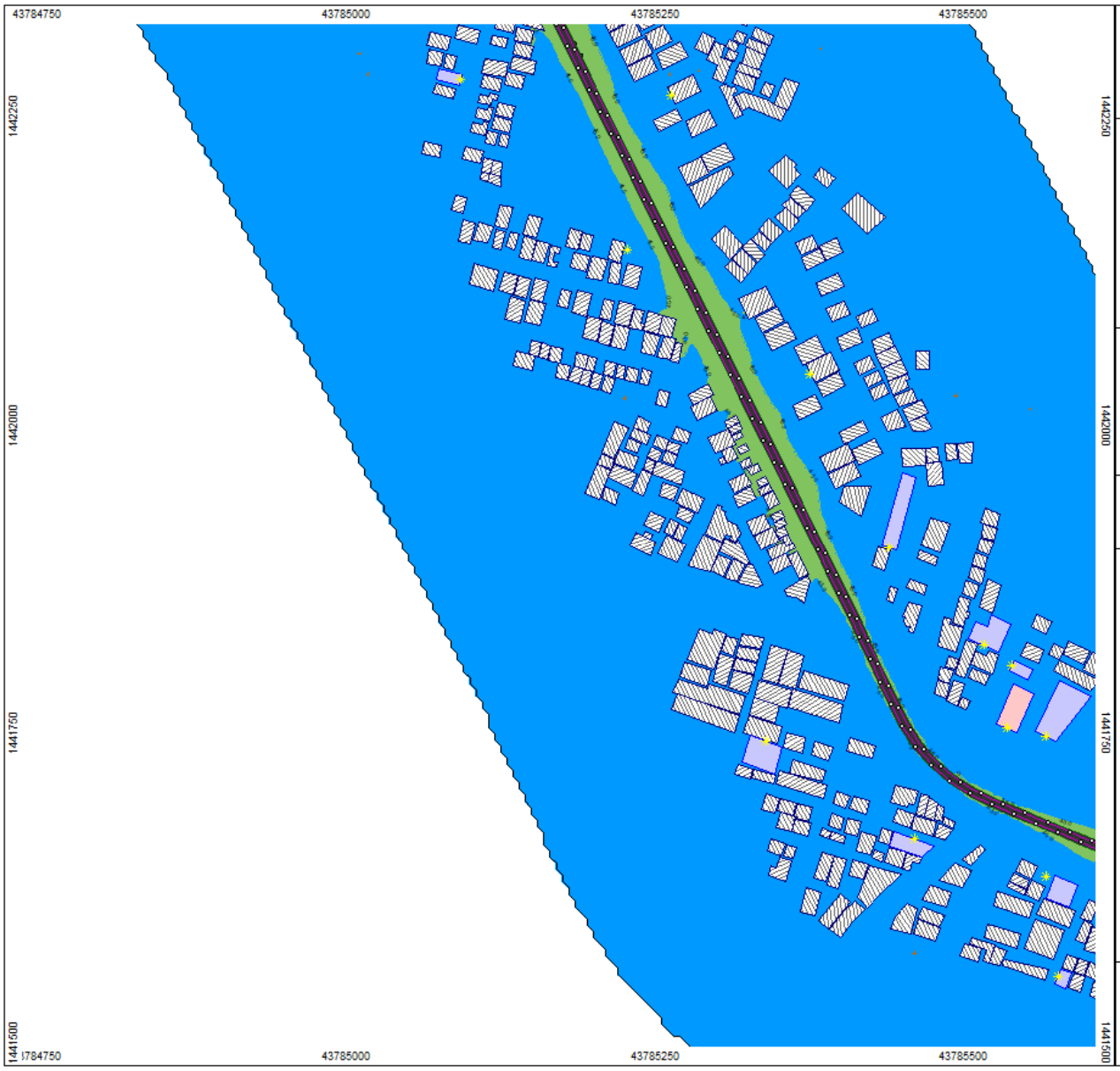

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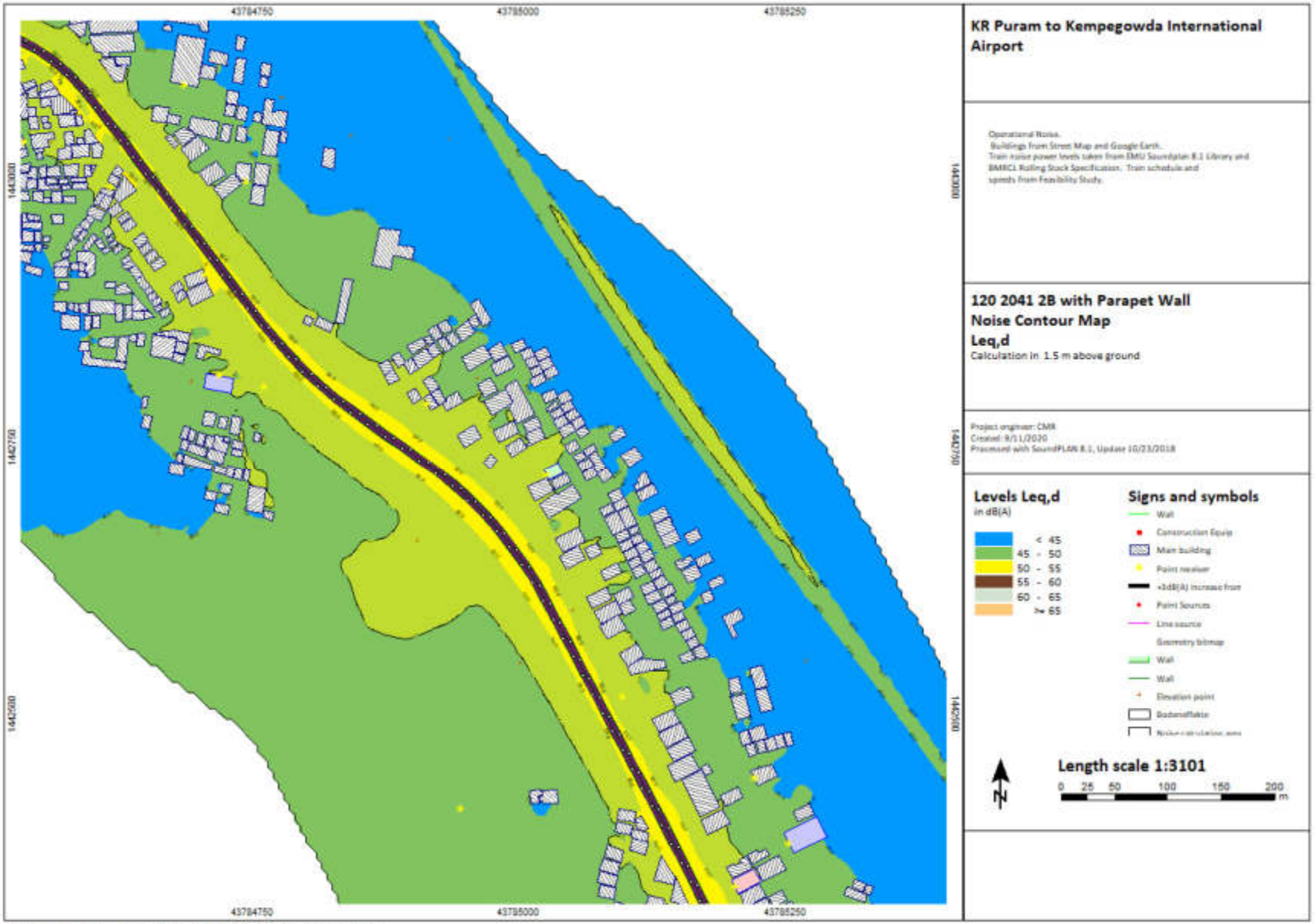
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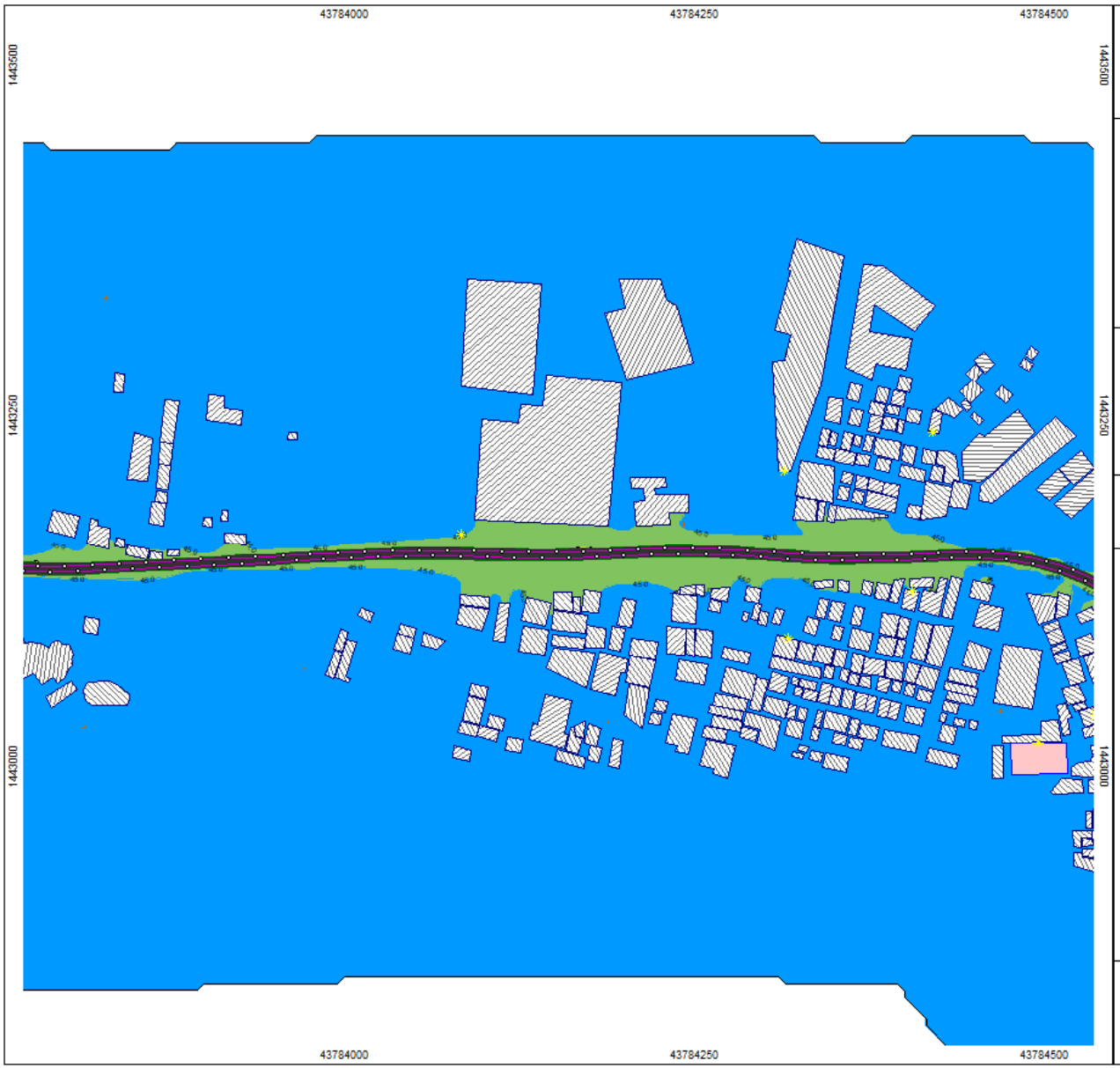

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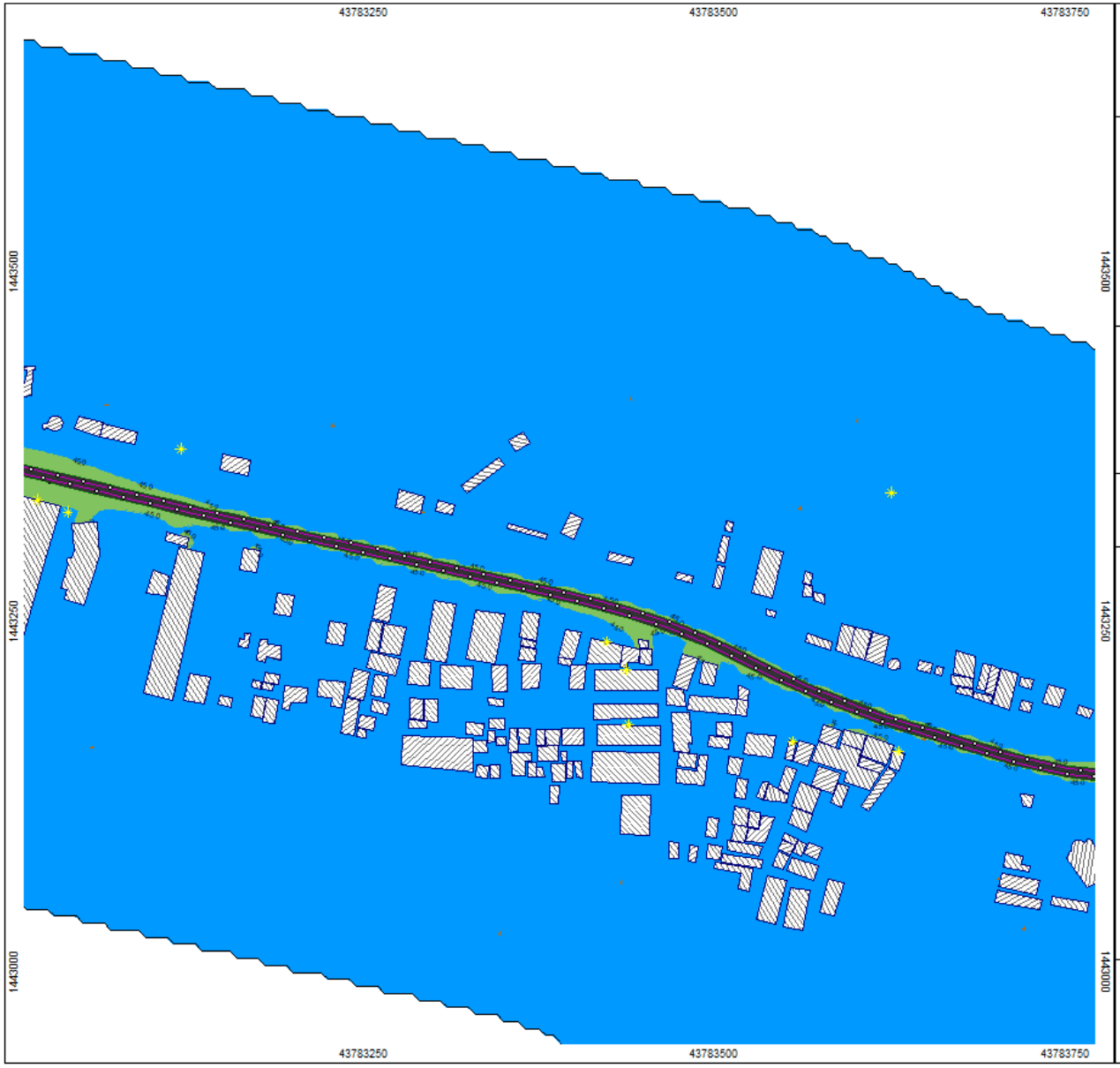

KR Puram to Kempegowda International Airport

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

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

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

Levels Leq,n
in dB(A)

	< 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

N

Length scale 1:2727

0 25 50 100 150 200

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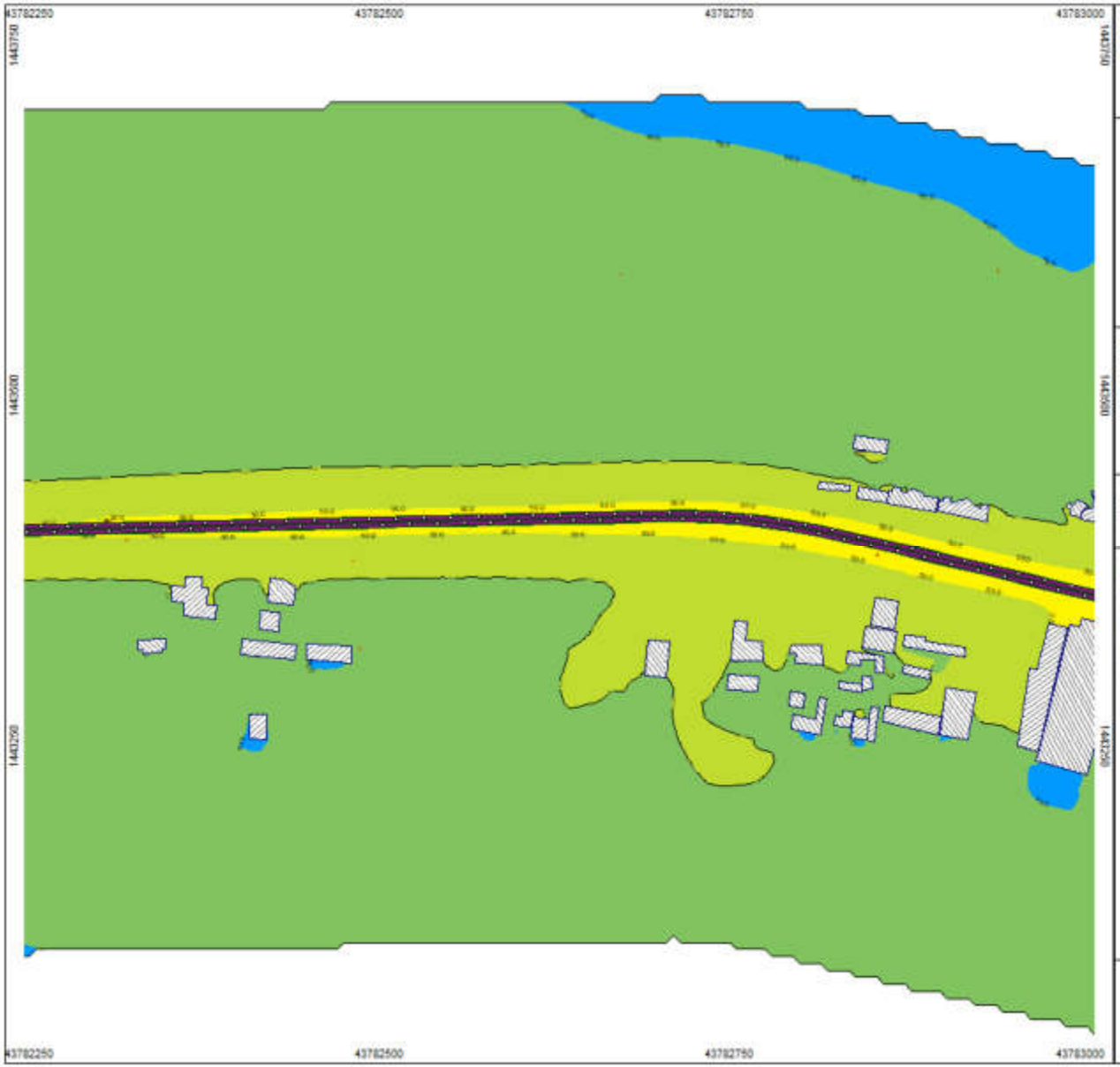

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Leq,d
Calculation in 1.5 m above ground

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

Levels Leq,d
in dB(A)

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

Signs and symbols

- Wall
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- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodeneffekte

Length scale 1:2727

0 25 50 100 150 200

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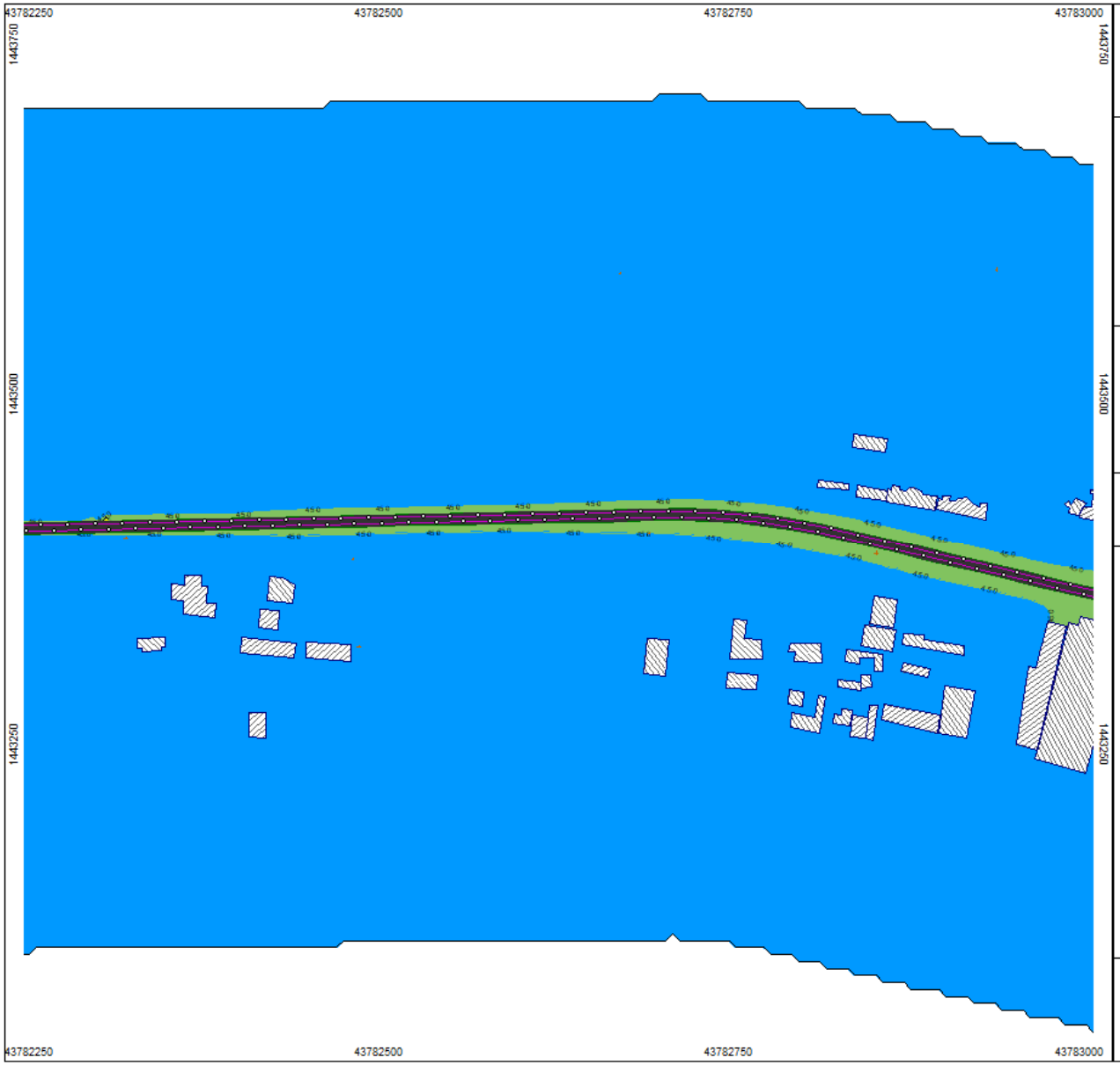

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- Bodeneffekte
- Noise calculation area

N

Length scale 1:2727

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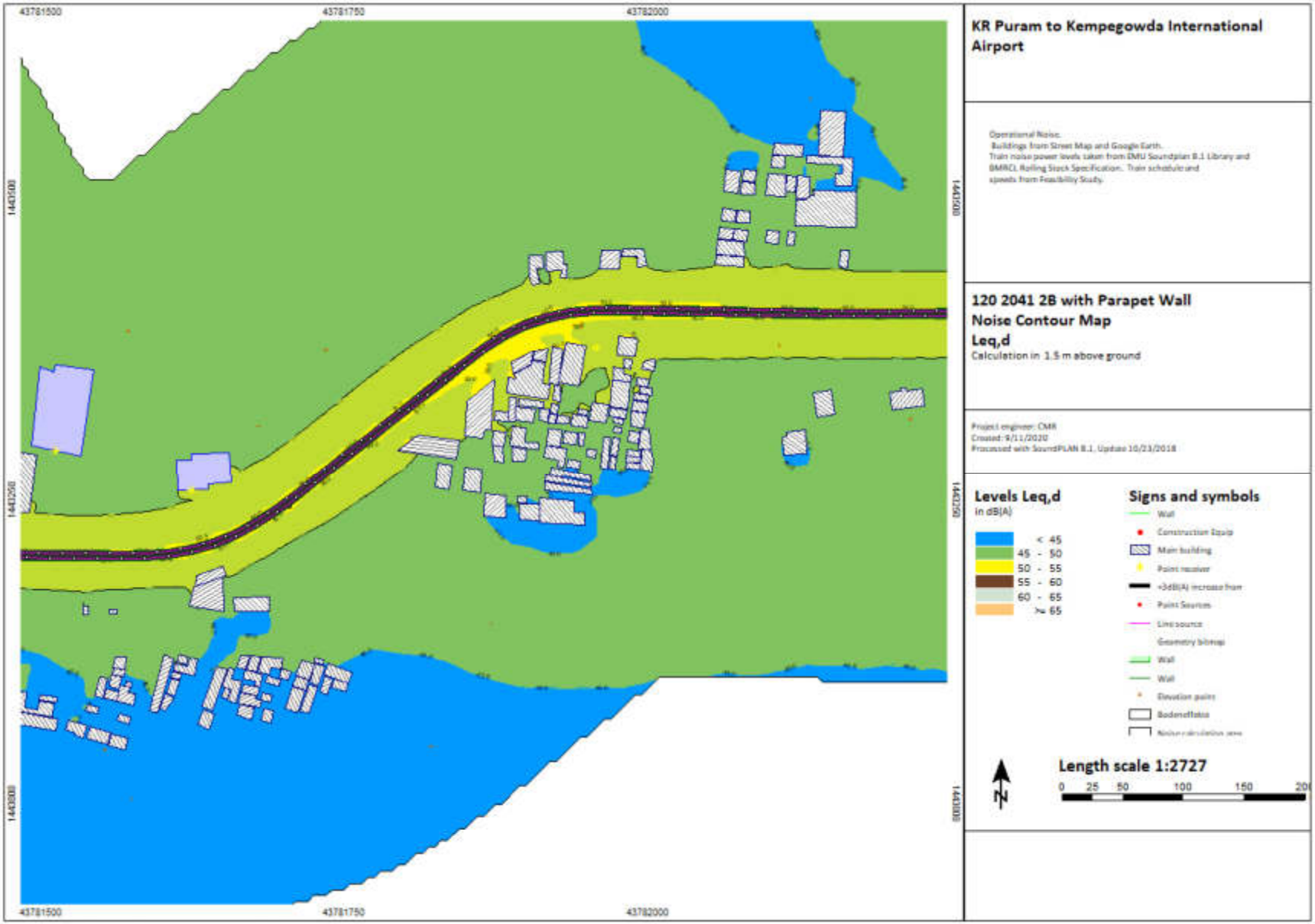

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- Noise calculation area

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Length scale 1:2727

0 25 50 100 150 200

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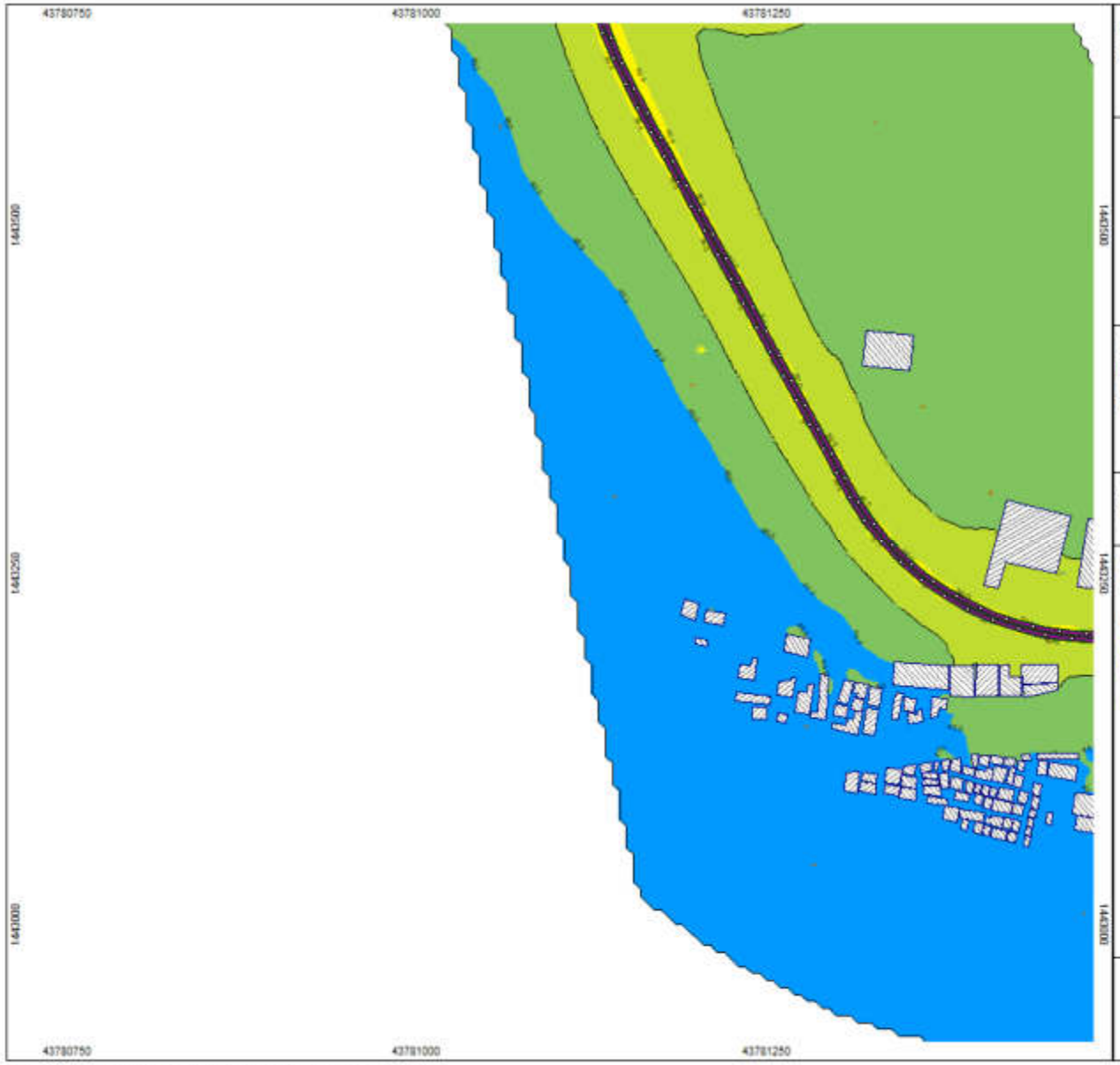

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Signs and symbols

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- Construction Equip
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- Point receiver
- +3dB(A) increase from
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point
- Bodenreflekt

Length scale 1:2727

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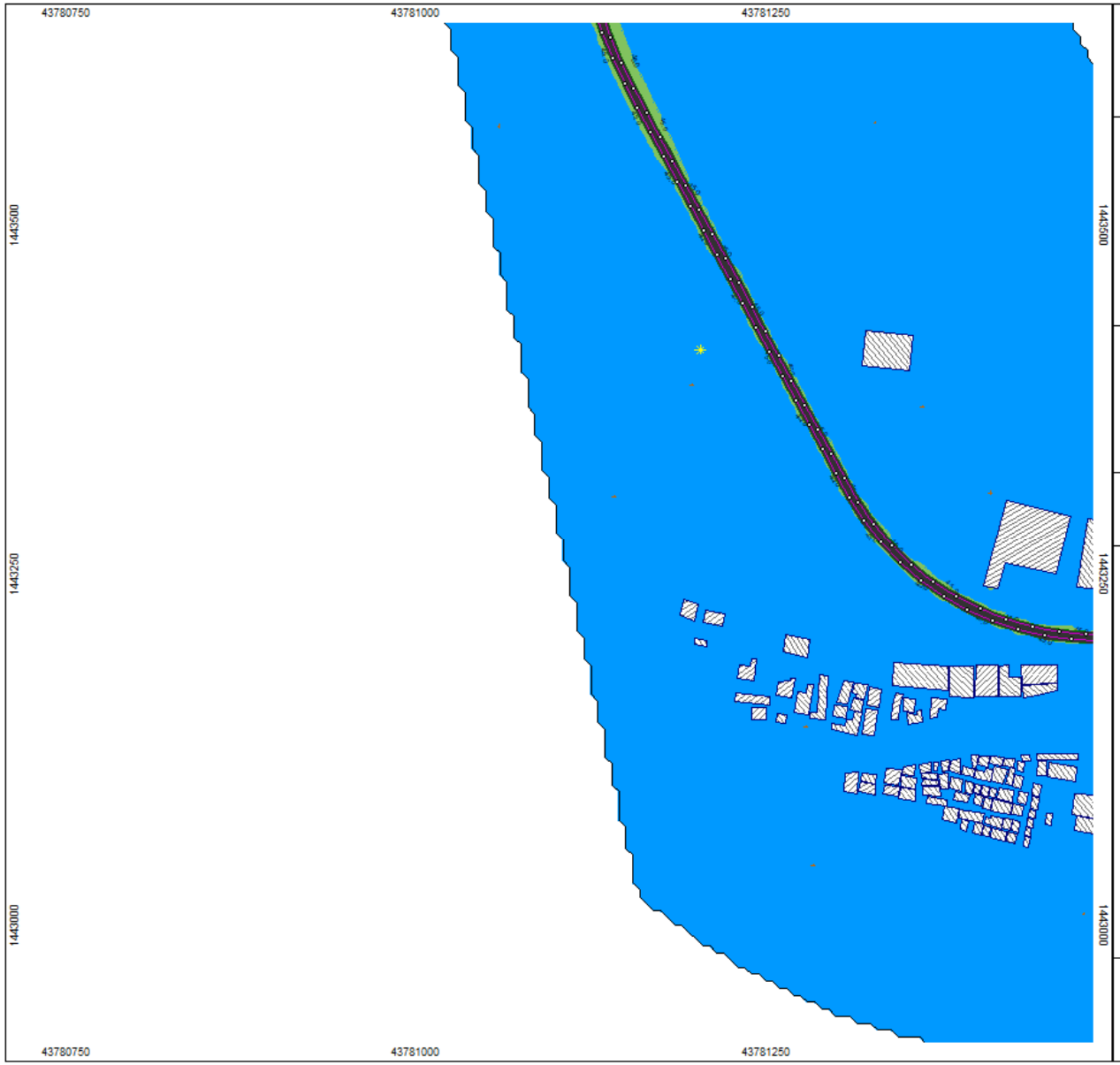

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Signs and symbols

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

N

Length scale 1:2727

0 25 50 100 150 200

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KR Puram to Kempegowda International Airport

Operational Noise.
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Signs and symbols

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- Geometry bitmap
- Wall
- Wall
- Elevation point
- BuildingStatus
- Noise calculation area

N

Length scale 1:2727

0 25 50 100 150 200

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KR Puram to Kempegowda International Airport

Operational Noise.
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Calculation in 1.5 m above ground

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- Wall
- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area

Length scale 1:2727
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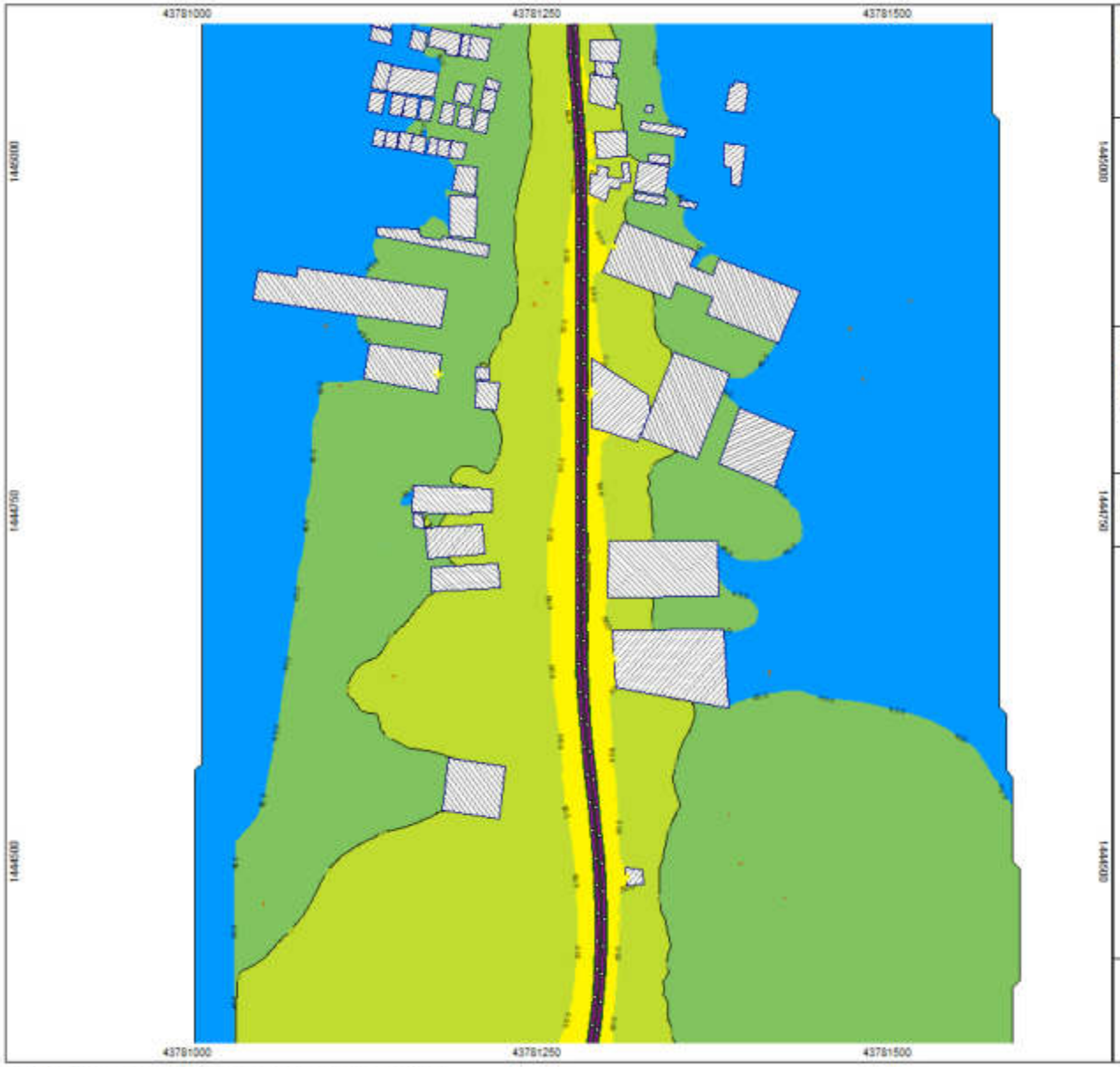

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Length scale 1:2727

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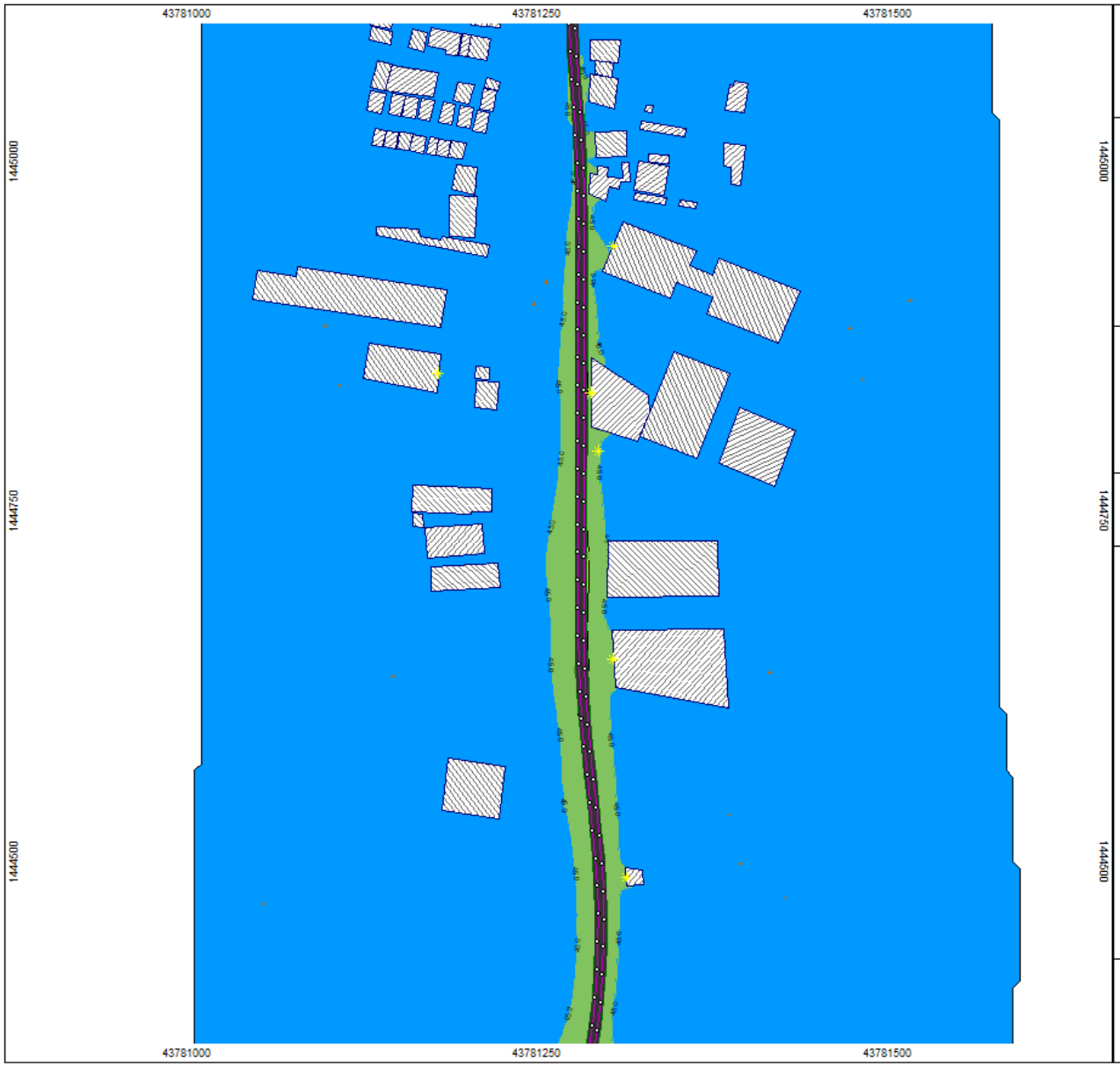

KR Puram to Kempegowda International Airport

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Length scale 1:2727

0 25 50 100 150 200

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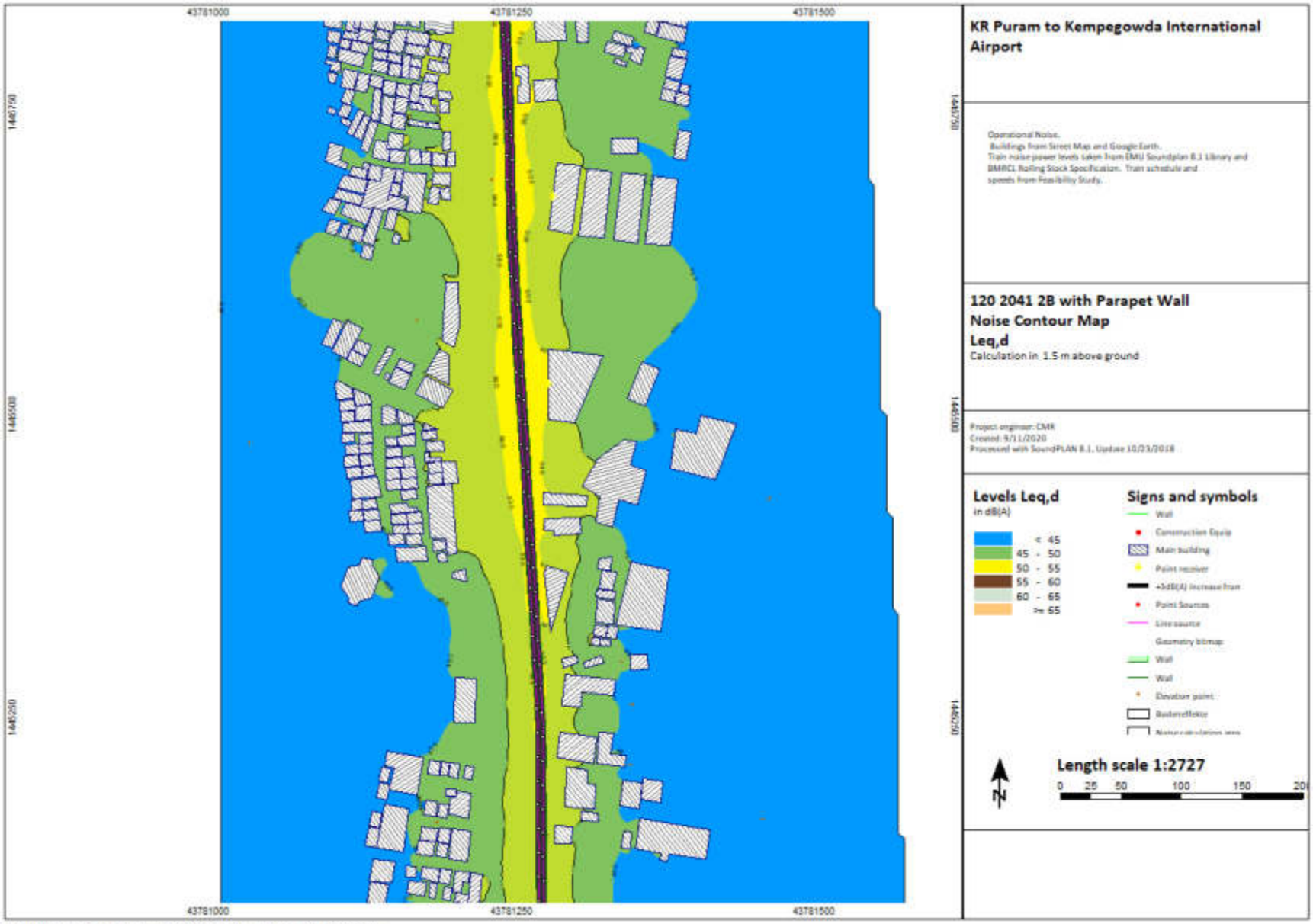

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120 2041 2B with Parapet Wall
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- Line source
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- Wall
- Elevation point
- Bodeneffekte

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Length scale 1:2727

0 25 50 100 150 20

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KR Puram to Kempegowda International Airport

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

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

Calculation in 1.5 m above ground

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Levels Leq,n
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- Noise calculation area

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Length scale 1:2727

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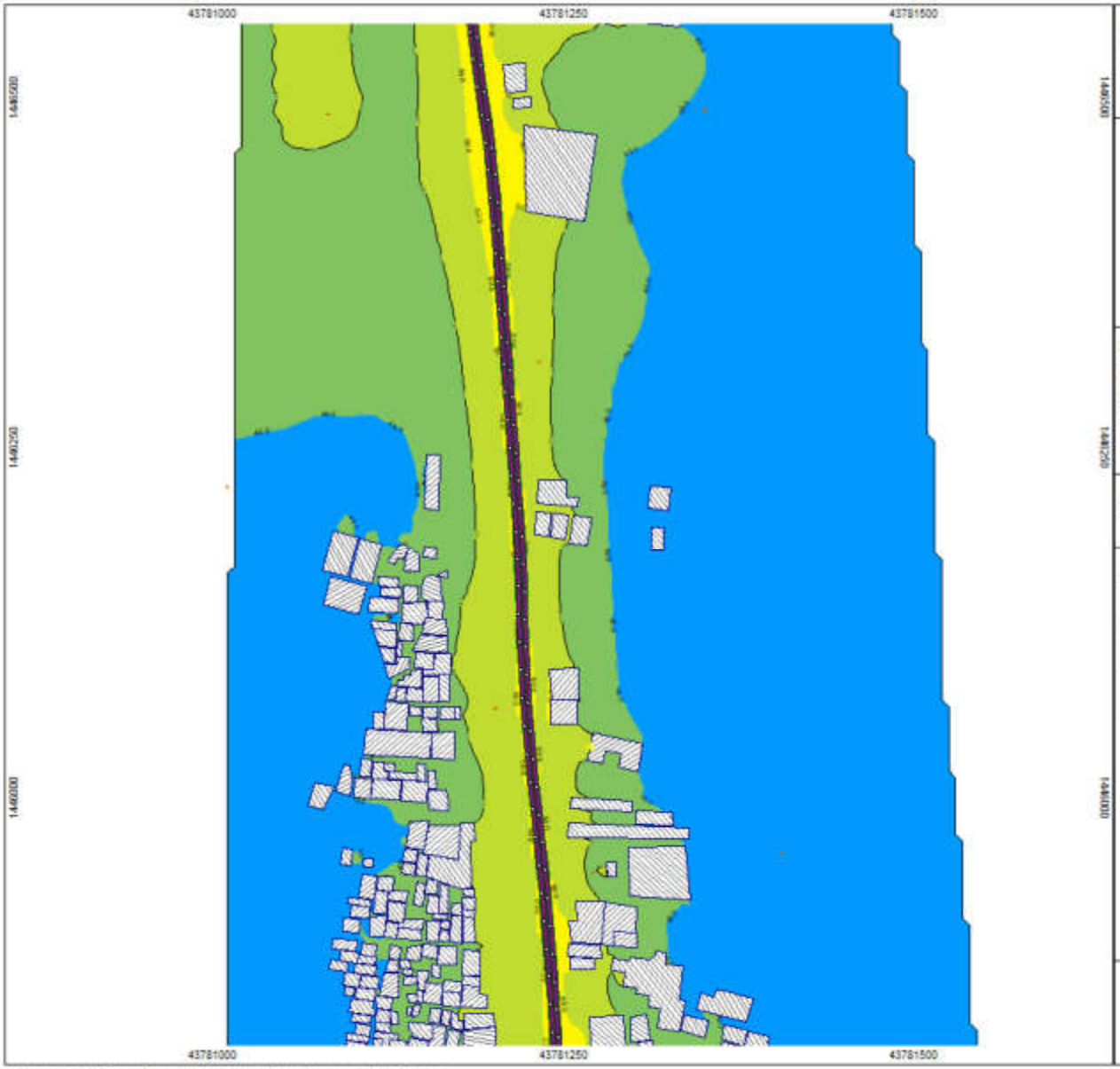

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- Wall
- Elevation point
- Bodeneffekt
- Noise calculation area

N

Length scale 1:2727

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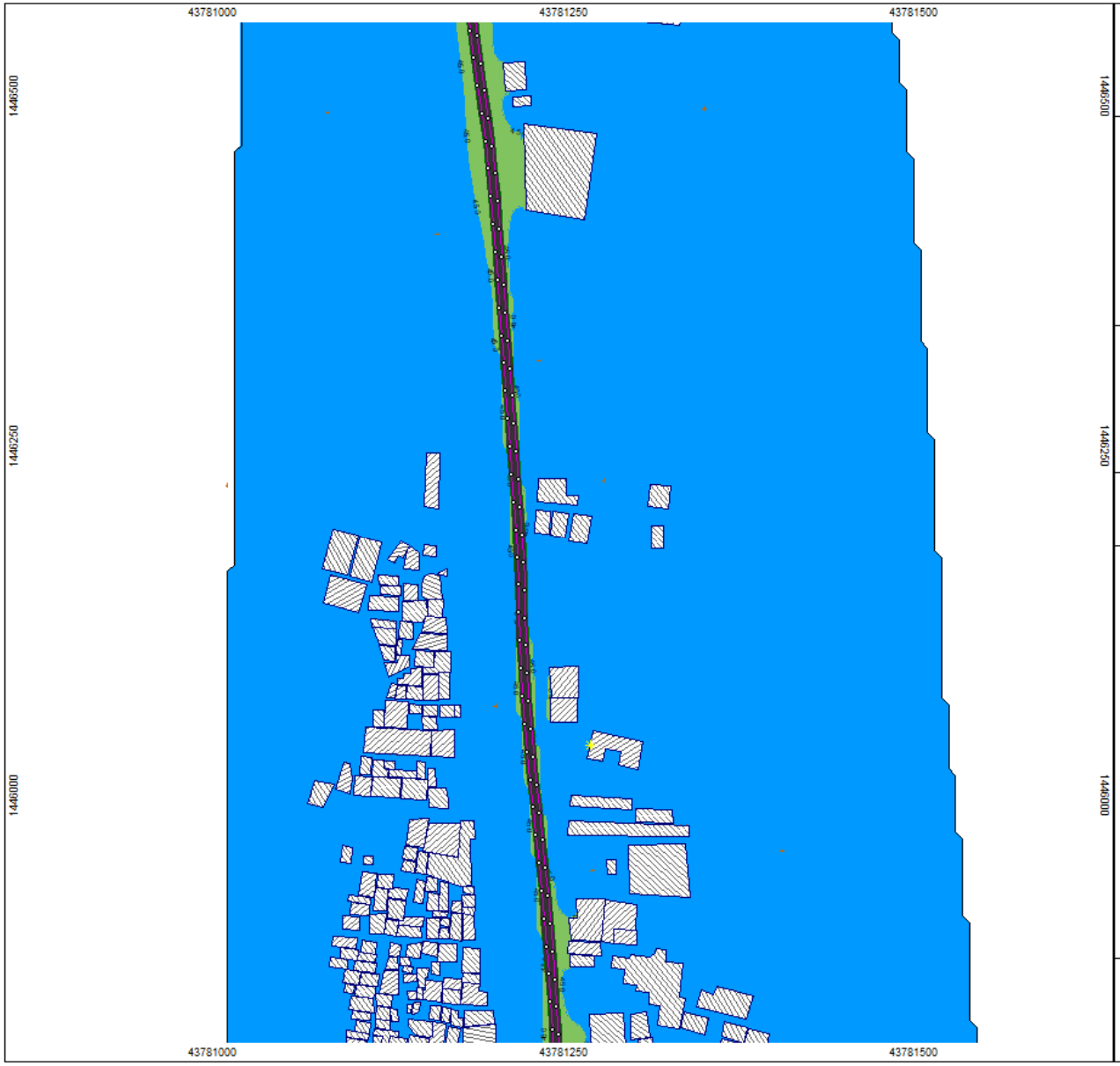

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Length scale 1:2727

0 25 50 100 150 200

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0 25 50 100 150 200

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0 25 50 100 150 200

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Length scale 1:2727

0 25 50 100 150 20

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KR Puram to Kempegowda International Airport

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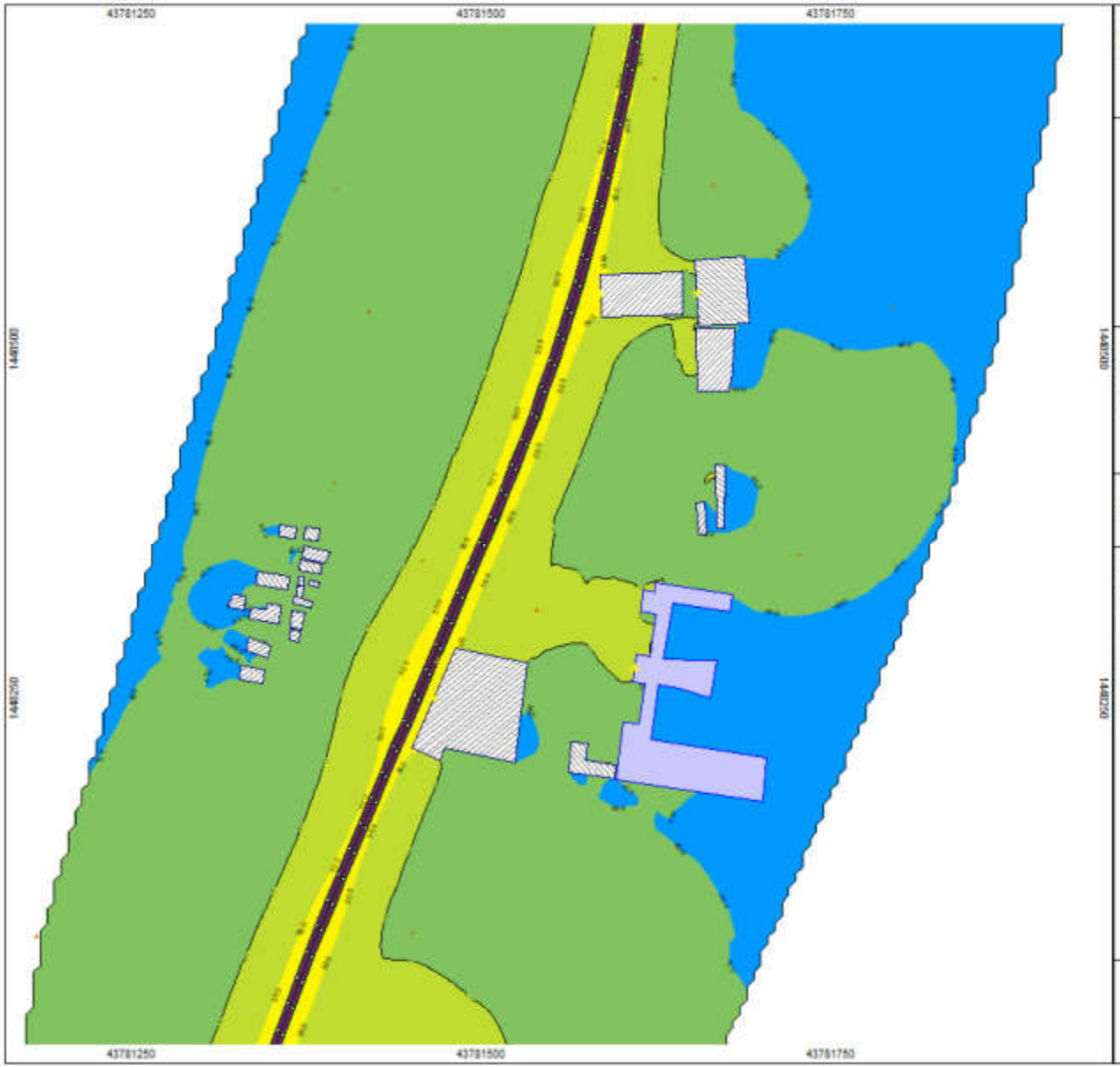

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- Wall
- Wall
- Elevation point
- Bodenrelief
- Noise calculation area

Length scale 1:2727

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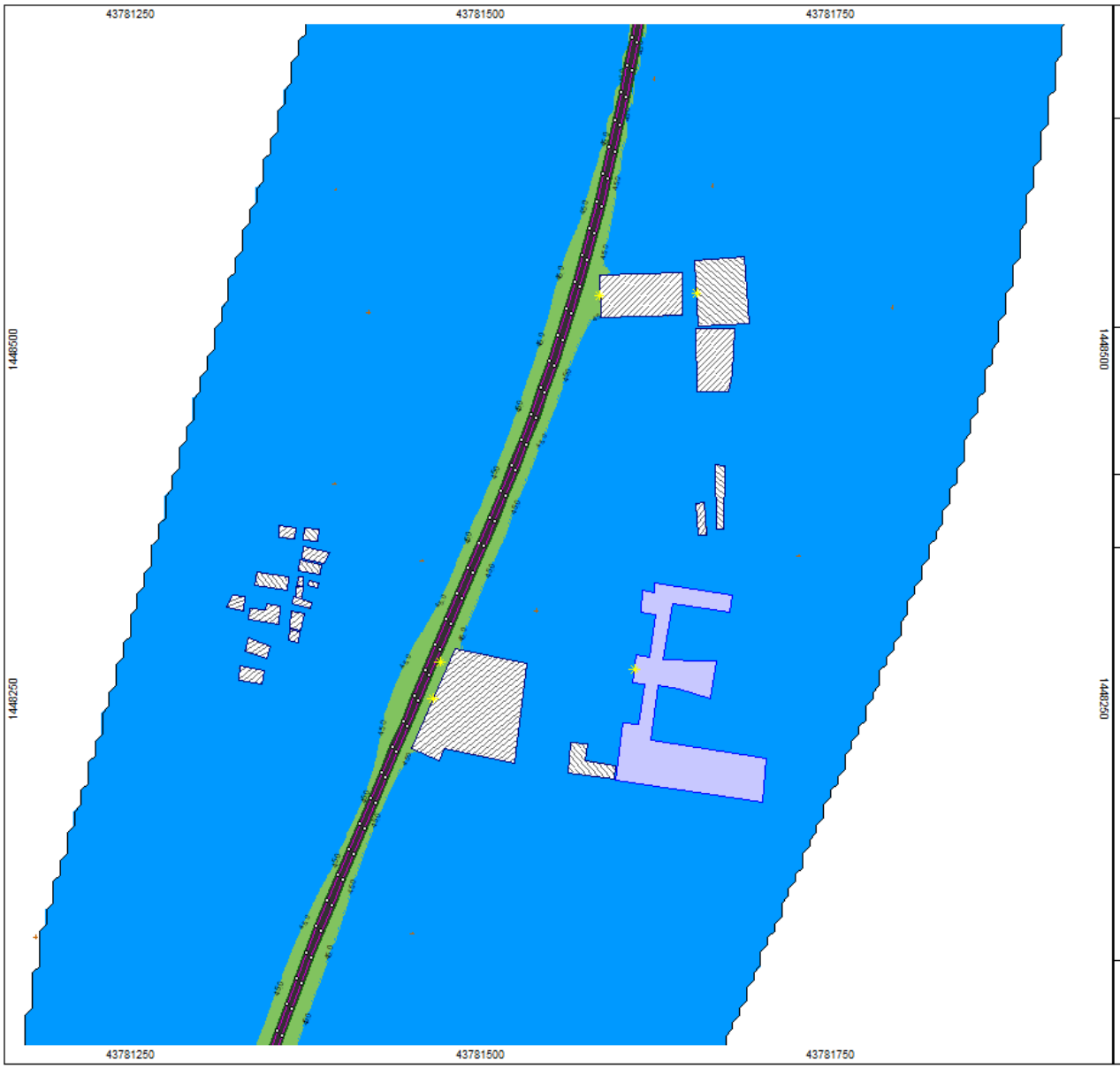

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0 25 50 100 150 200

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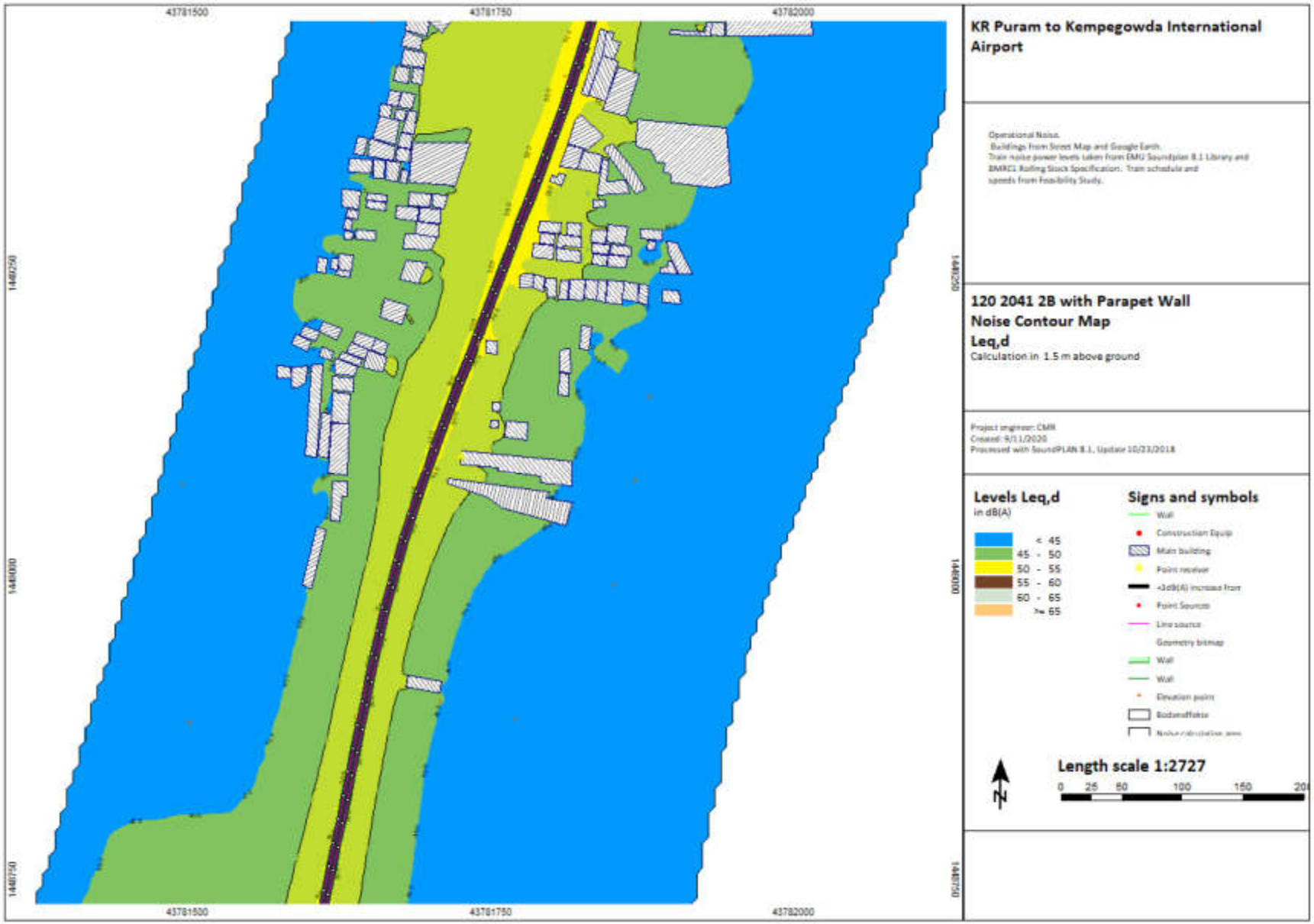

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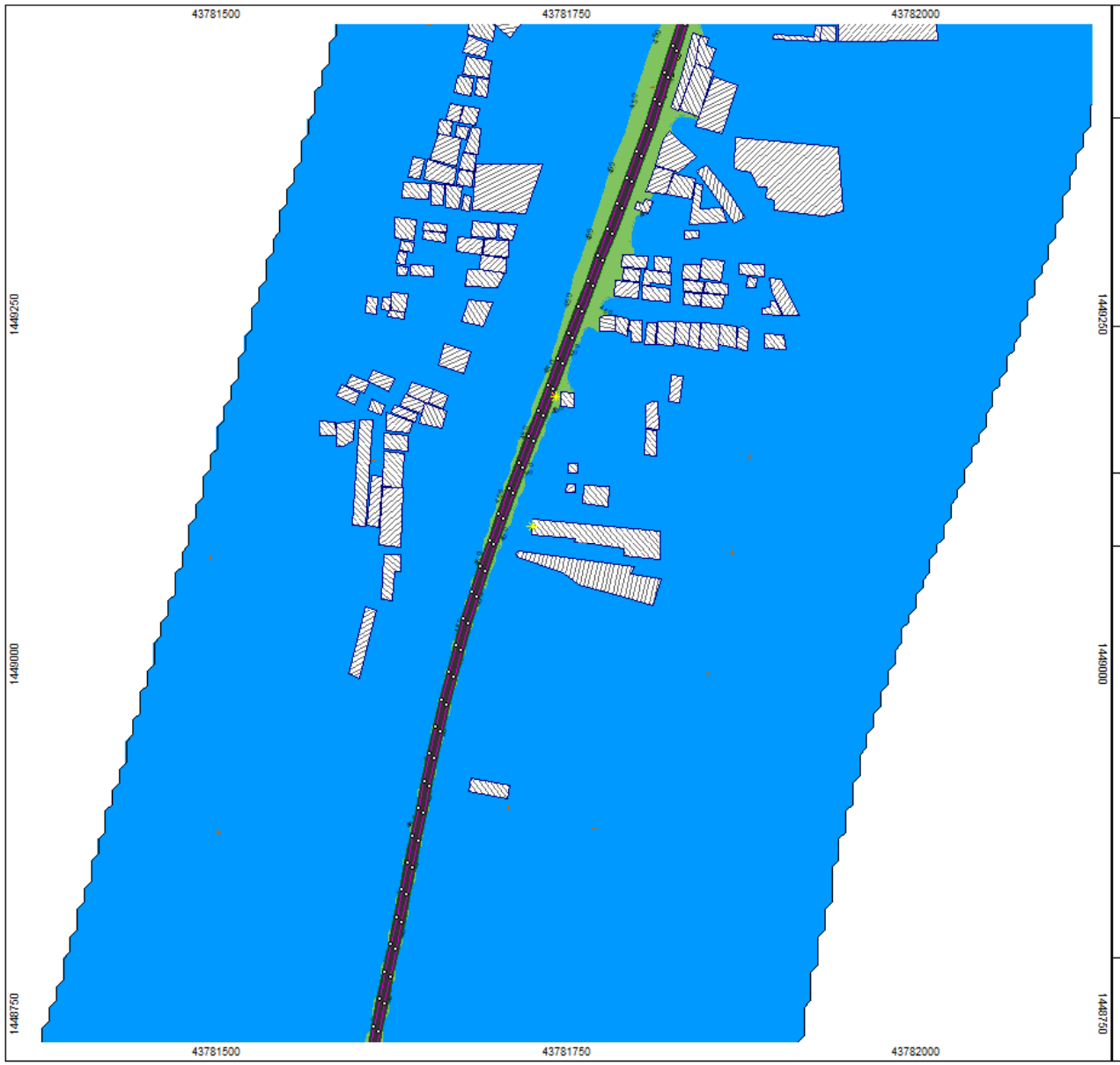

KR Puram to Kempegowda International Airport

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

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

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

Levels Leq,n
in dB(A)

	< 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

N

Length scale 1:2727

0 25 50 100 150 200

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