Environmental Impact Assessment

October 2020

India: Bengaluru Metro Rail Project

Phase 2B (Airport Metro Line)
KR Puram to Kempegowda International Airport

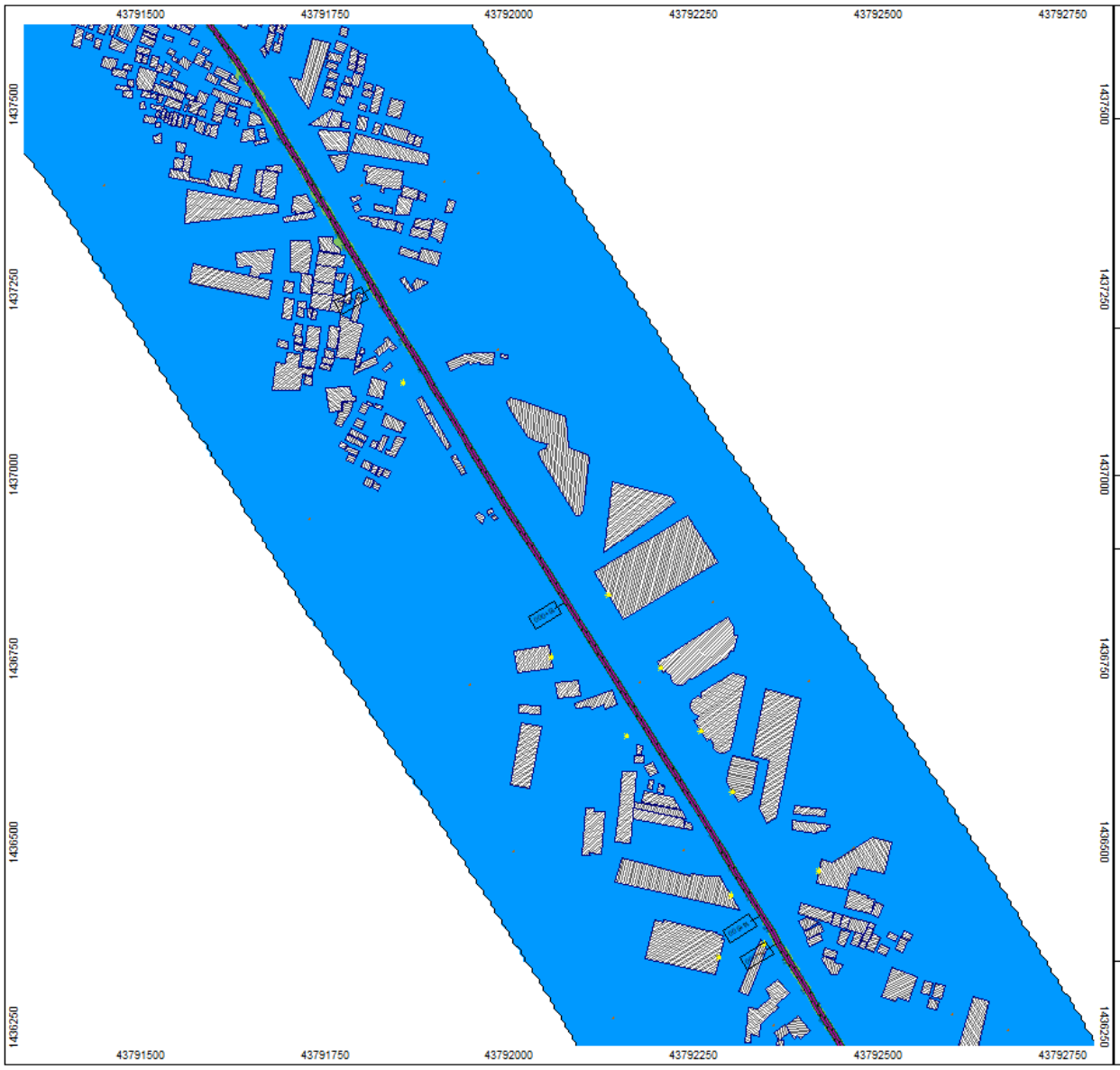
Volume 7
Annex 5

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.



"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)

	< 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

0 45 90 180 270 360 m

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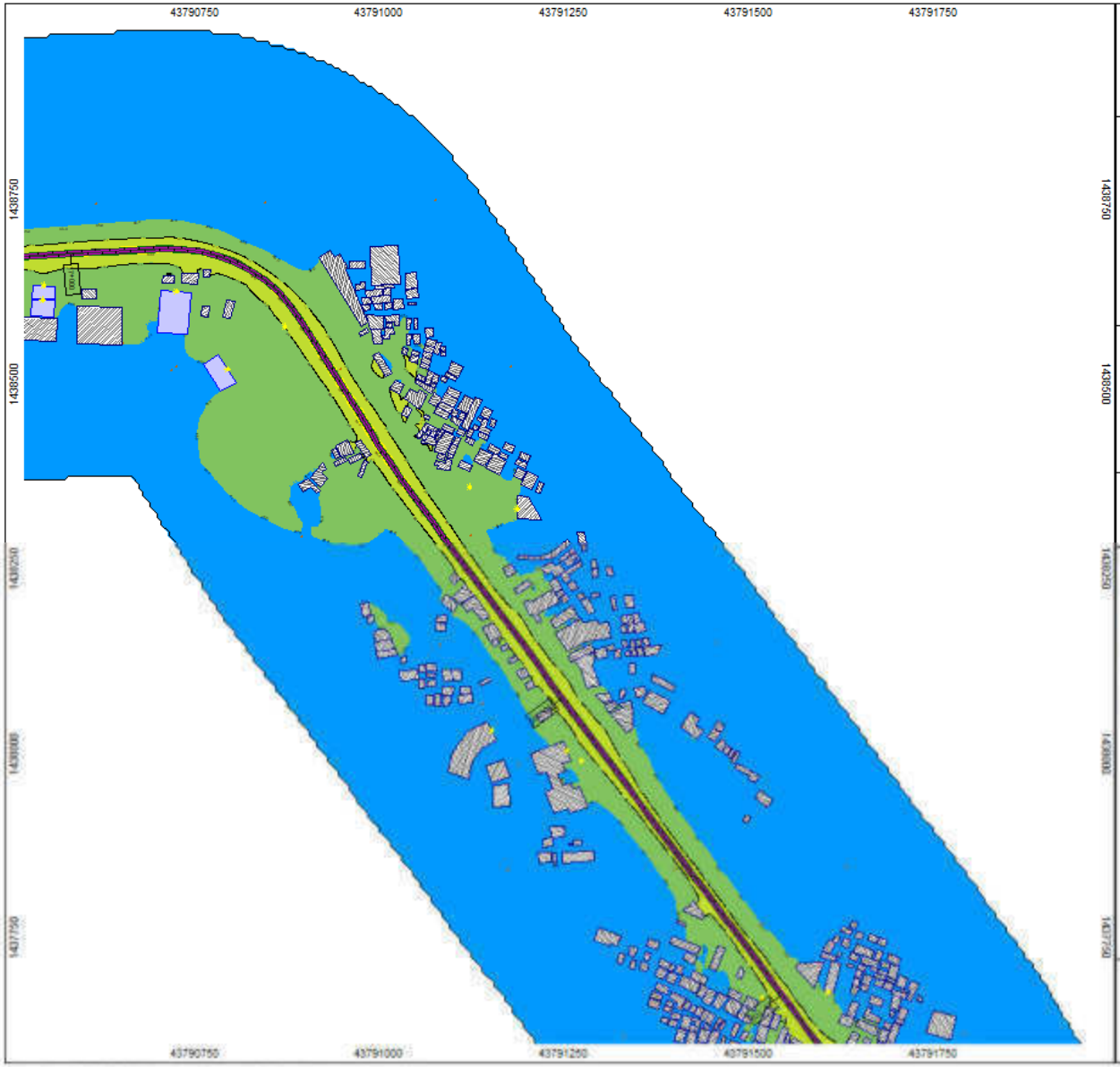

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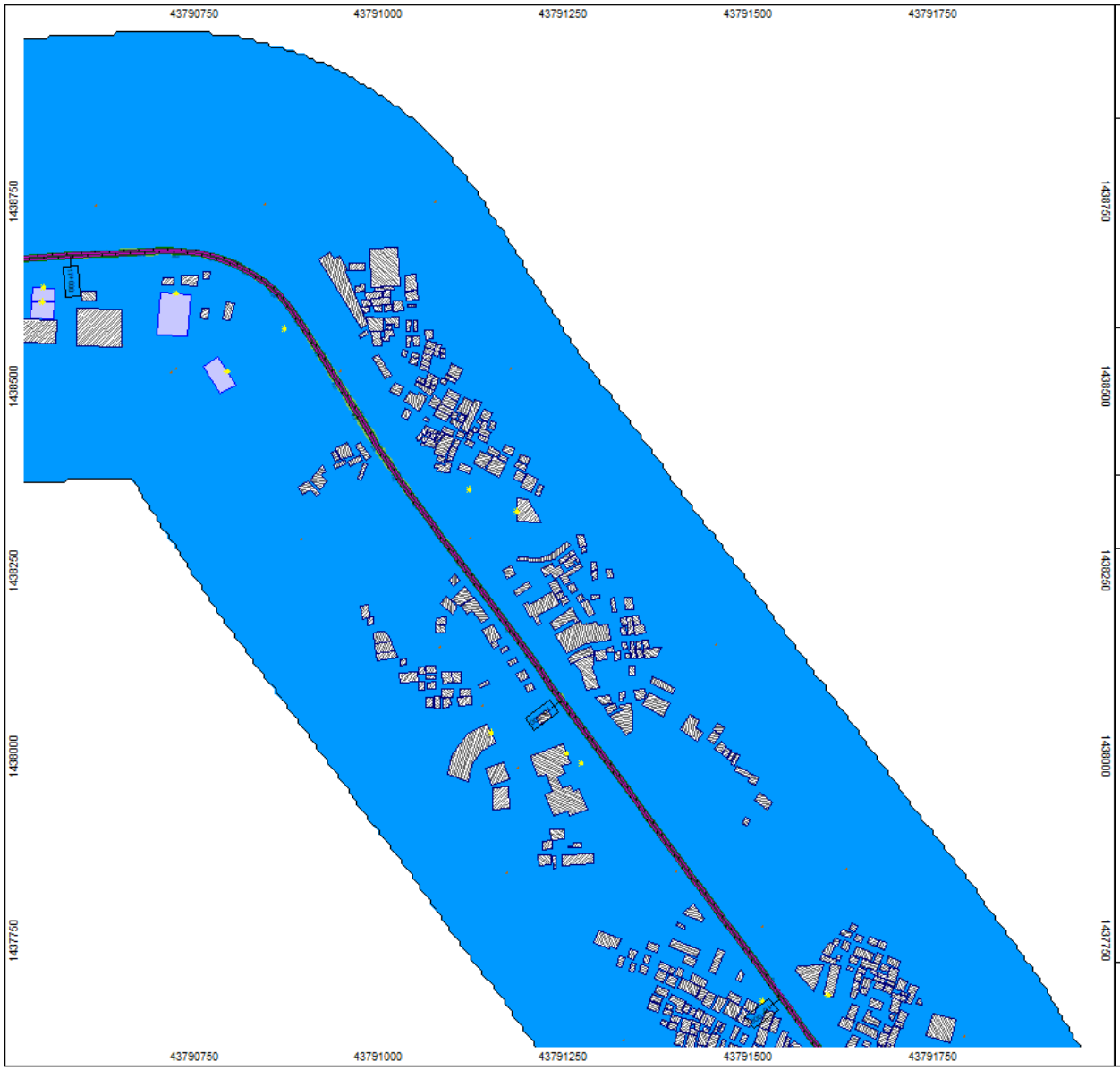

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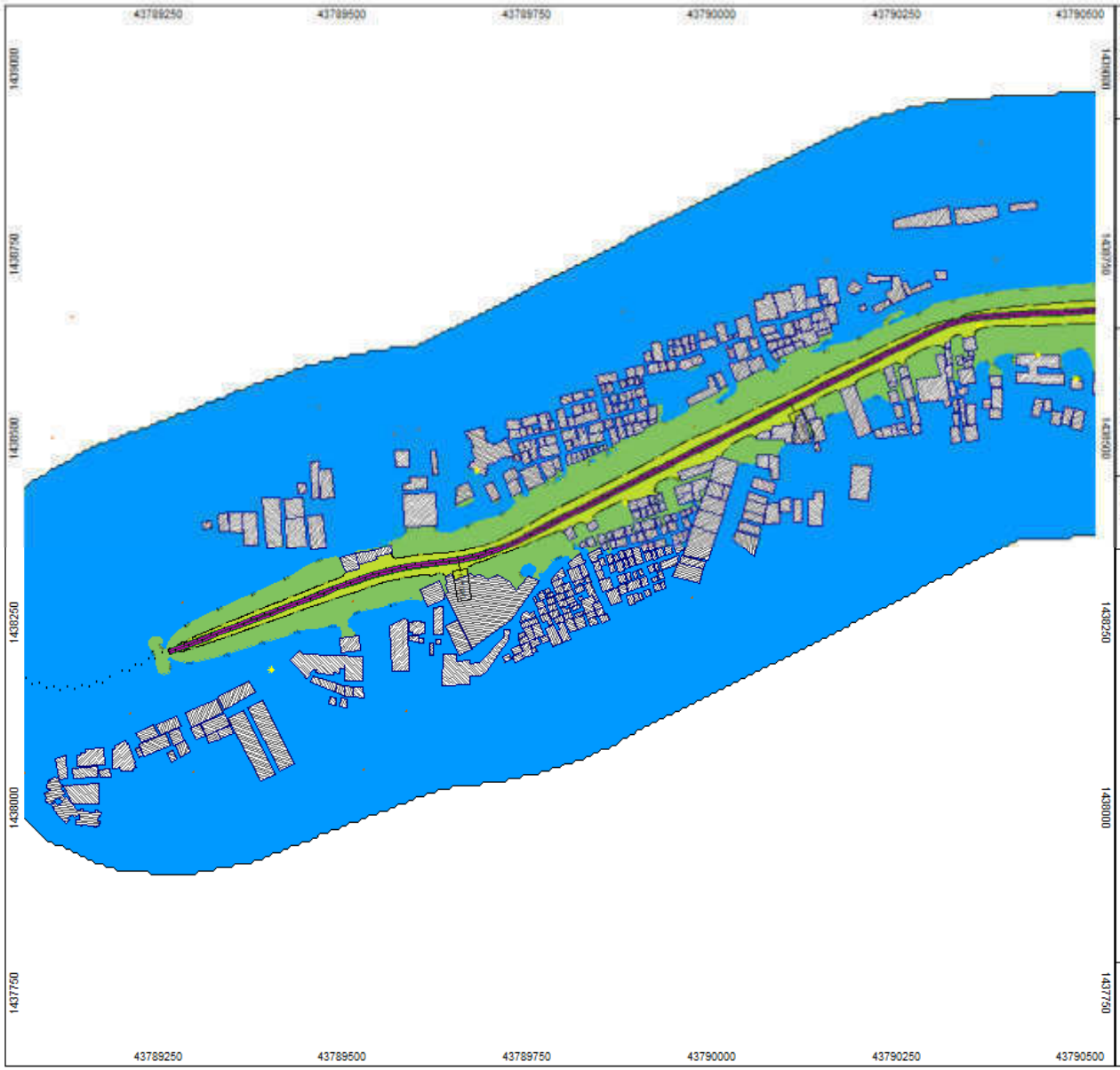

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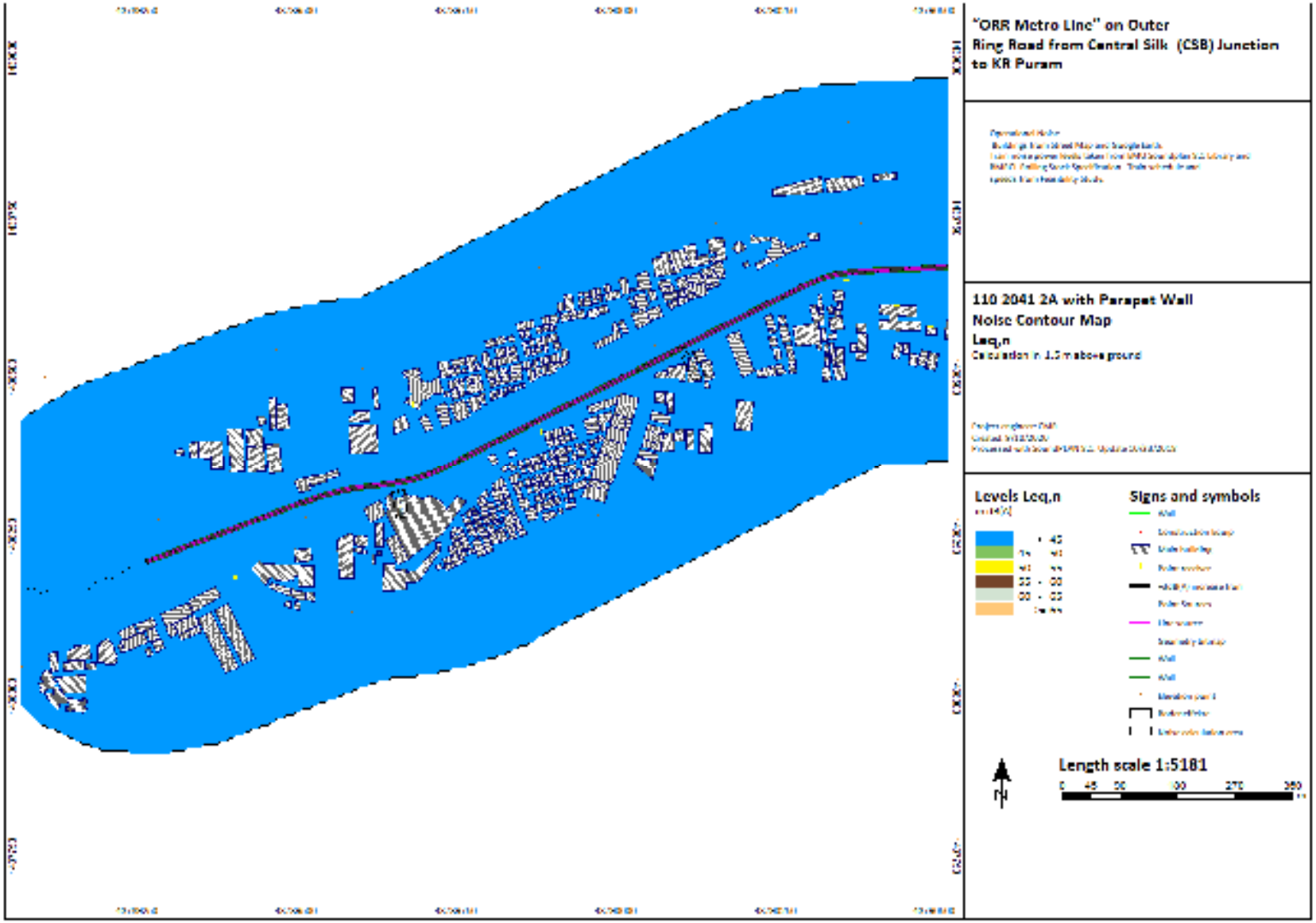
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KR Puram to Kempegowda International Airport

2024, 2031, 2041

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Length scale 1:2887

0 25 50 100 150 200 m

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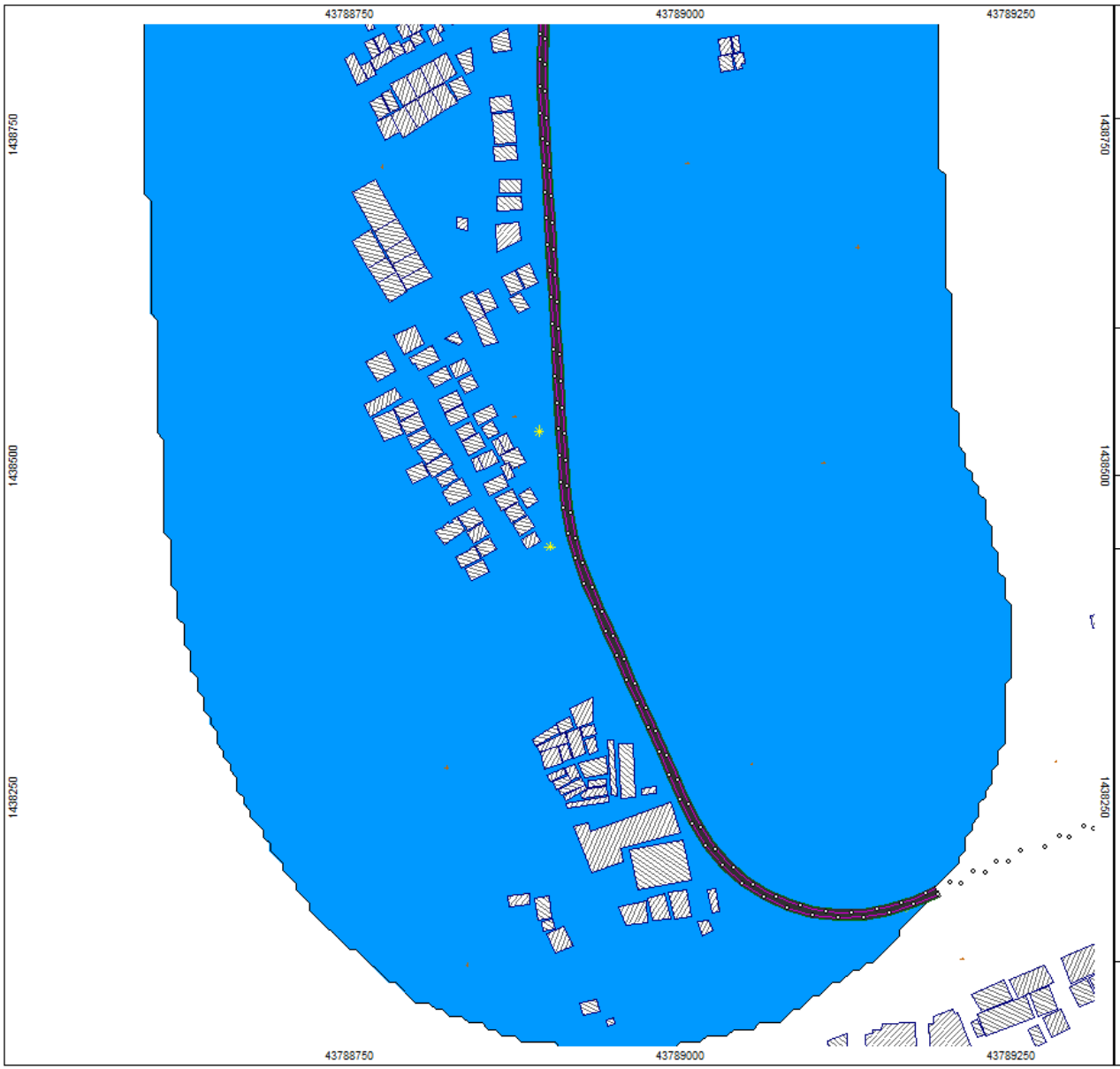

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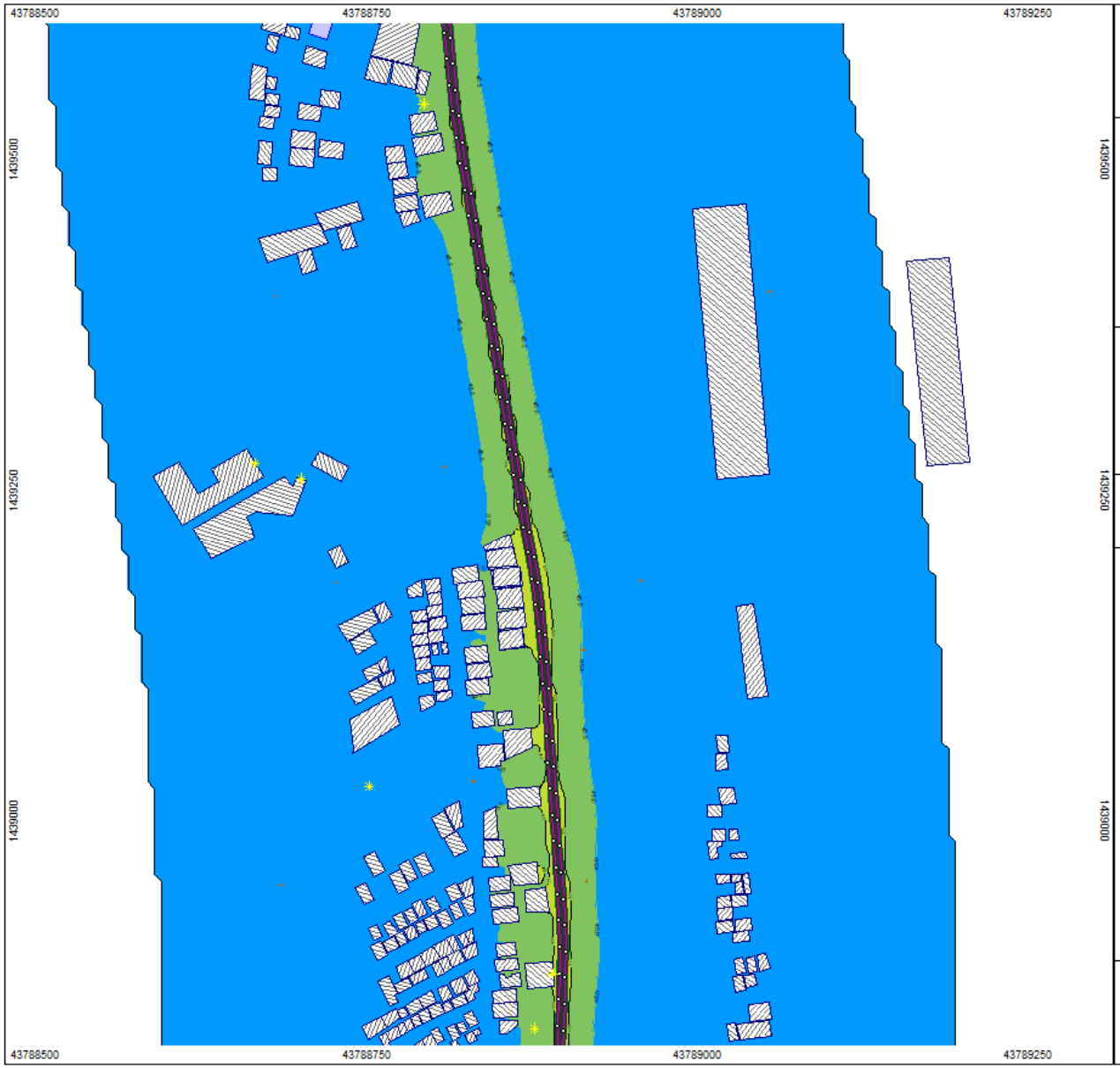

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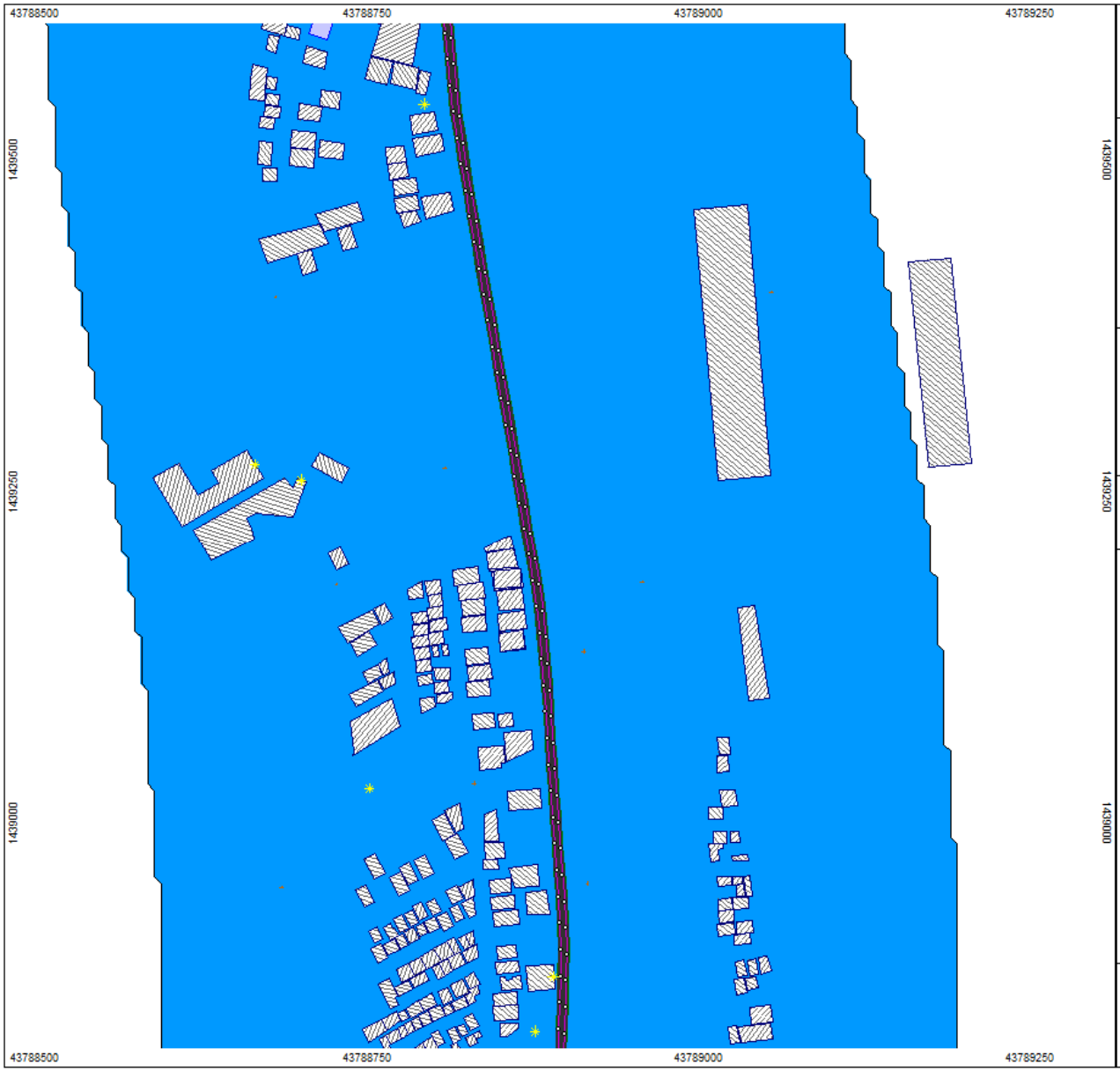

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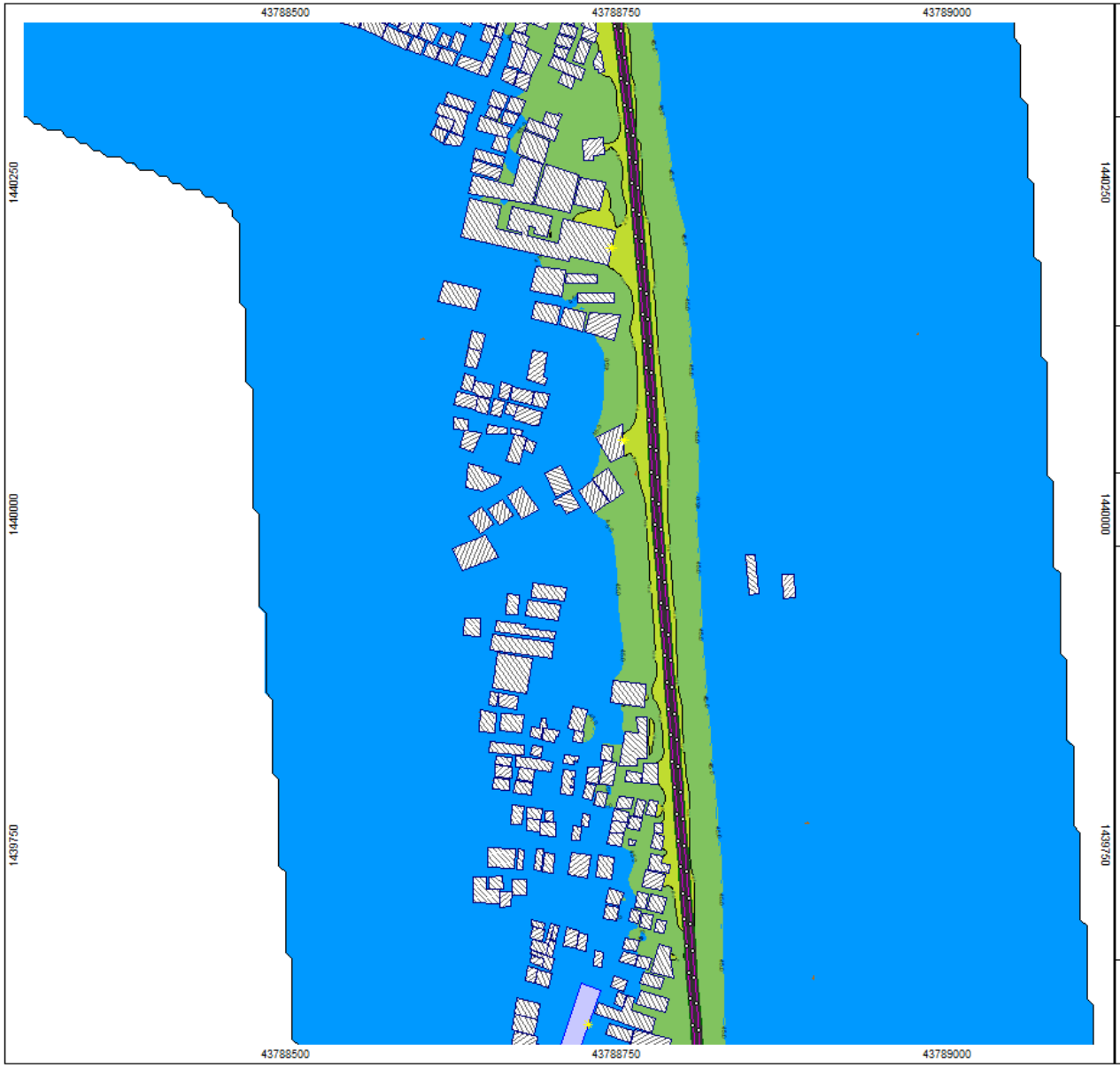

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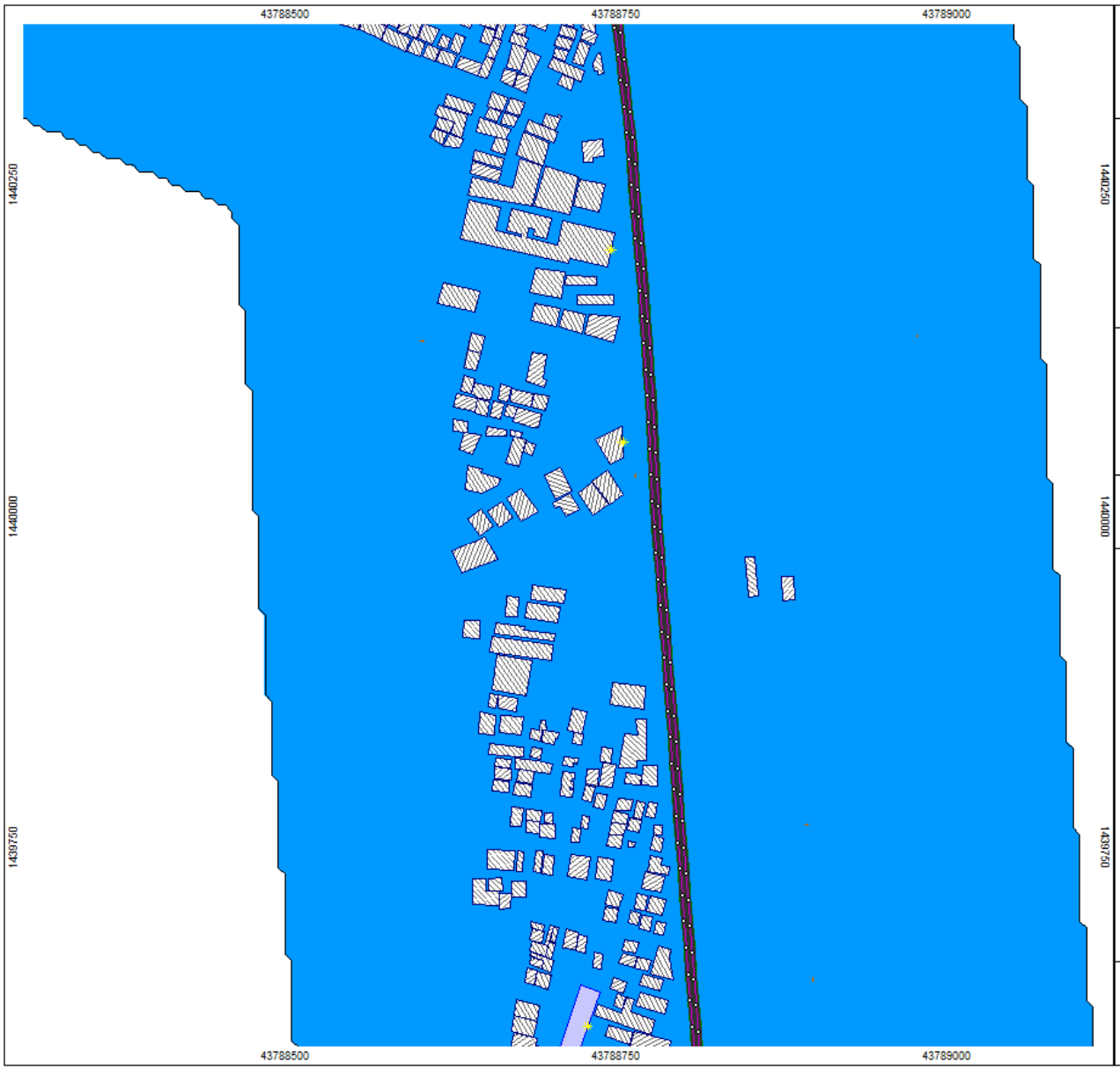

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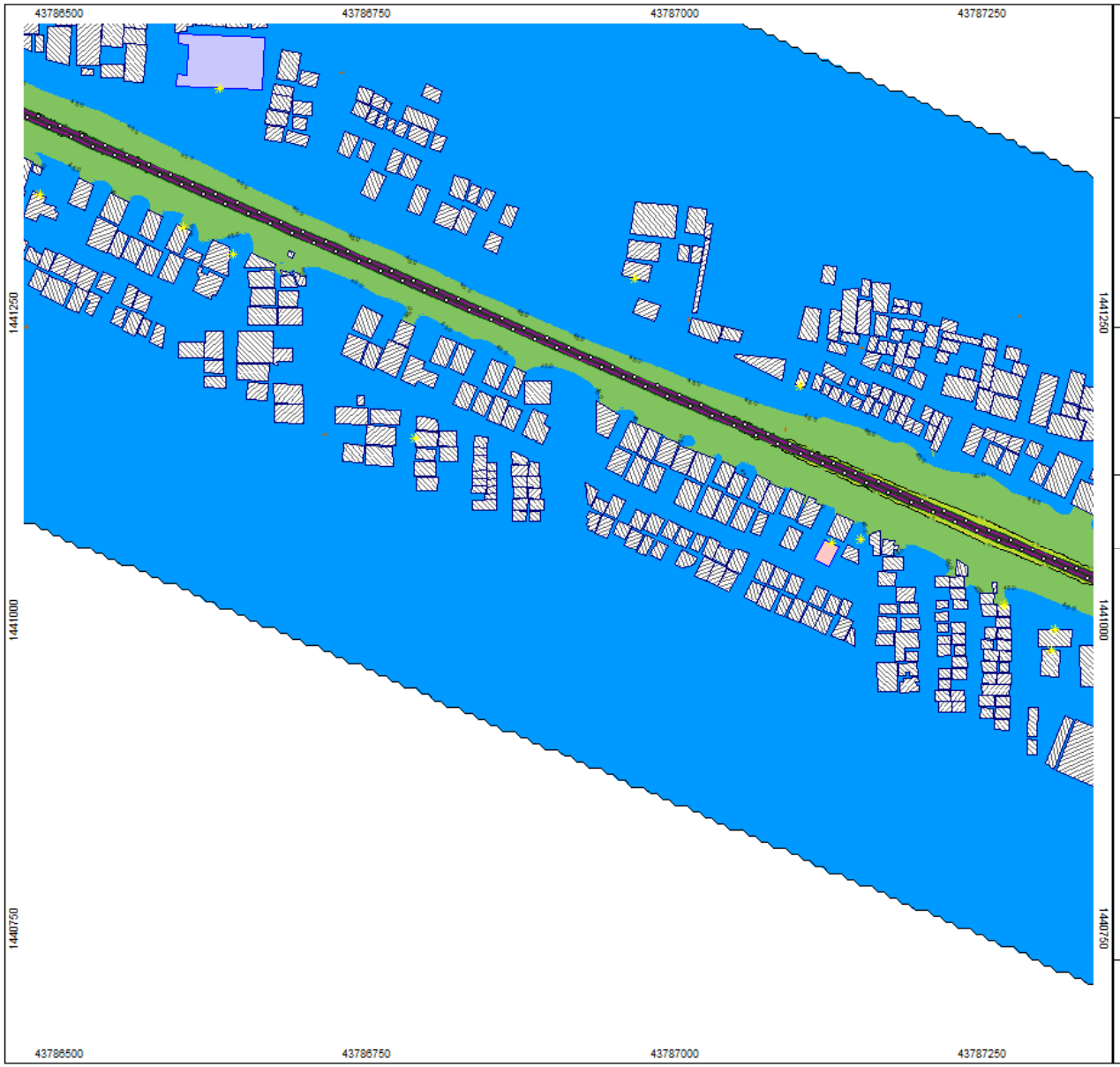

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Length scale 1:3101

0 25 50 100 150 200 m

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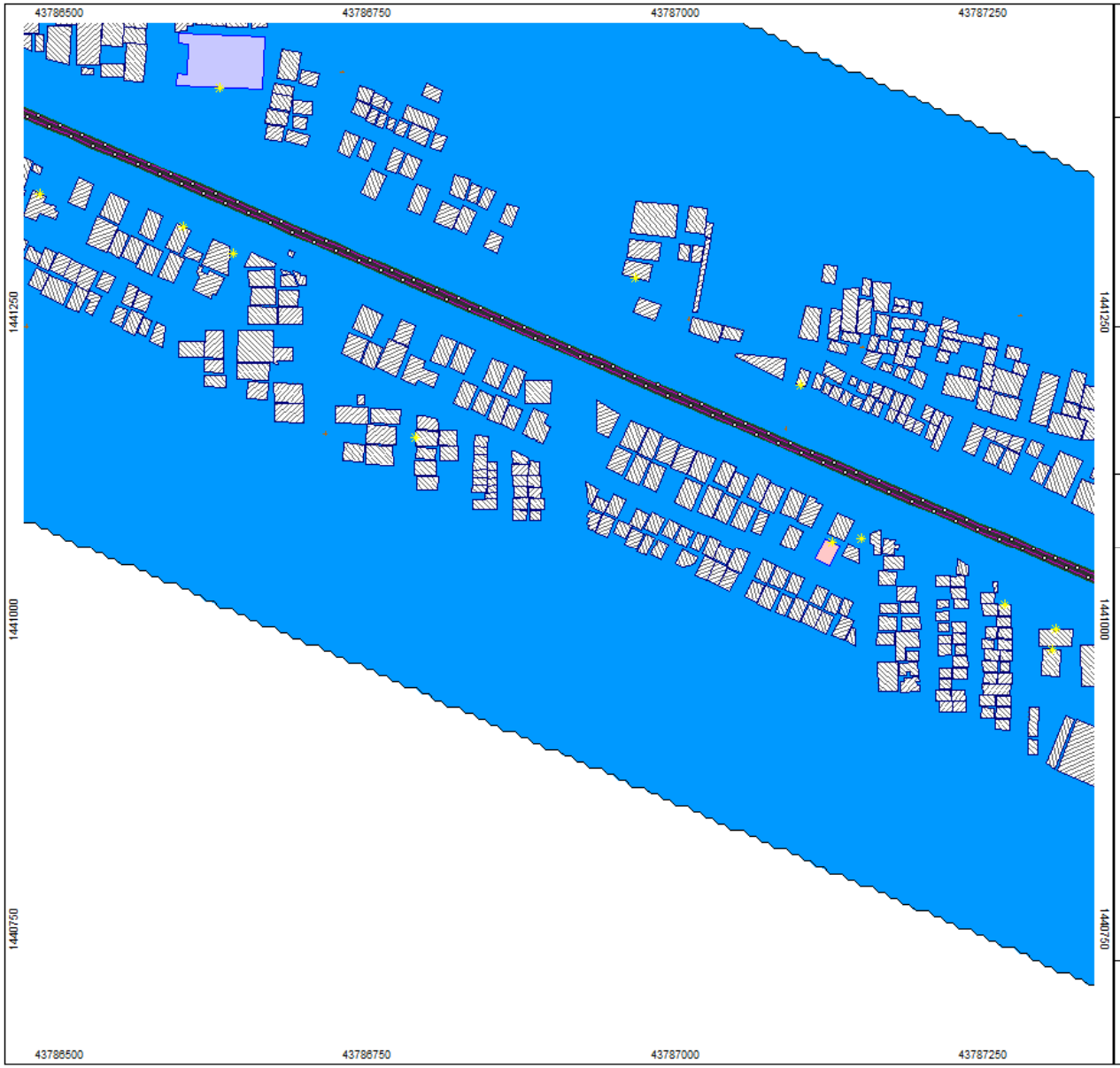

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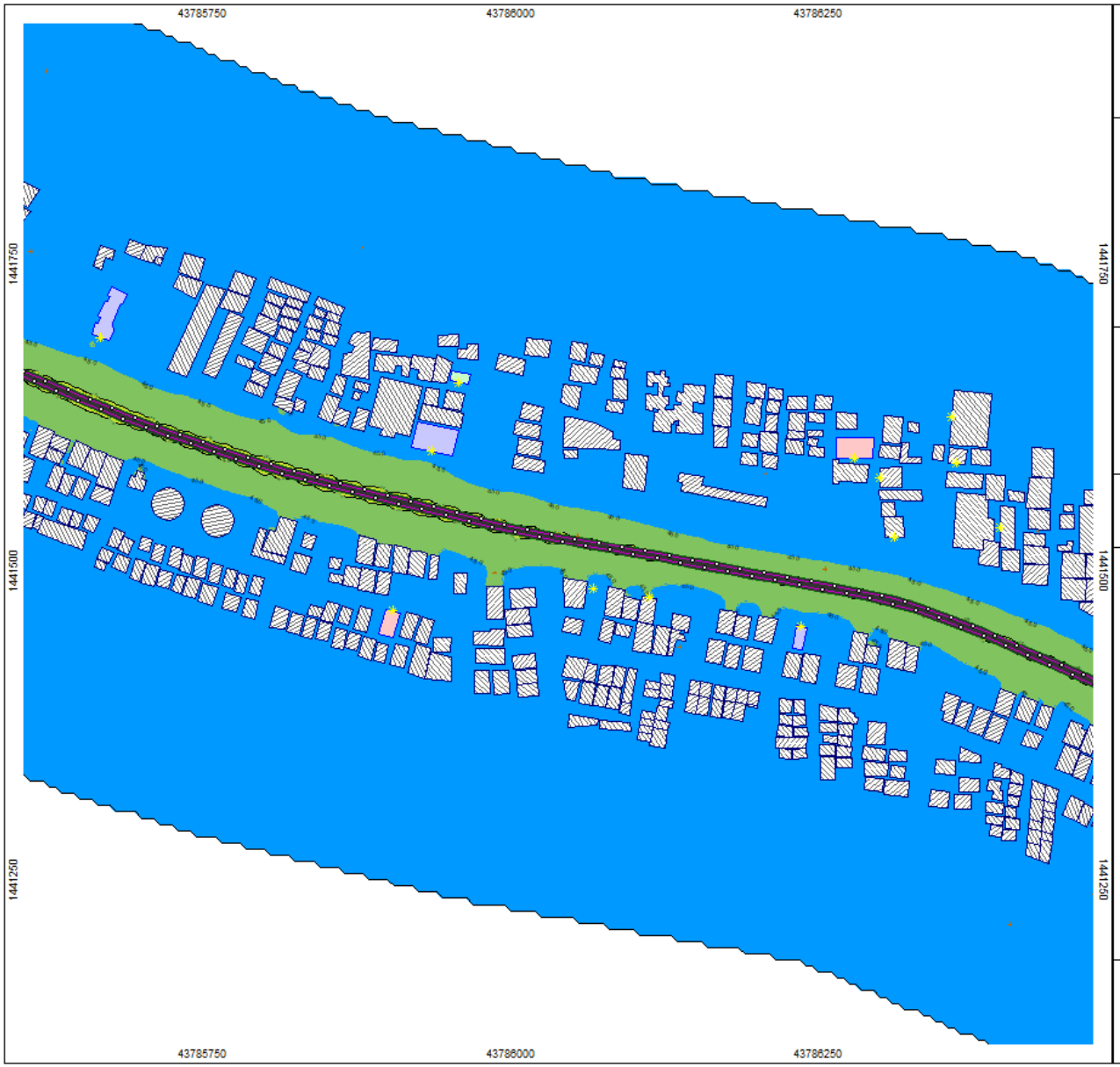

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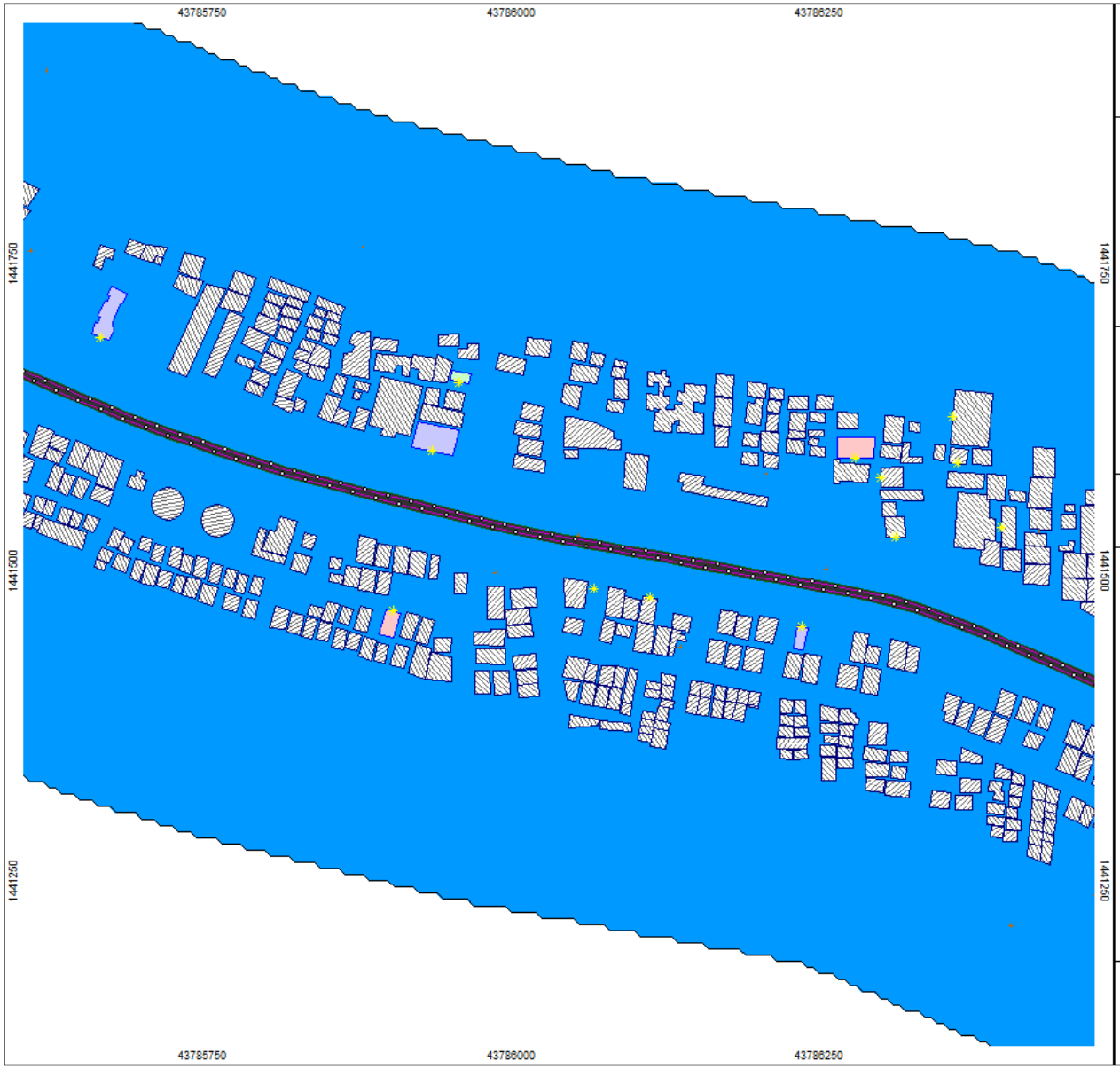

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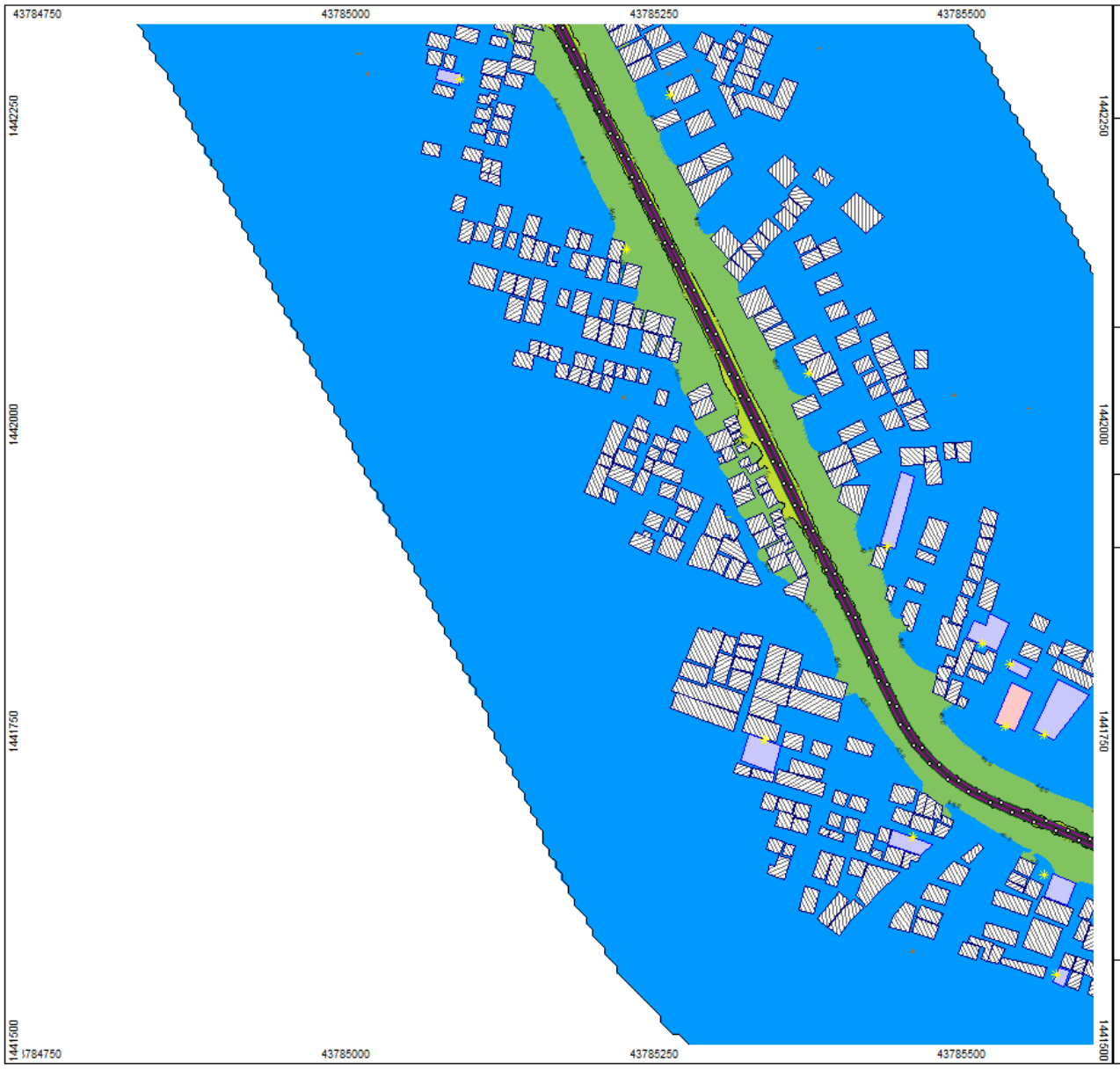

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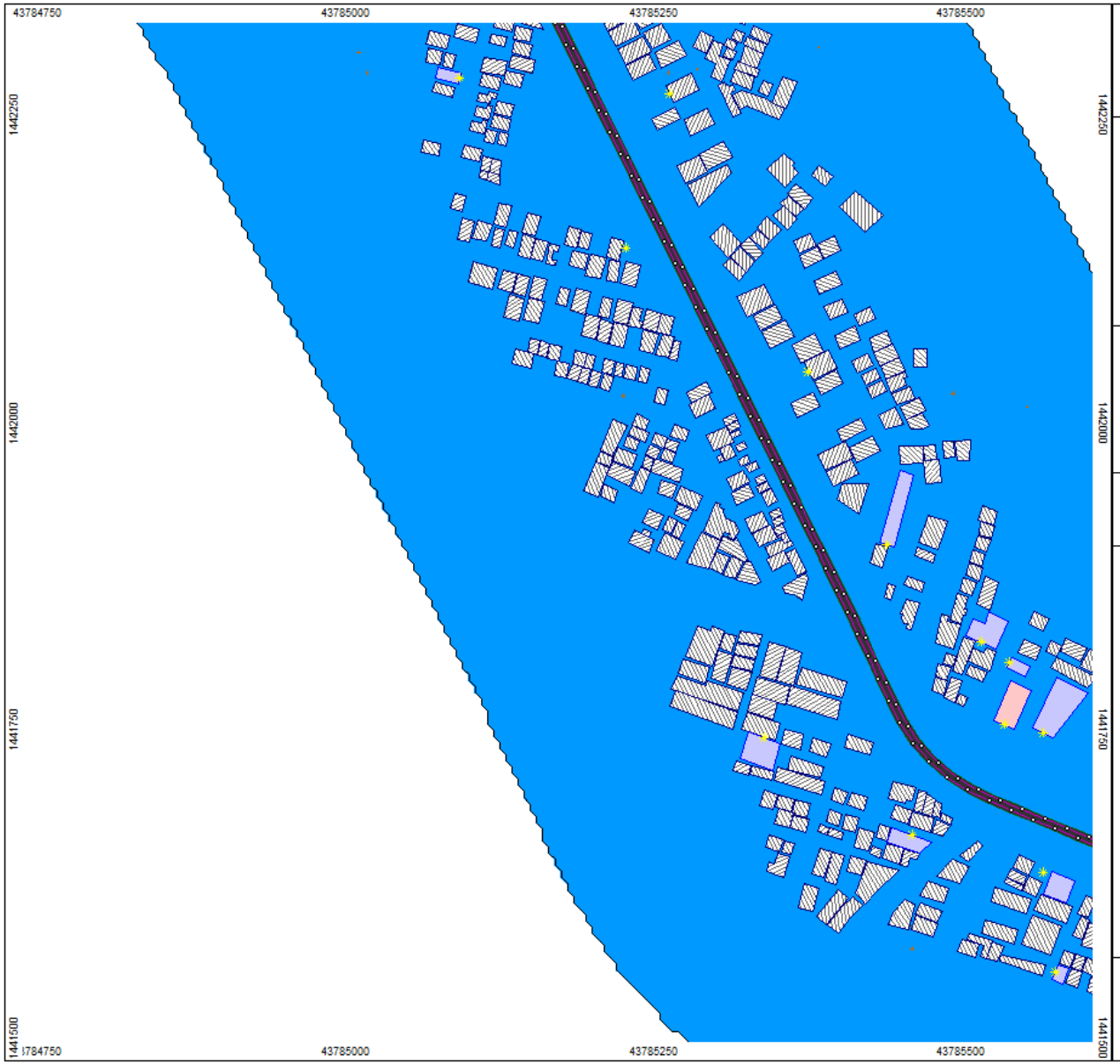

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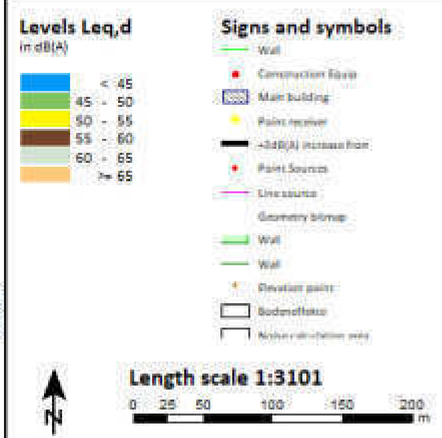

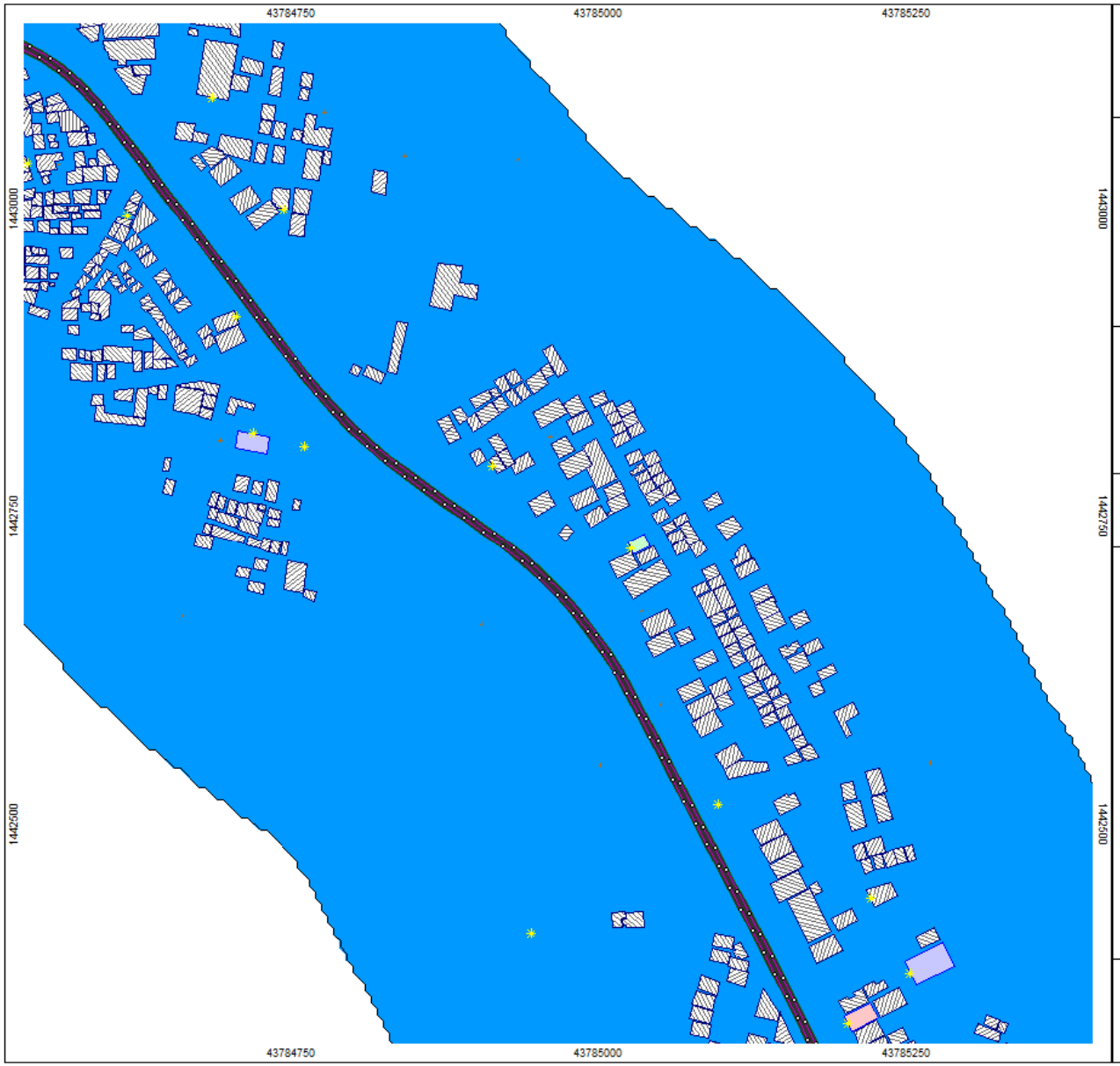

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Leq,d
Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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Levels Leq,d
in dB(A)

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45 - 50
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>= 65

Signs and symbols

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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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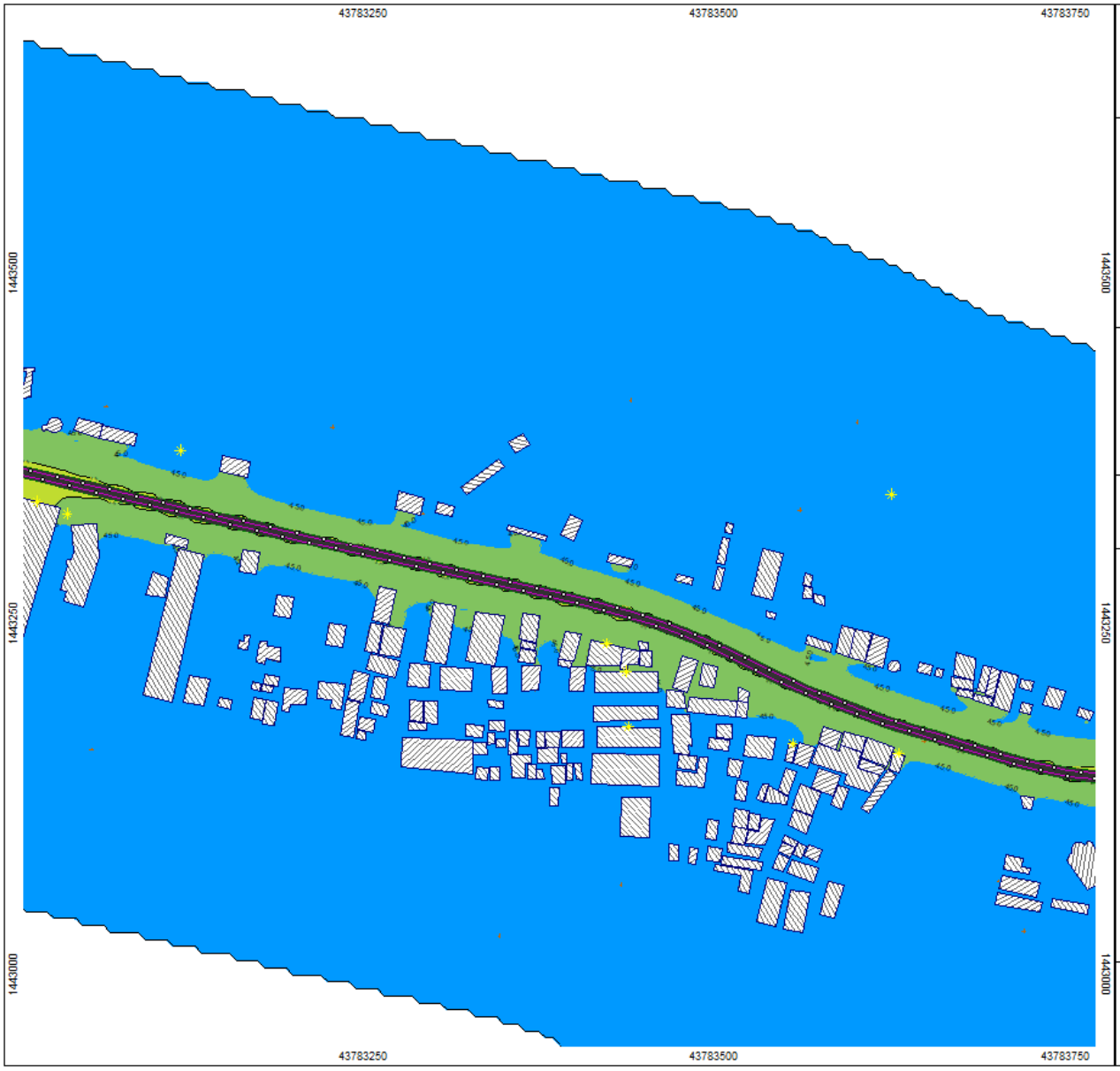

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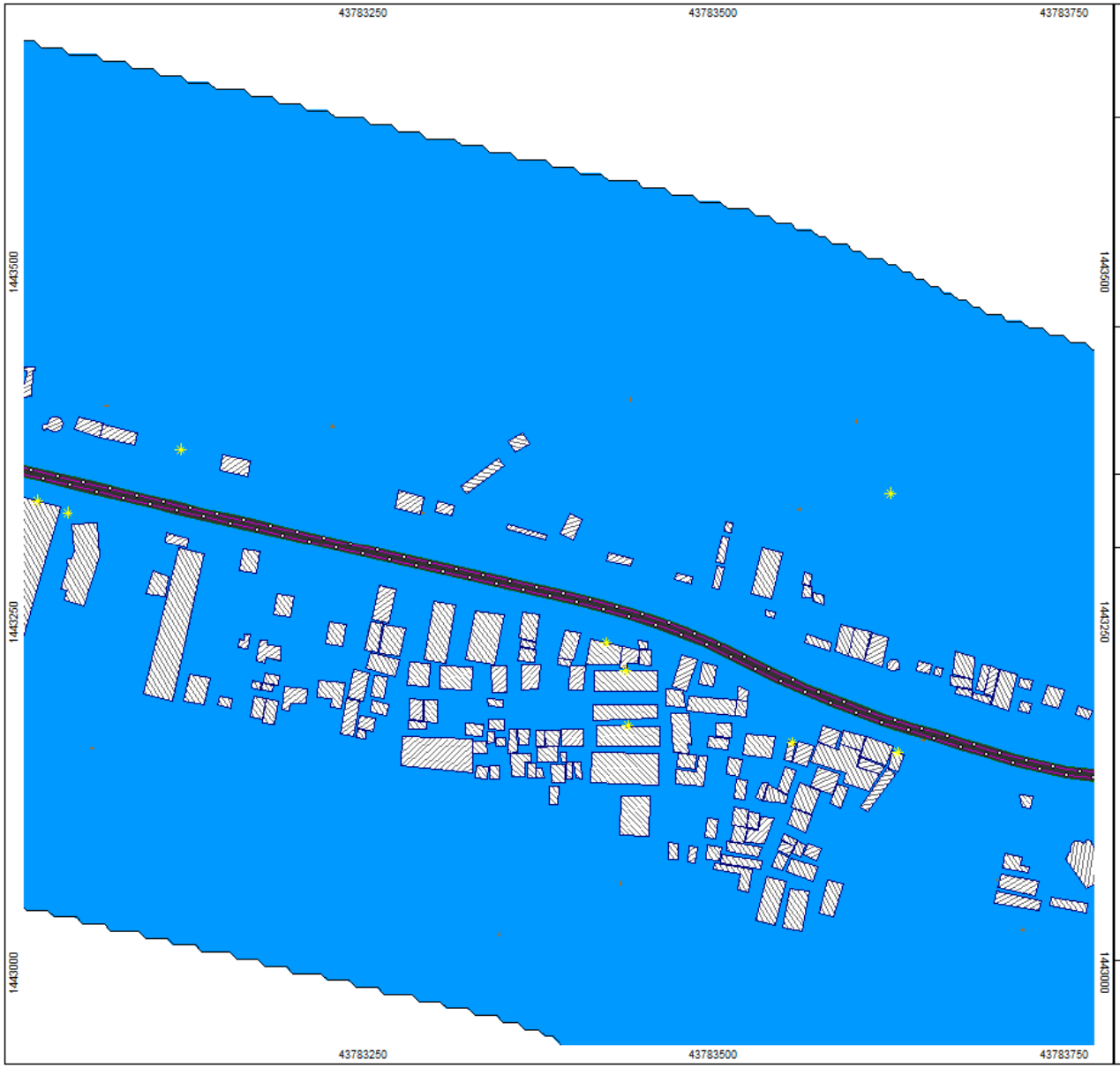

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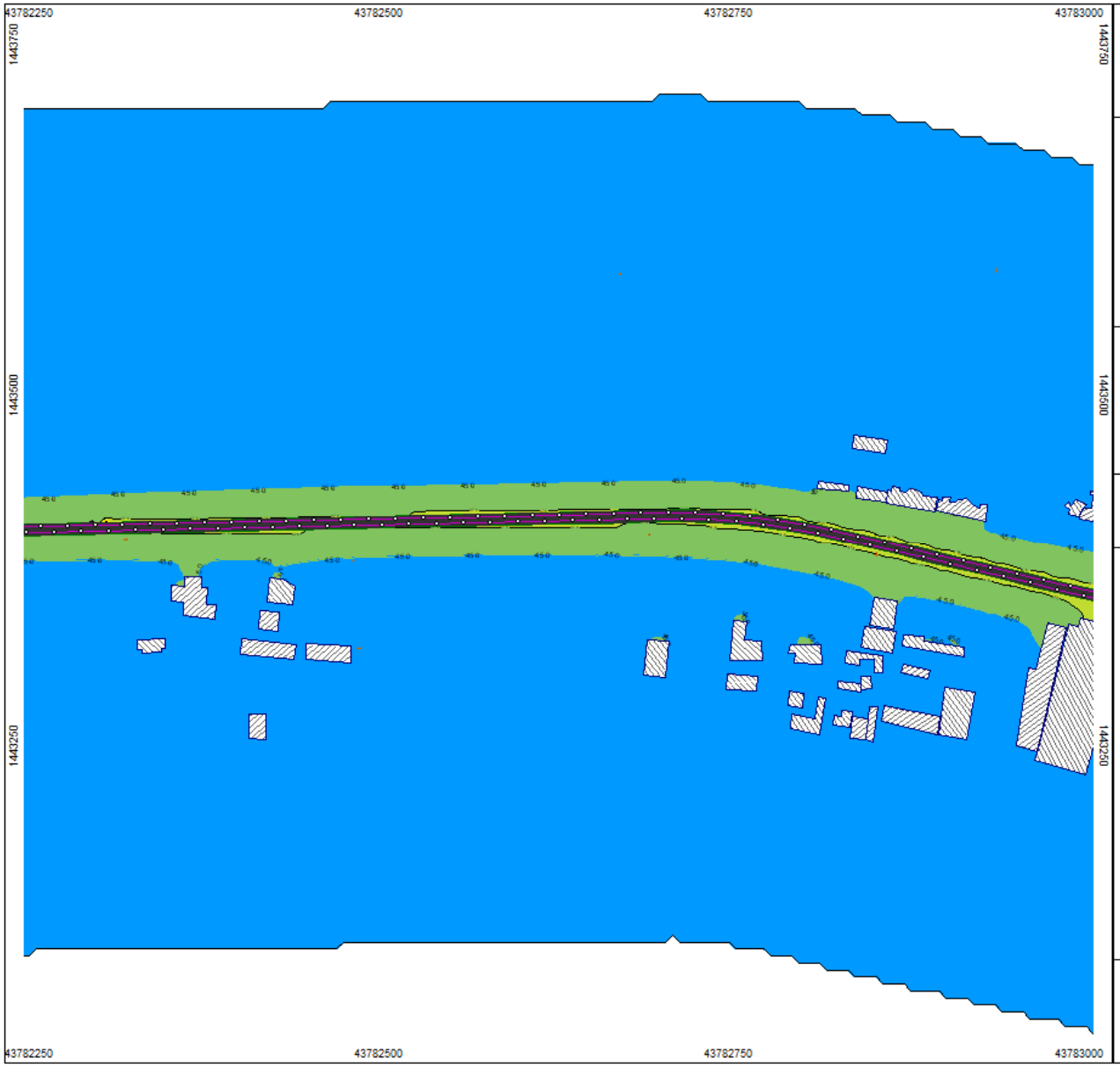

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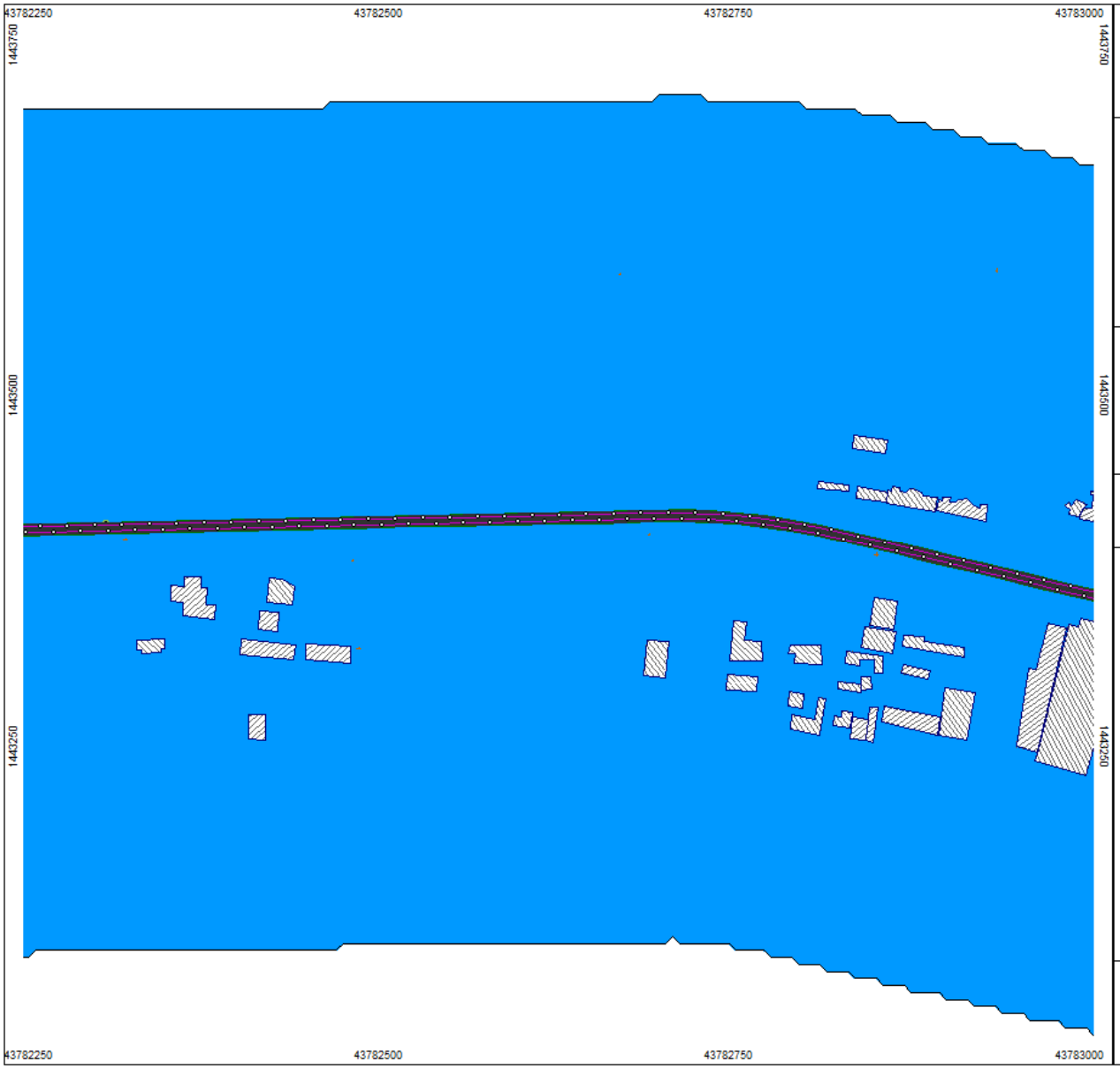

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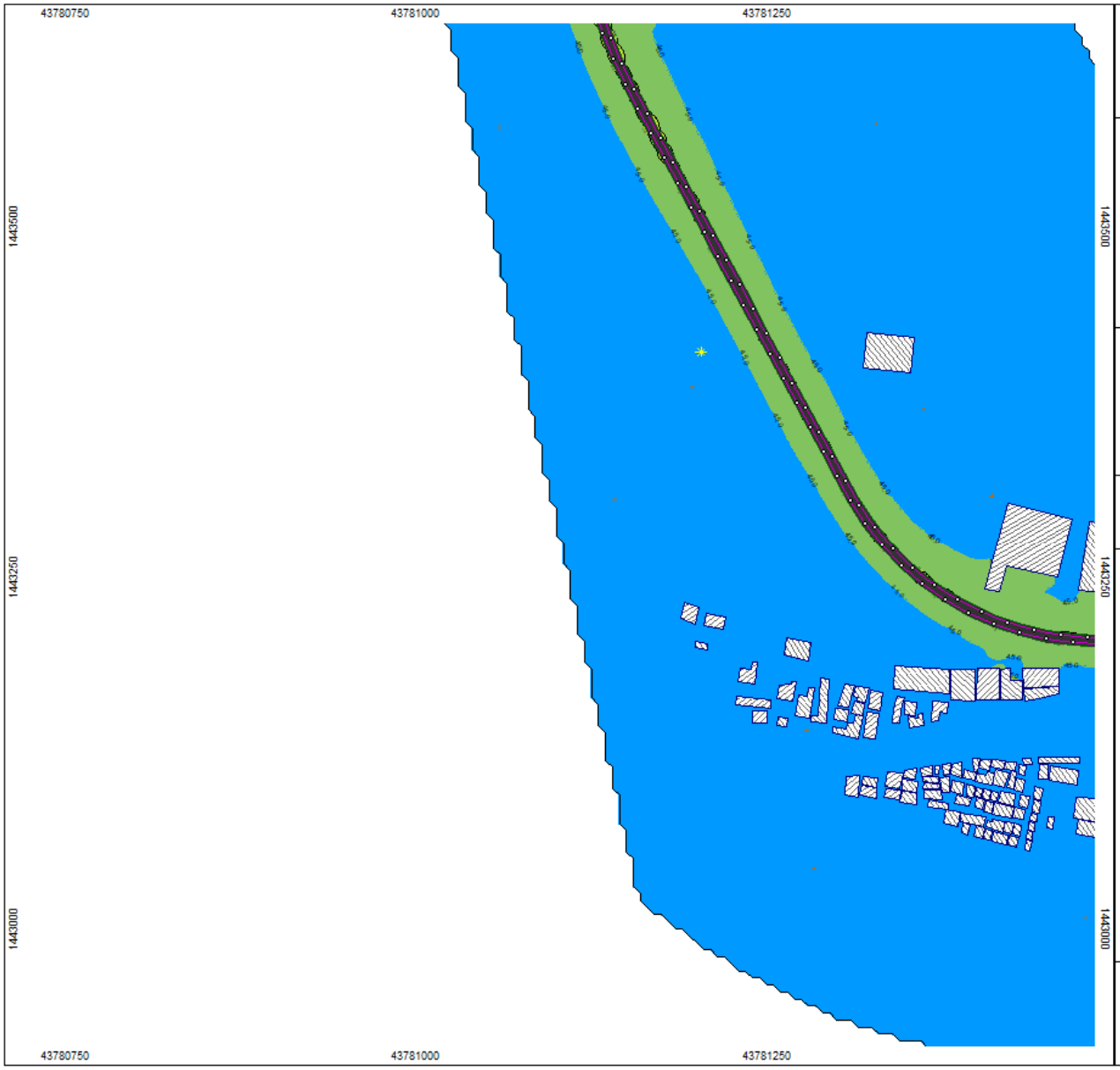

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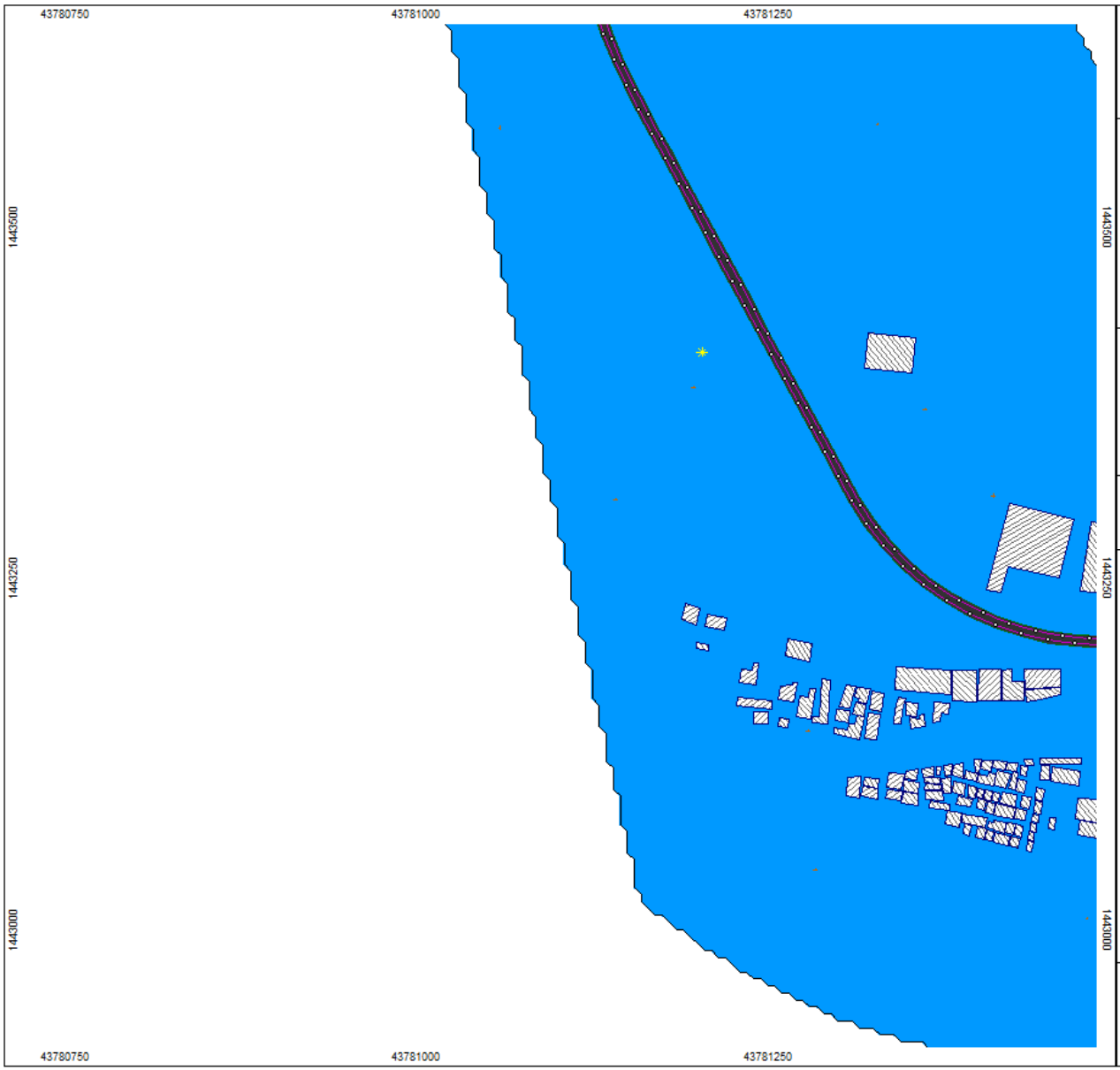

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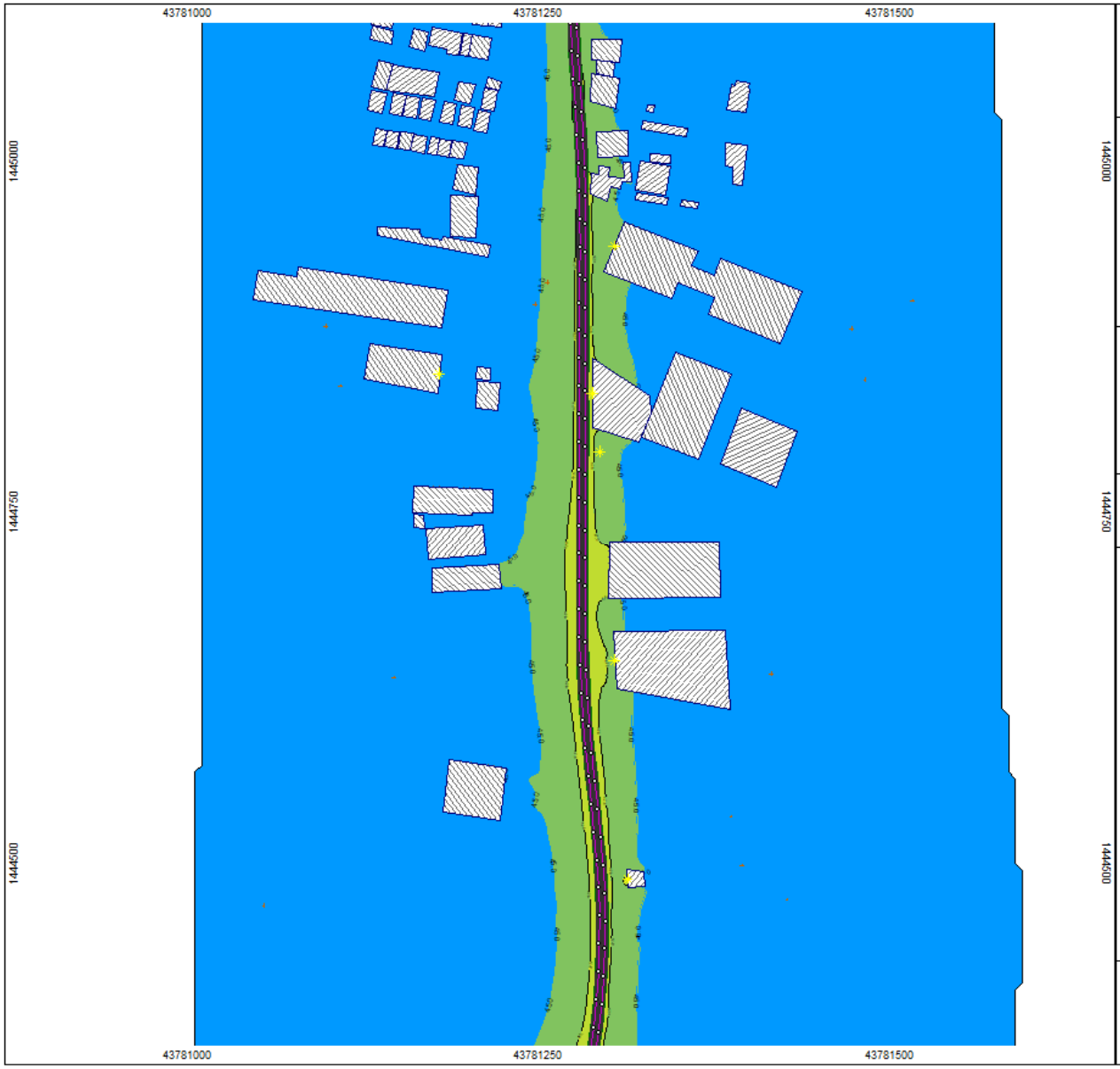

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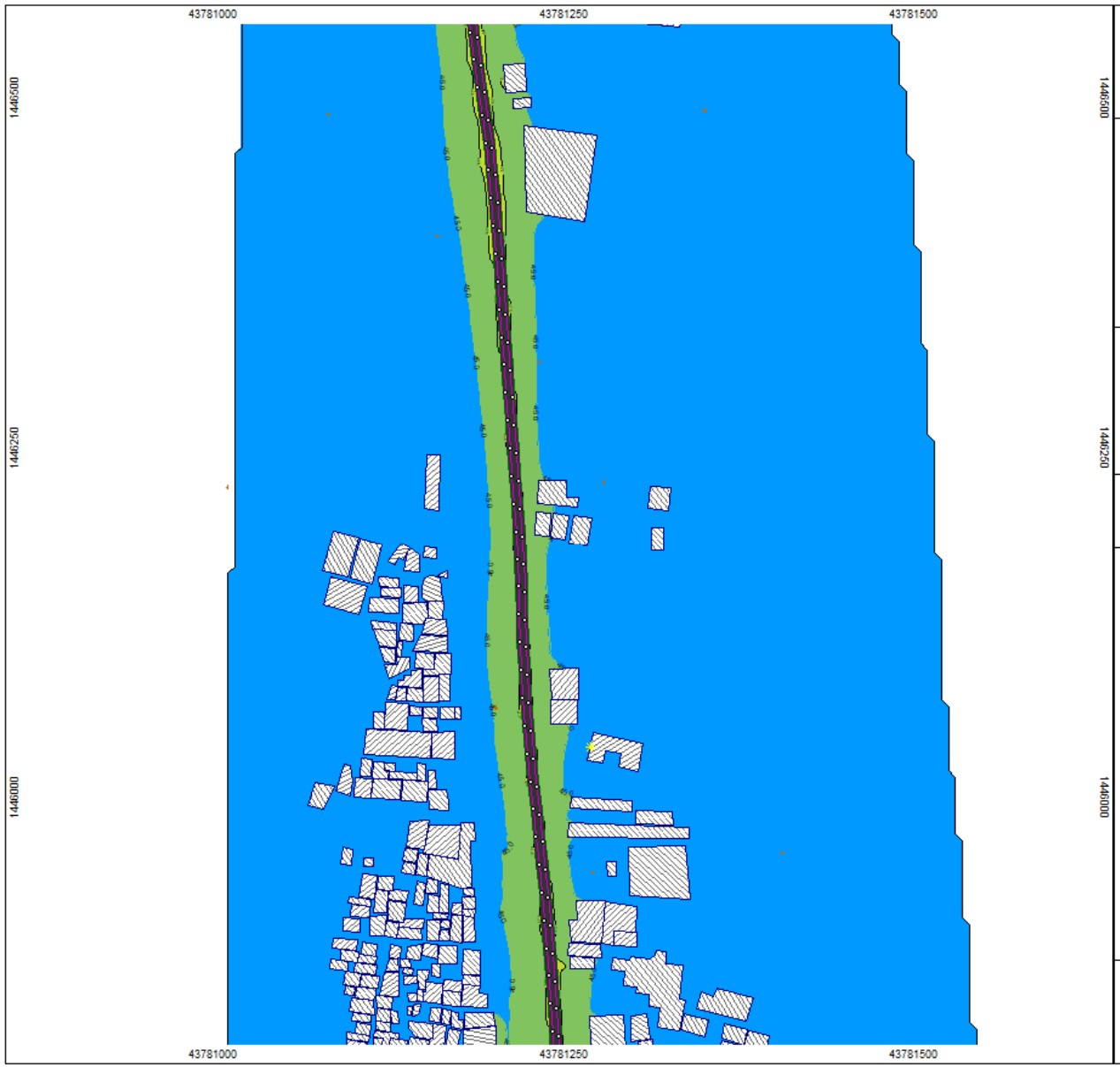

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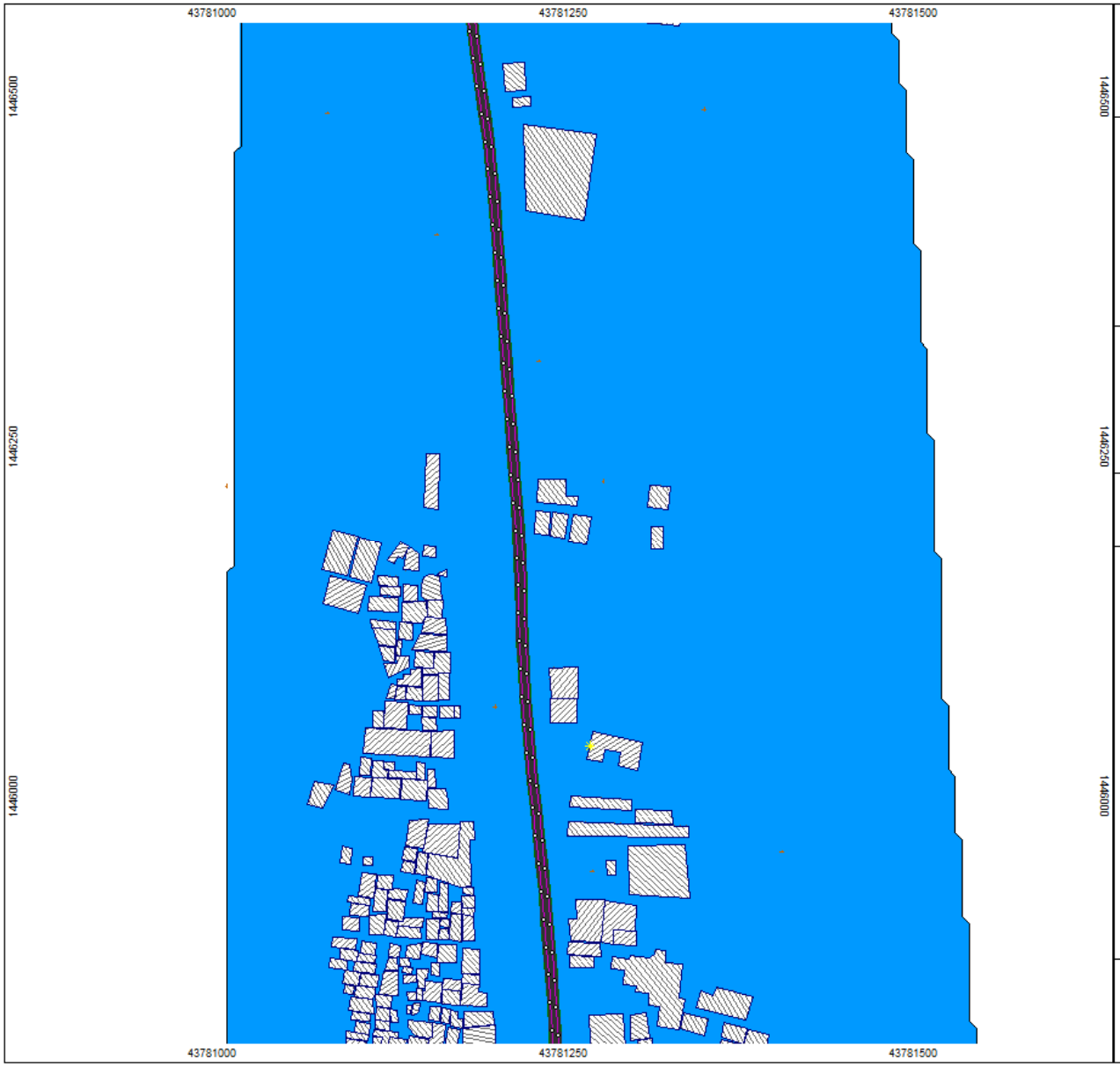

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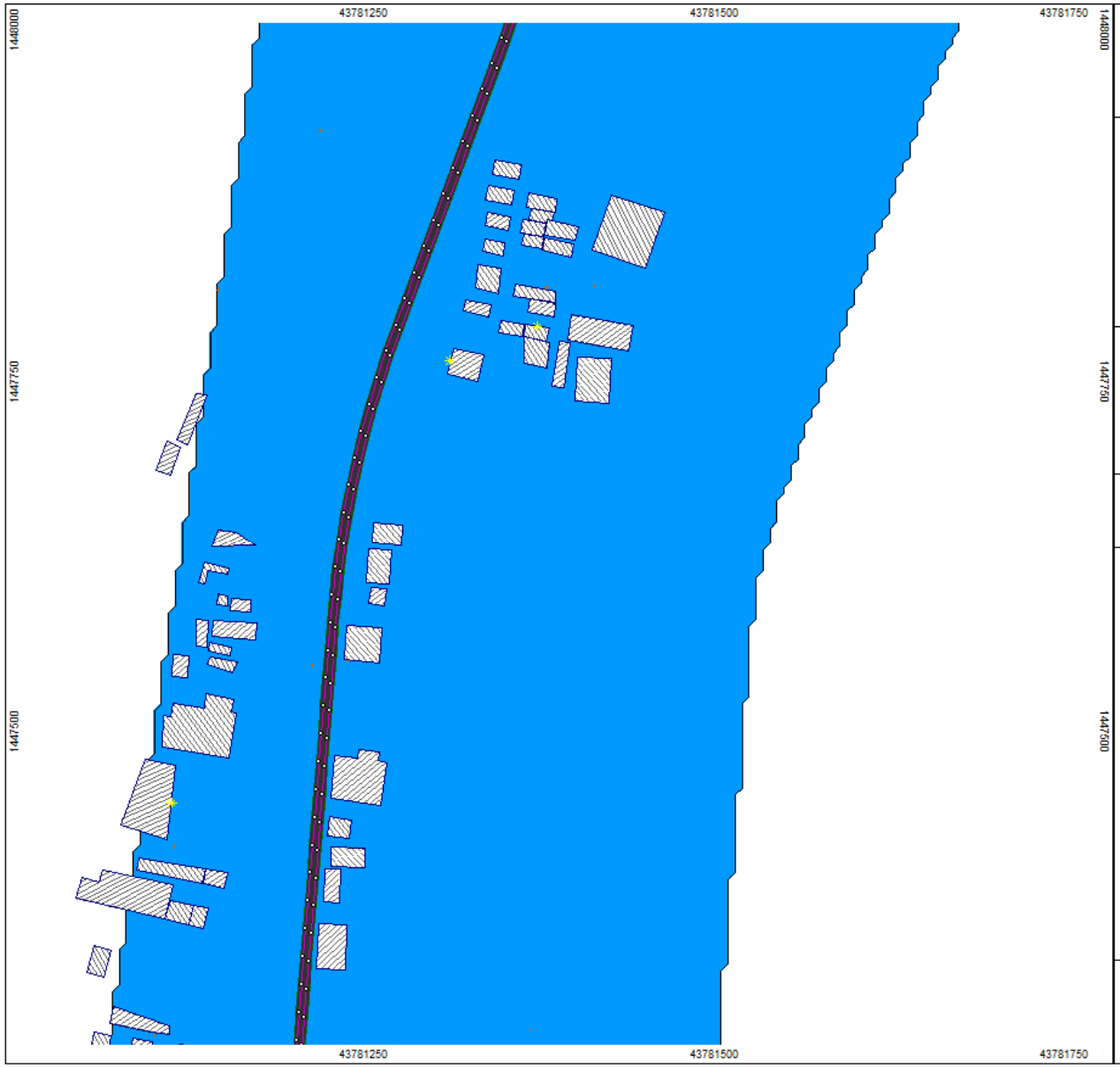

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- Wall
- Elevation point
- Bodeneffekte
- Noise calculation area

N

Length scale 1:2727

0 25 50 100 150 200

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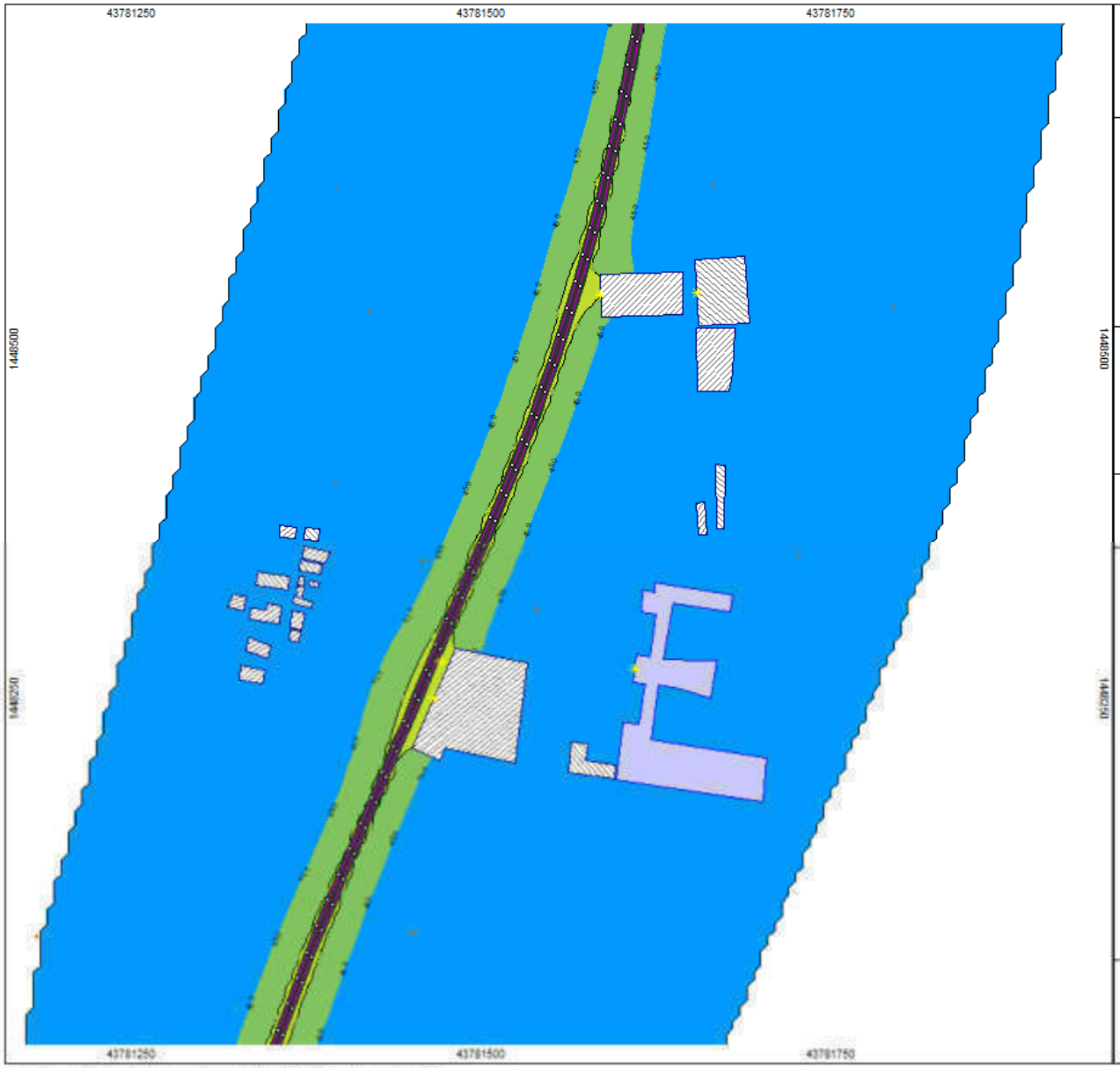

KR Puram to Kempegowda International Airport

Operational Noise.
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)

< 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
Barrier/Edge
Noise calculation area

N

Length scale 1:2727
0 25 50 100 150 200

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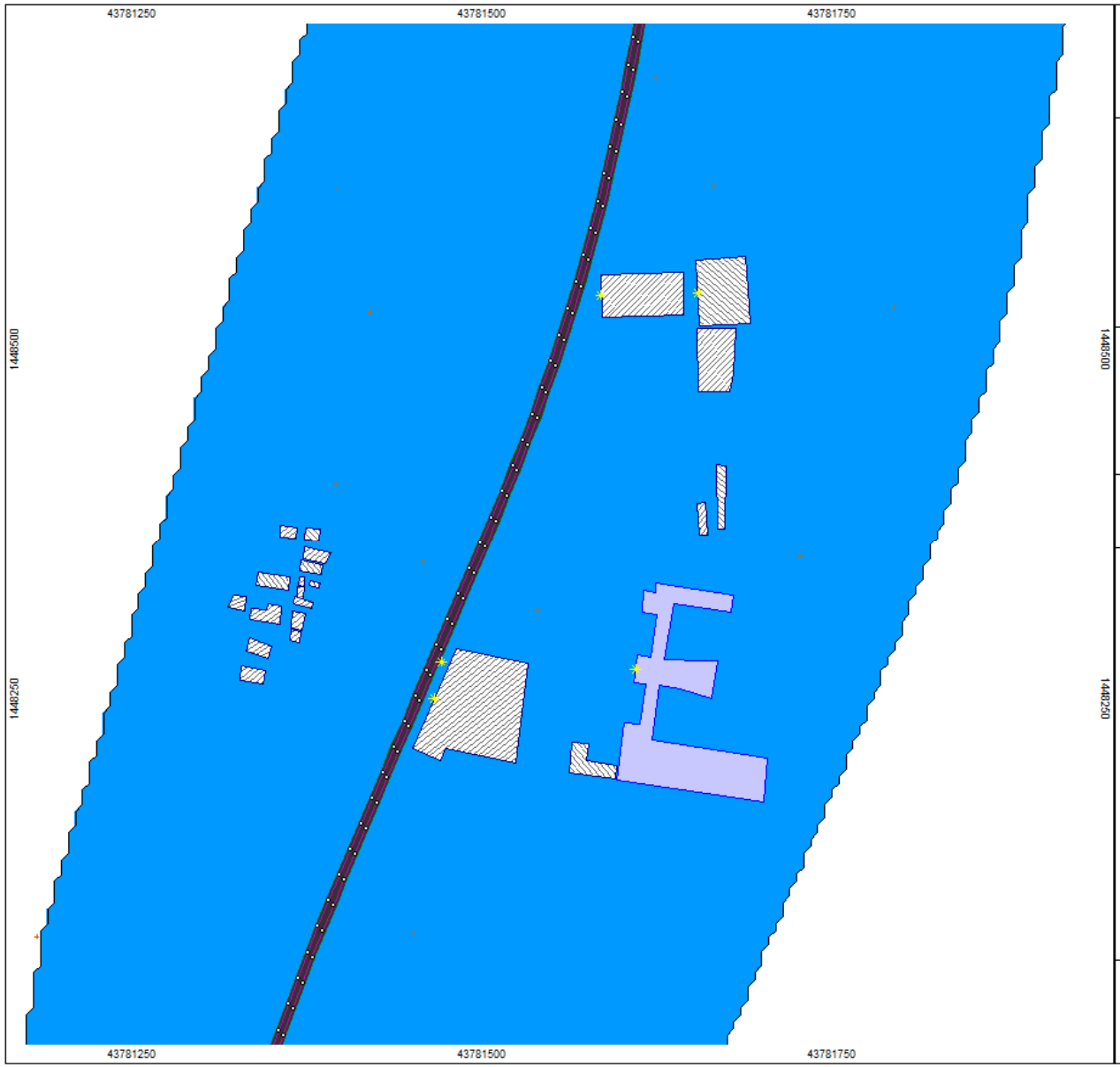

KR Puram to Kempegowda International Airport

Operational Noise.
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)

	< 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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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)

	< 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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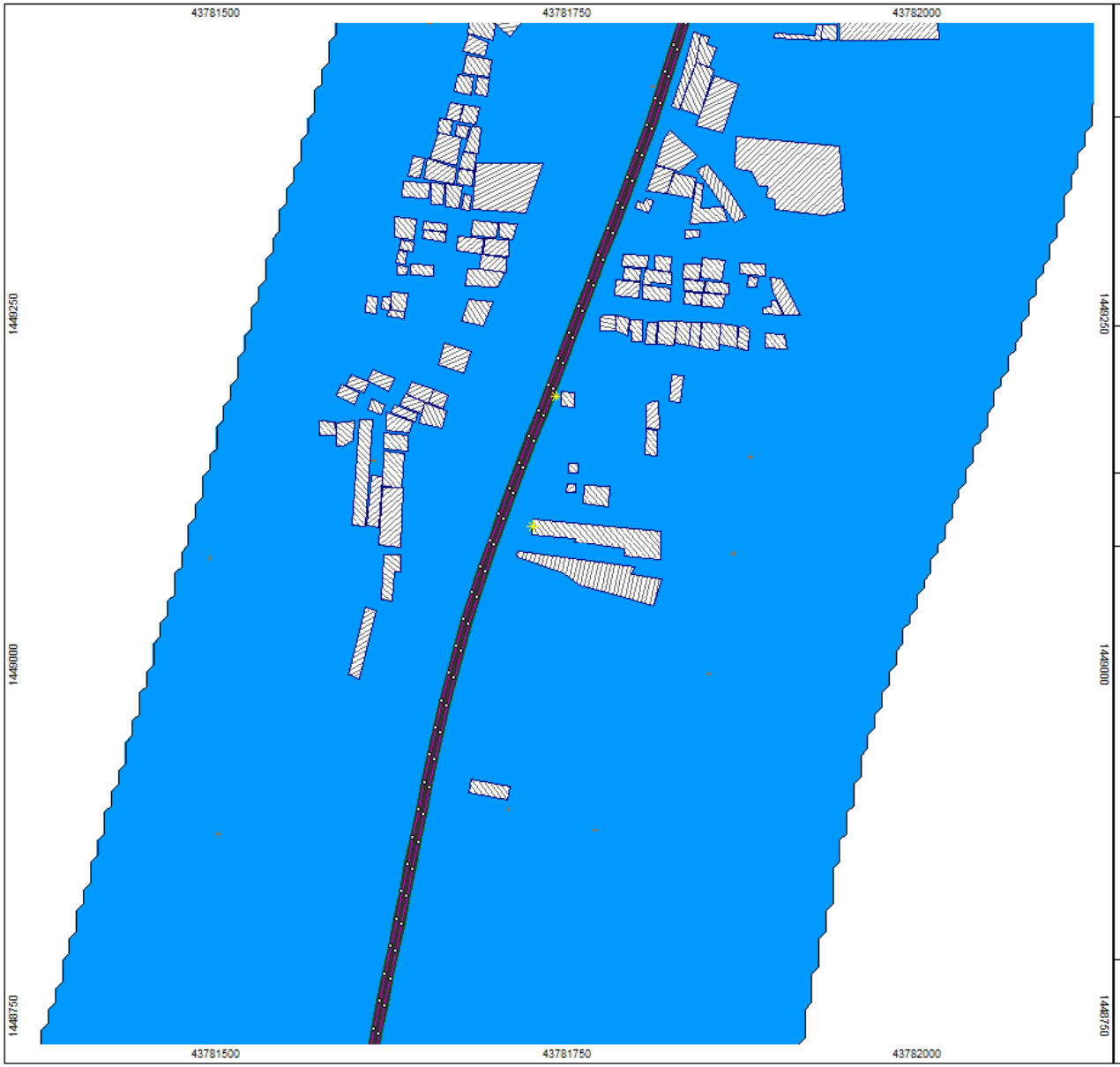

KR Puram to Kempegowda International Airport

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)

- < 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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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)

	< 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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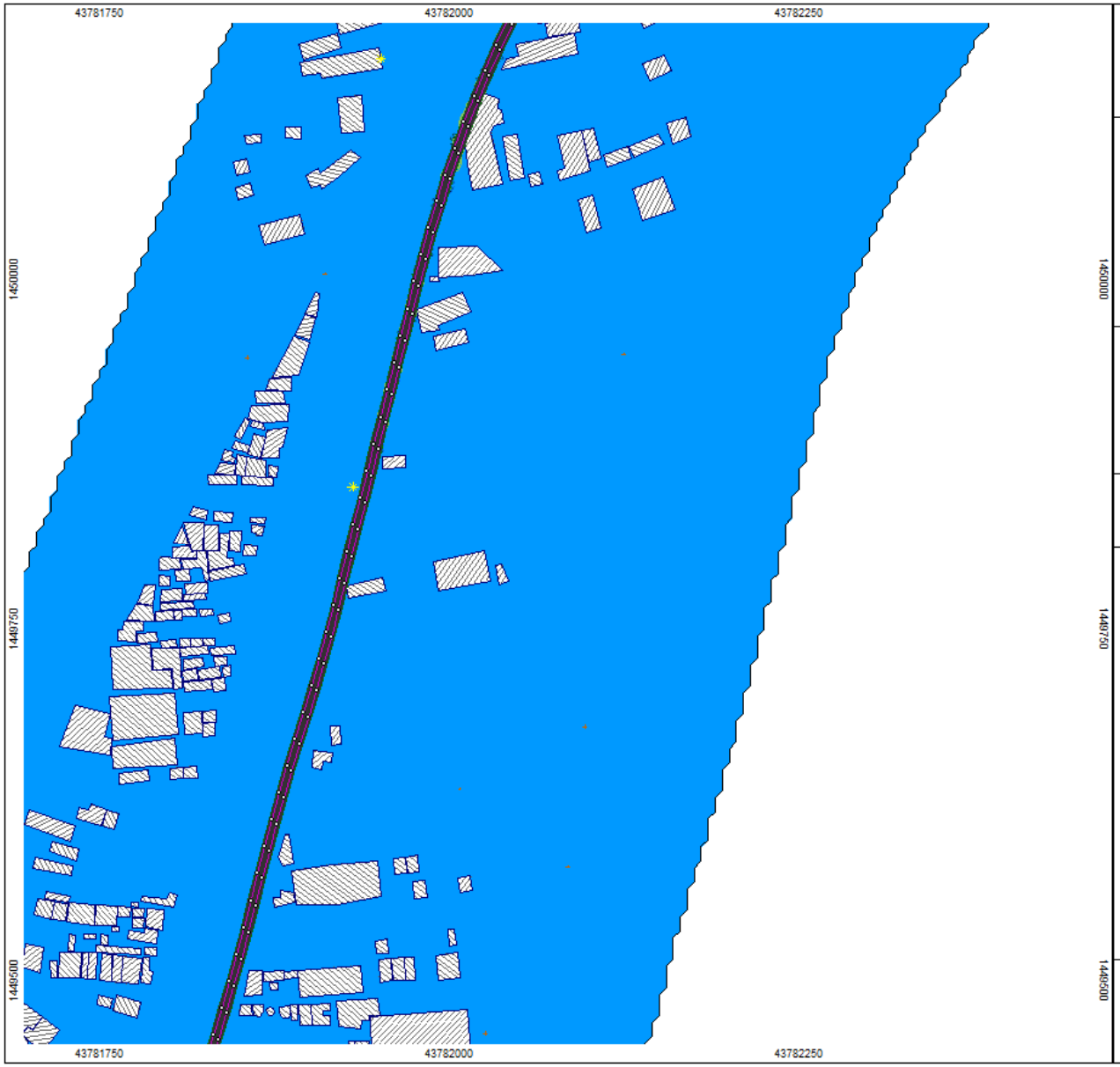

KR Puram to Kempegowda International Airport

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)

	< 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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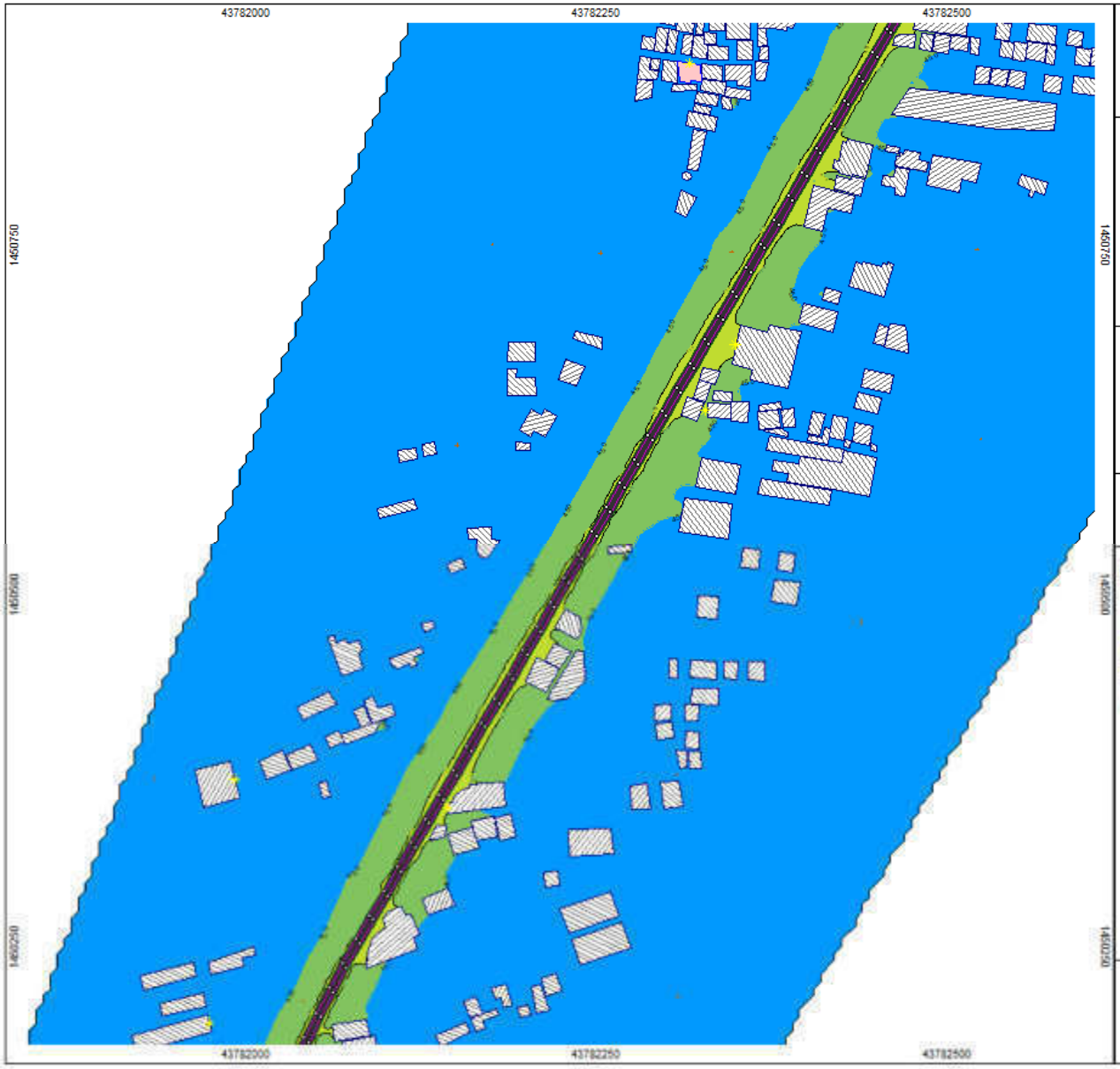

KR Puram to Kempegowda International Airport

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)

< 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 1:2727
0 25 50 100 150 200

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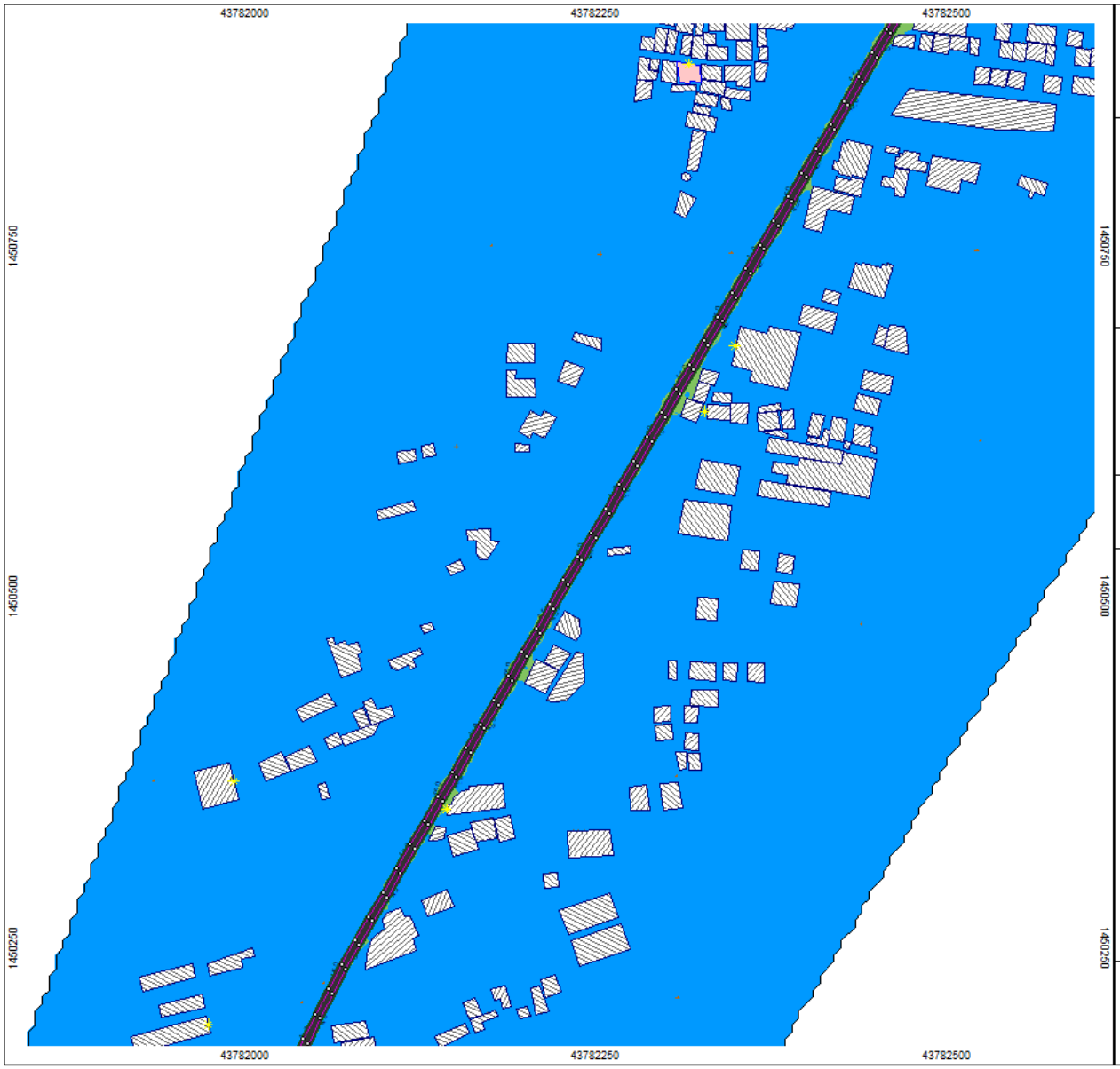

KR Puram to Kempegowda International Airport

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 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)

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

Signs and symbols

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

Length scale 1:2727
0 25 50 100 150 200

N

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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 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)

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

Signs and symbols
- Wall
- Main building
- Point receiver
- Point Sources
- Line source
- Geometry bitmap
- Wall
- Wall
- Elevation point

Length scale 1:2727
0 25 50 100 150 200

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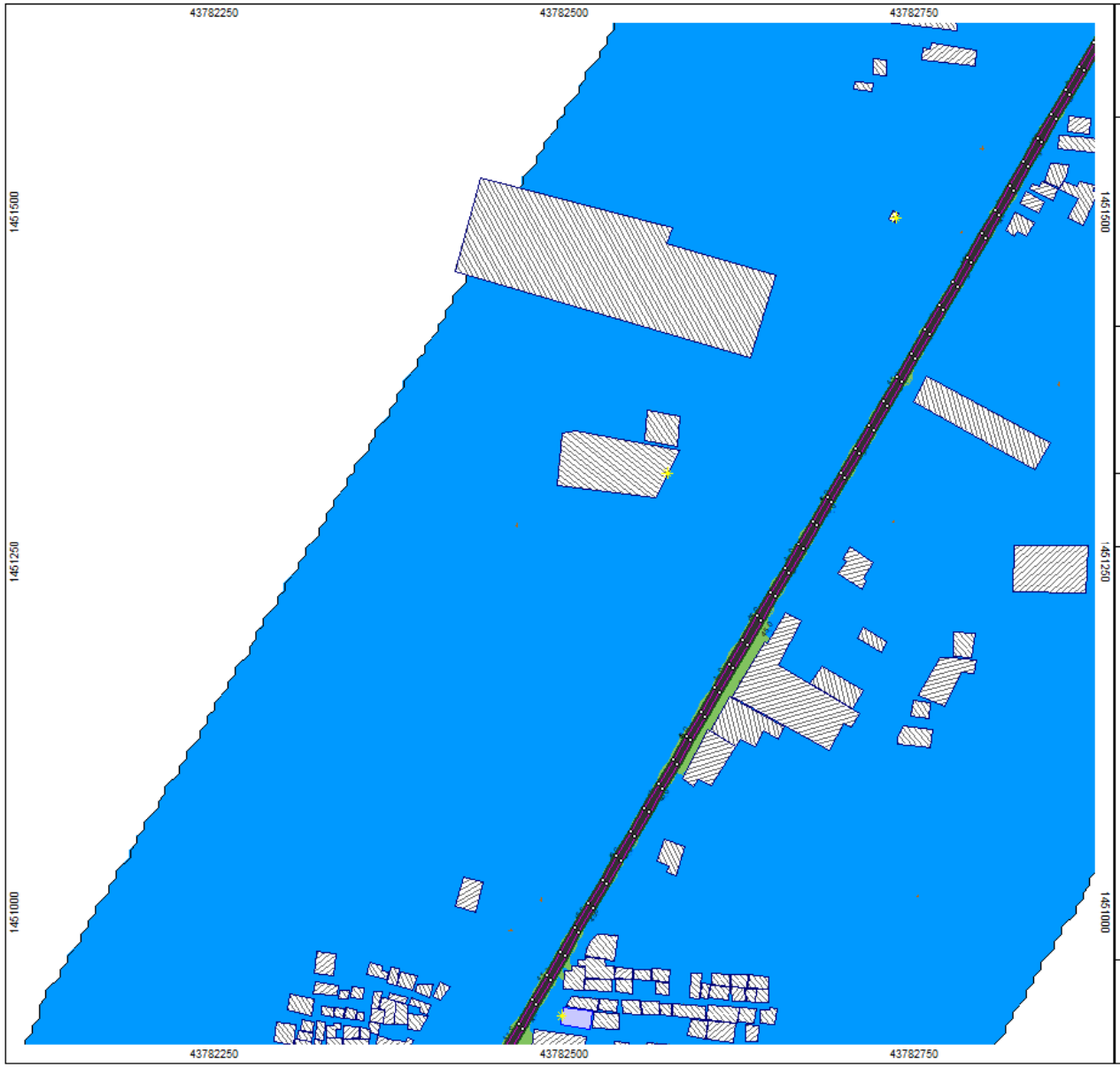

KR Puram to Kempegowda International Airport

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 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)

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

Signs and symbols

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

Length scale 1:2727

0 25 50 100 150 200

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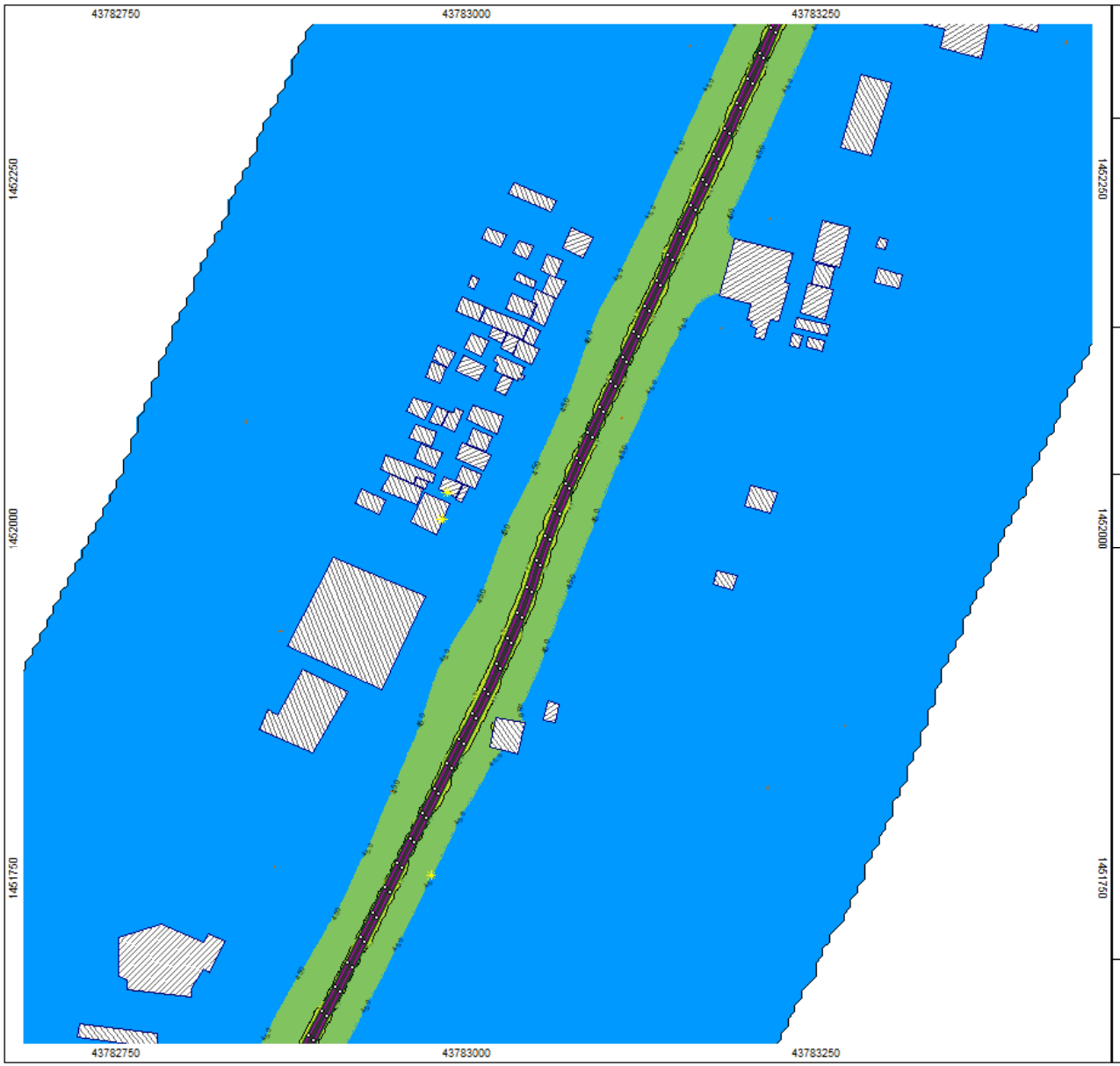

KR Puram to Kempegowda International Airport

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 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)

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

Signs and symbols

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

Length scale 1:2727

0 25 50 100 150 200

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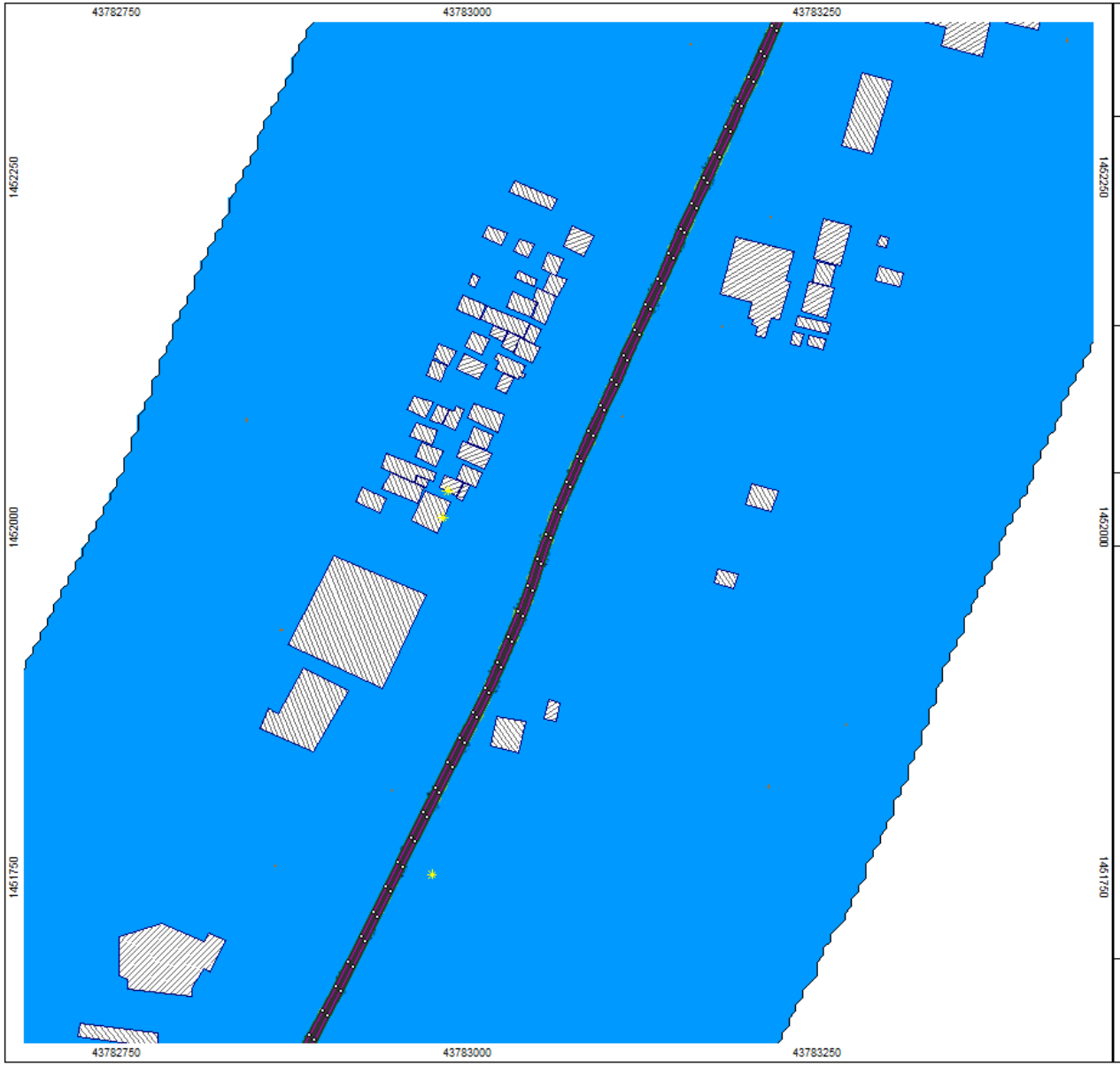

KR Puram to Kempegowda International Airport

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 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)

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

Signs and symbols

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

Length scale 1:2727

0 25 50 100 150 200

N

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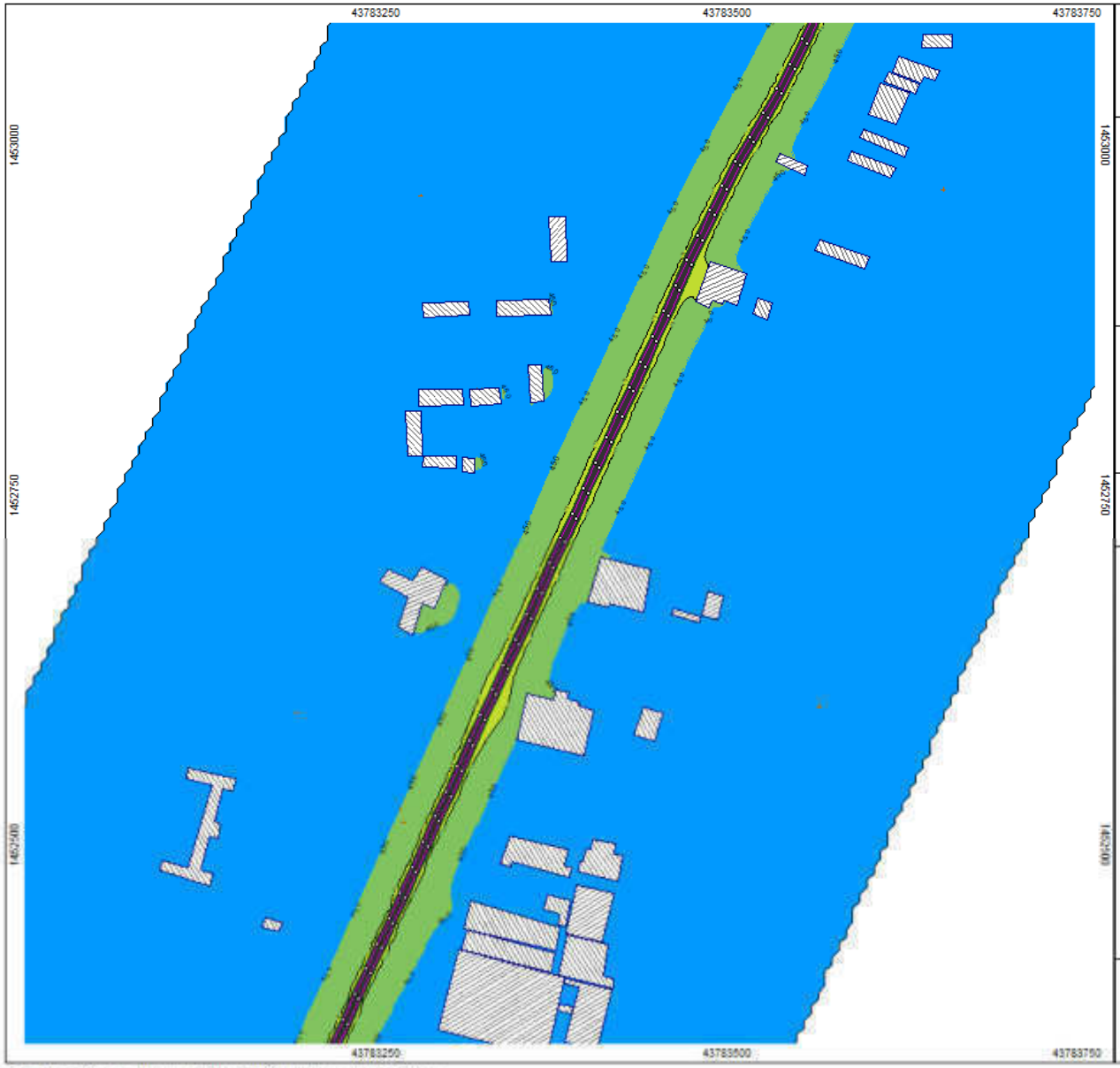

KR Puram to Kempegowda International Airport

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 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)

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

Signs and symbols

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

N

Length scale 1:2727
0 25 50 100 150 200

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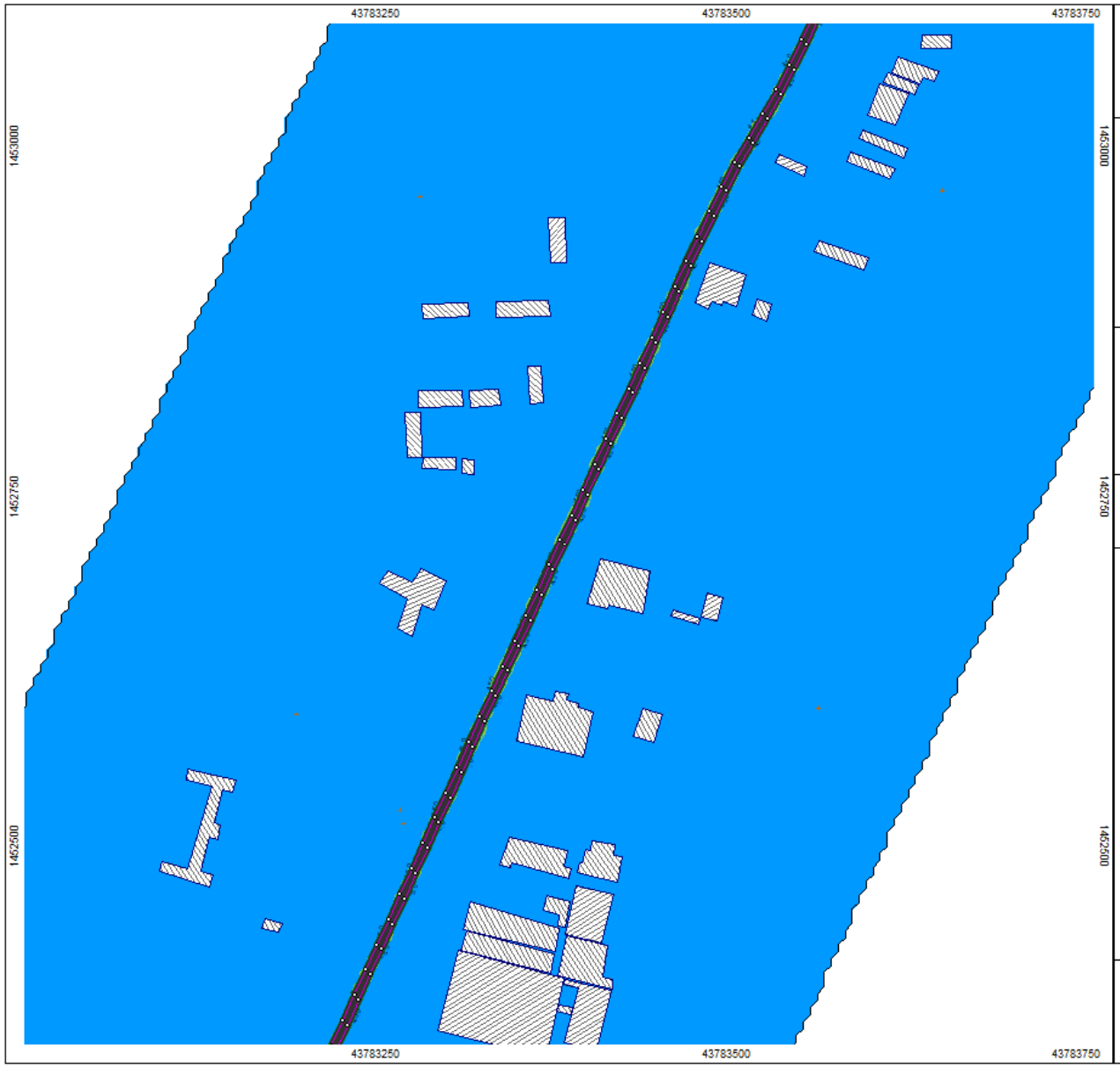

KR Puram to Kempegowda International Airport

Operational Noise.
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)

	< 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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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: 8/10/2020
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
Bodeneffekt

N

Length scale 1:1008
0 5 10 20 30 40 m

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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 2024 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 1:1008

0 5 10 20 30 40 m

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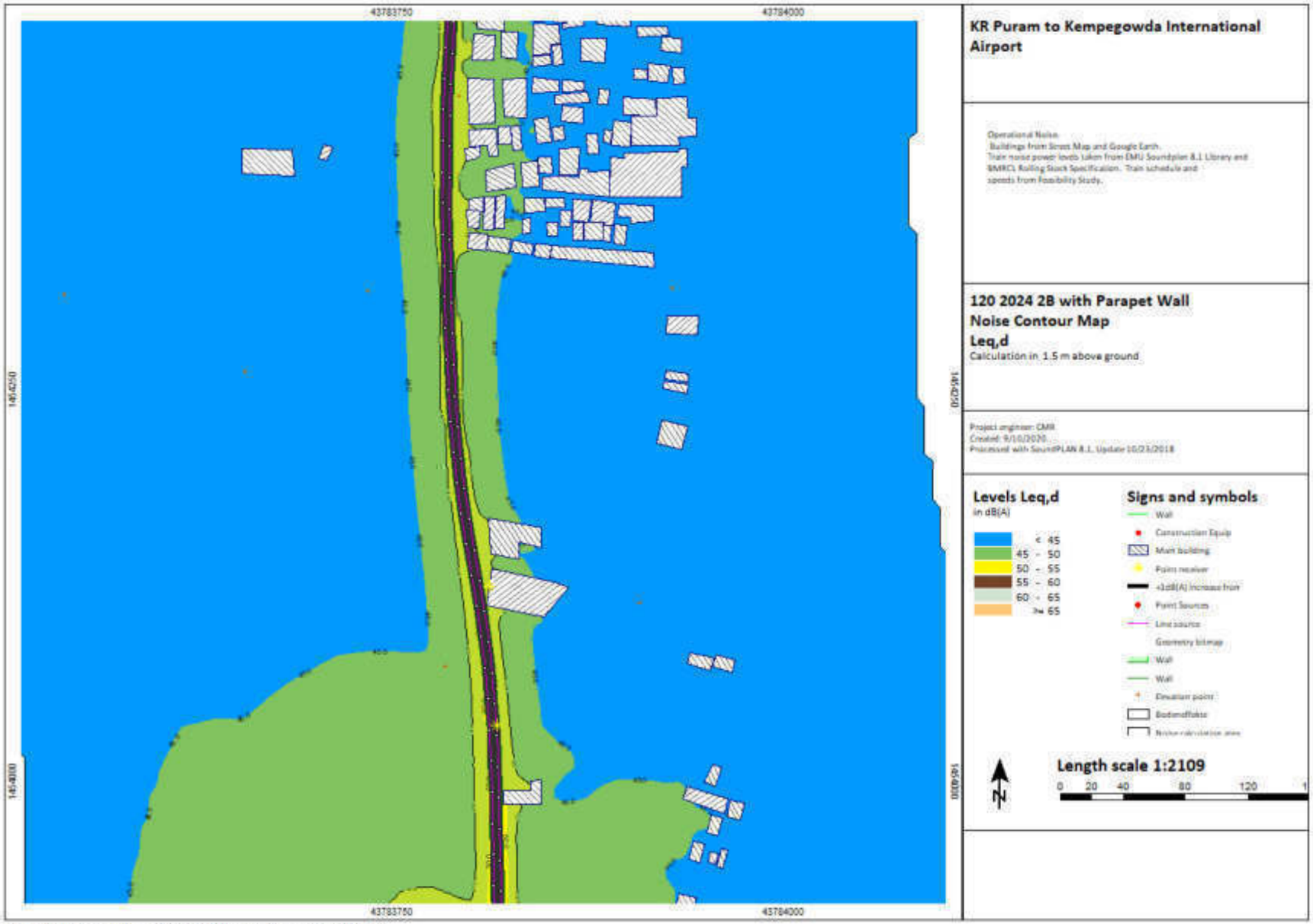
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1454000
KR Puram to Kempegowda International Airport
Operational Noise
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and BMRCL Rolling Stock Specification. Train schedule and speeds from Feasibility 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)
< 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
Bodenoffakte
Length scale 1:2109
0 20 40 80 120
N
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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 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)

	< 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 1:2109

0 20 40 80 120 1

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KR Puram to Kempegowda International Airport

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

120 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)

< 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
- Boundaryfence
- Noise calculation area

N

Length scale 1:2109

0 20 40 80 120

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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 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)

	< 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 1:2109

0 20 40 80 120 1

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KR Puram to Kempegowda International Airport

Operational Noise.
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120 2024 2B with Parapet Wall
Noise Contour Map
Leq,d
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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
Bodenrelief
Noise calculation area

N

Length scale 1:2109
0 20 40 80 120

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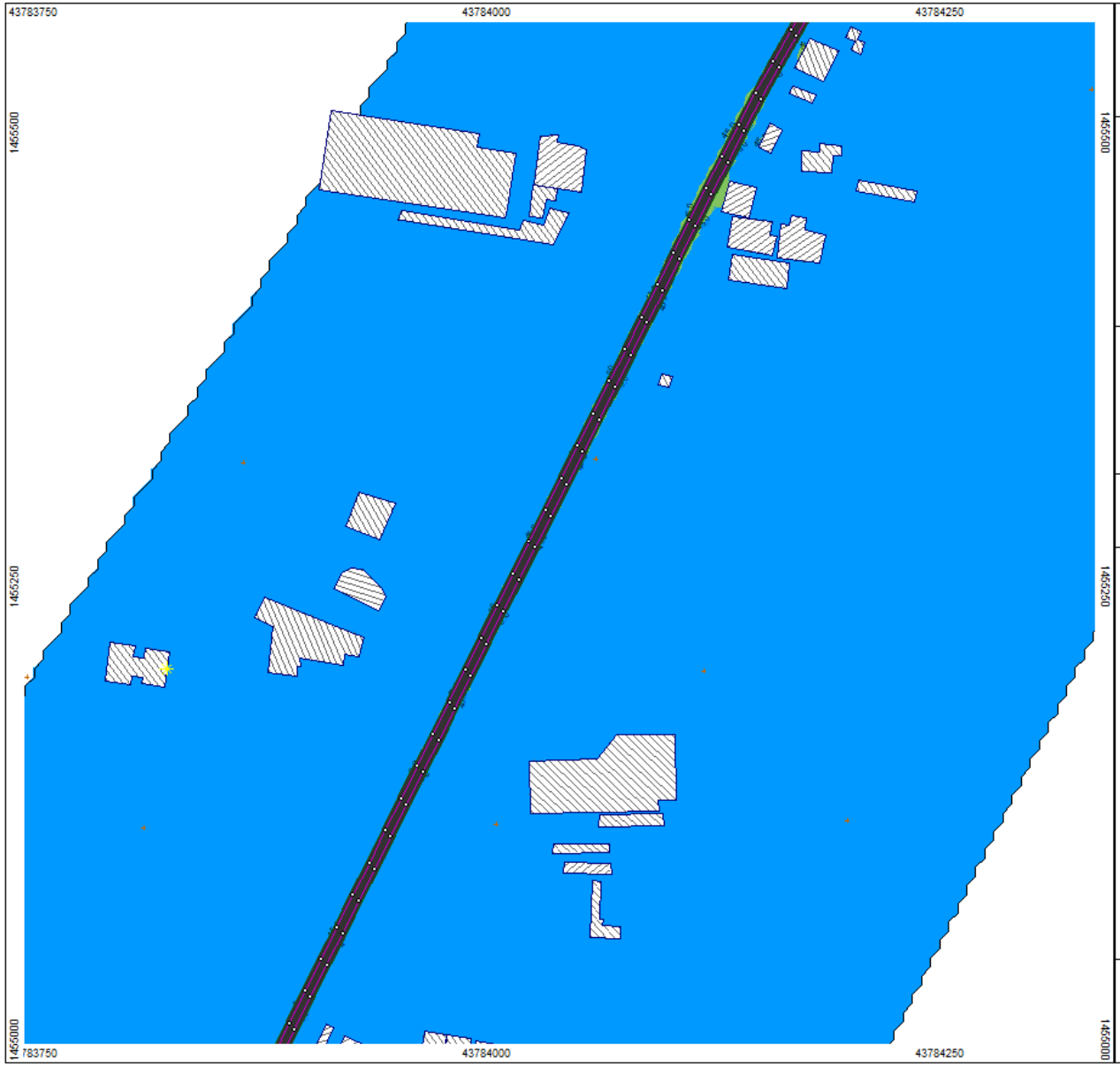

KR Puram to Kempegowda International Airport

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 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)

	< 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 1:2109

0 20 40 80 120 1

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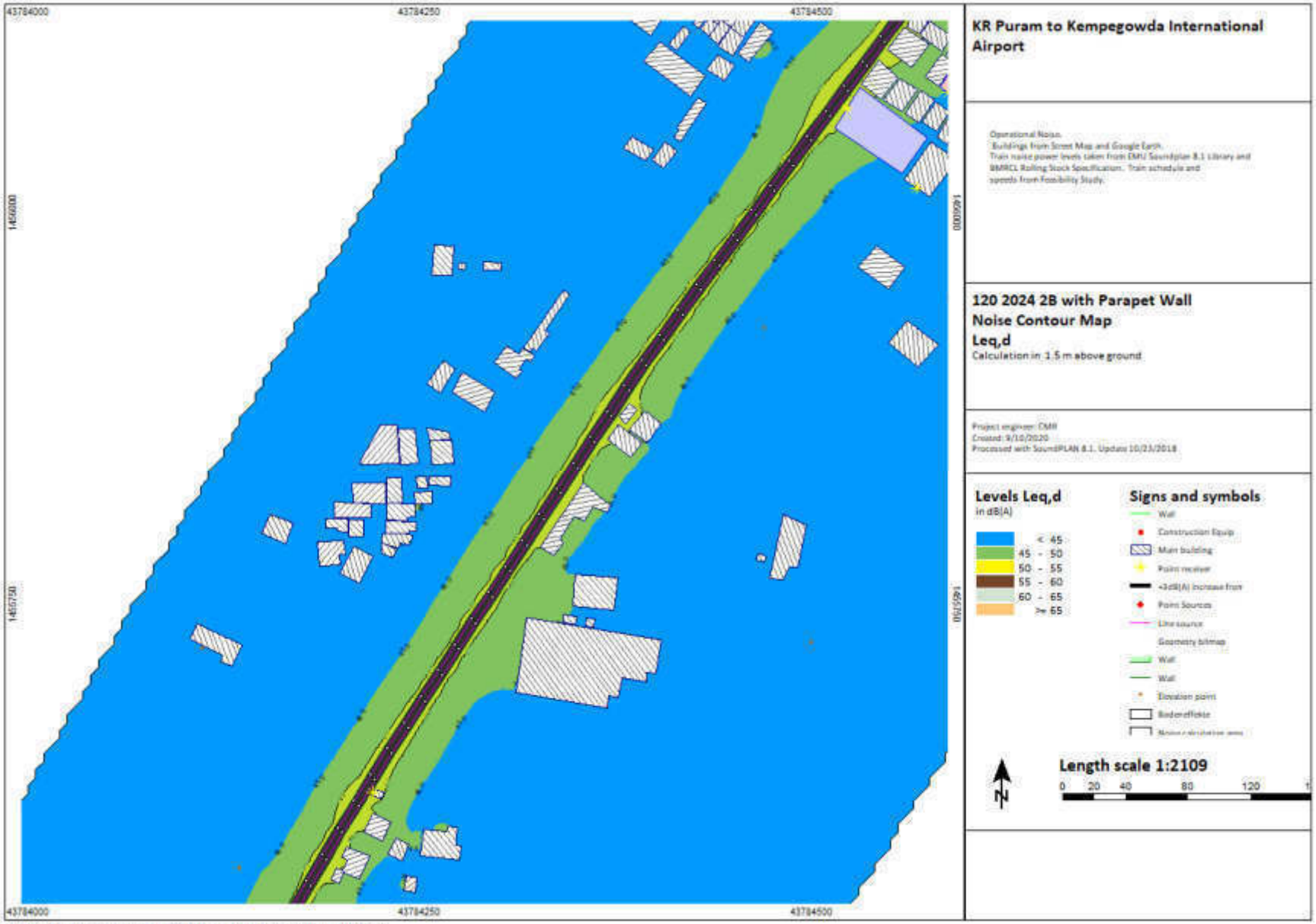

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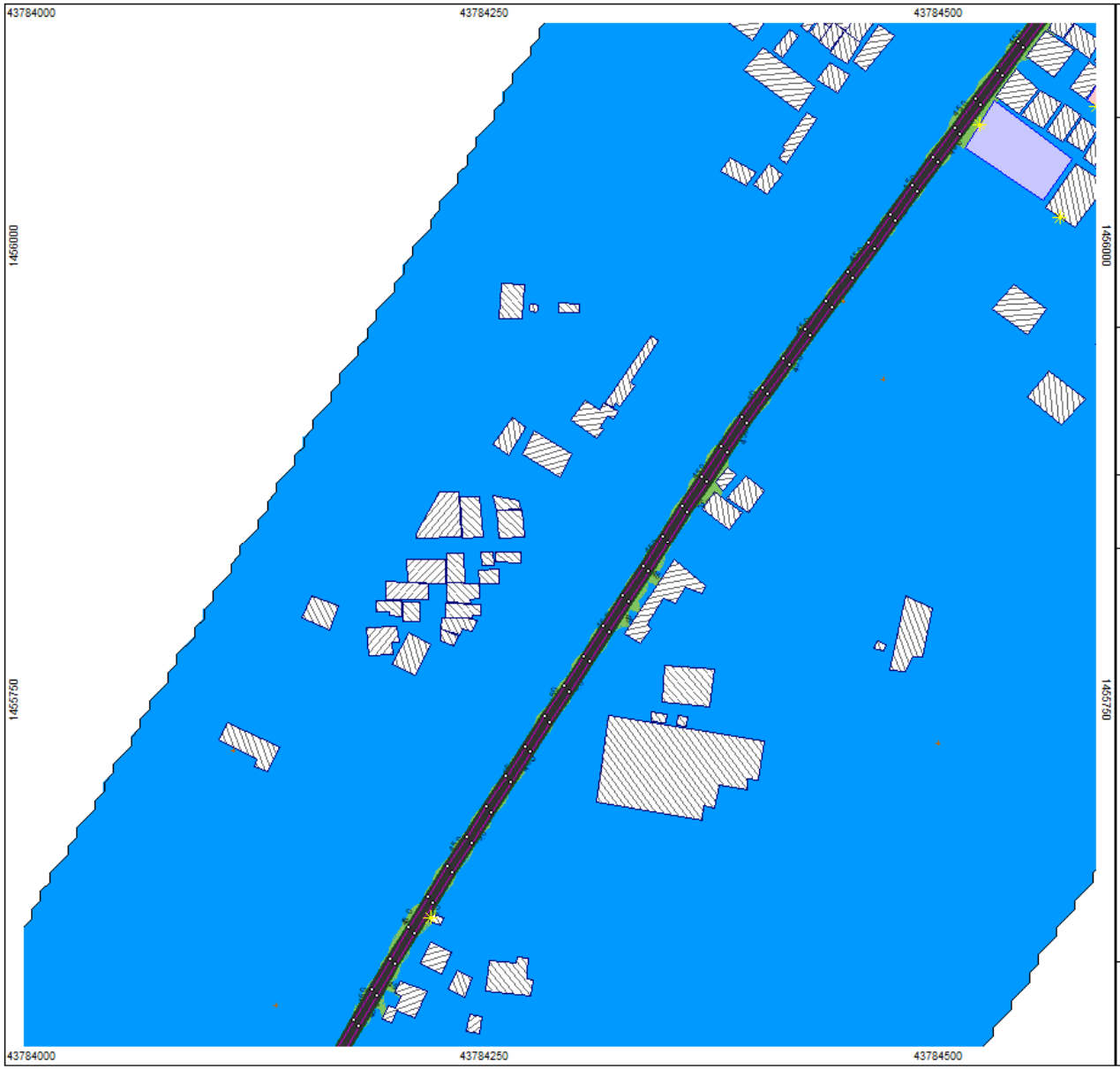

KR Puram to Kempegowda International Airport

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 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)

	< 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 1:2109

0 20 40 80 120 1

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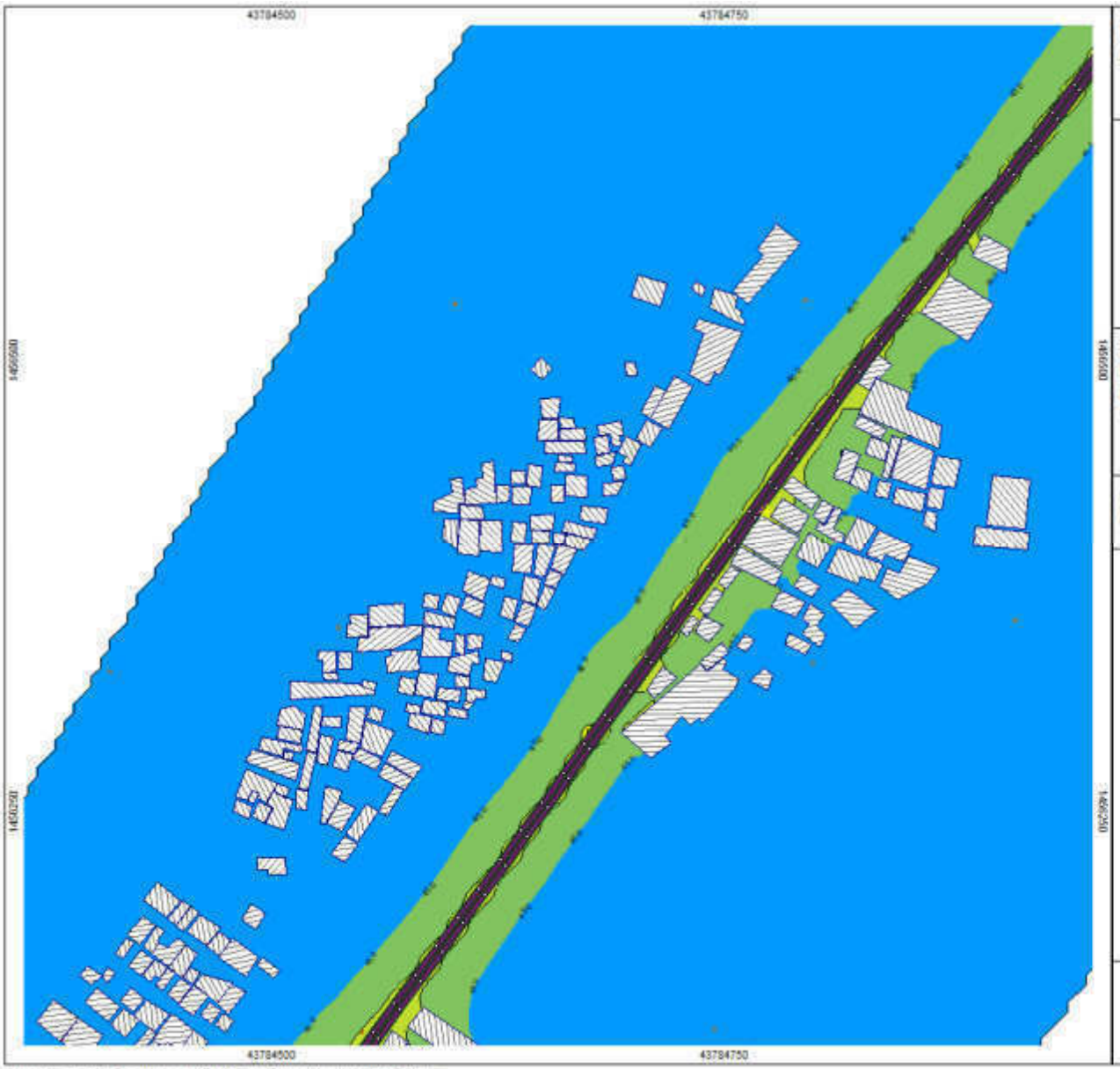

KR Puram to Kempegowda International Airport

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 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)

	< 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
- Buildingfloors

N

Length scale 1:2109
0 20 40 80 120

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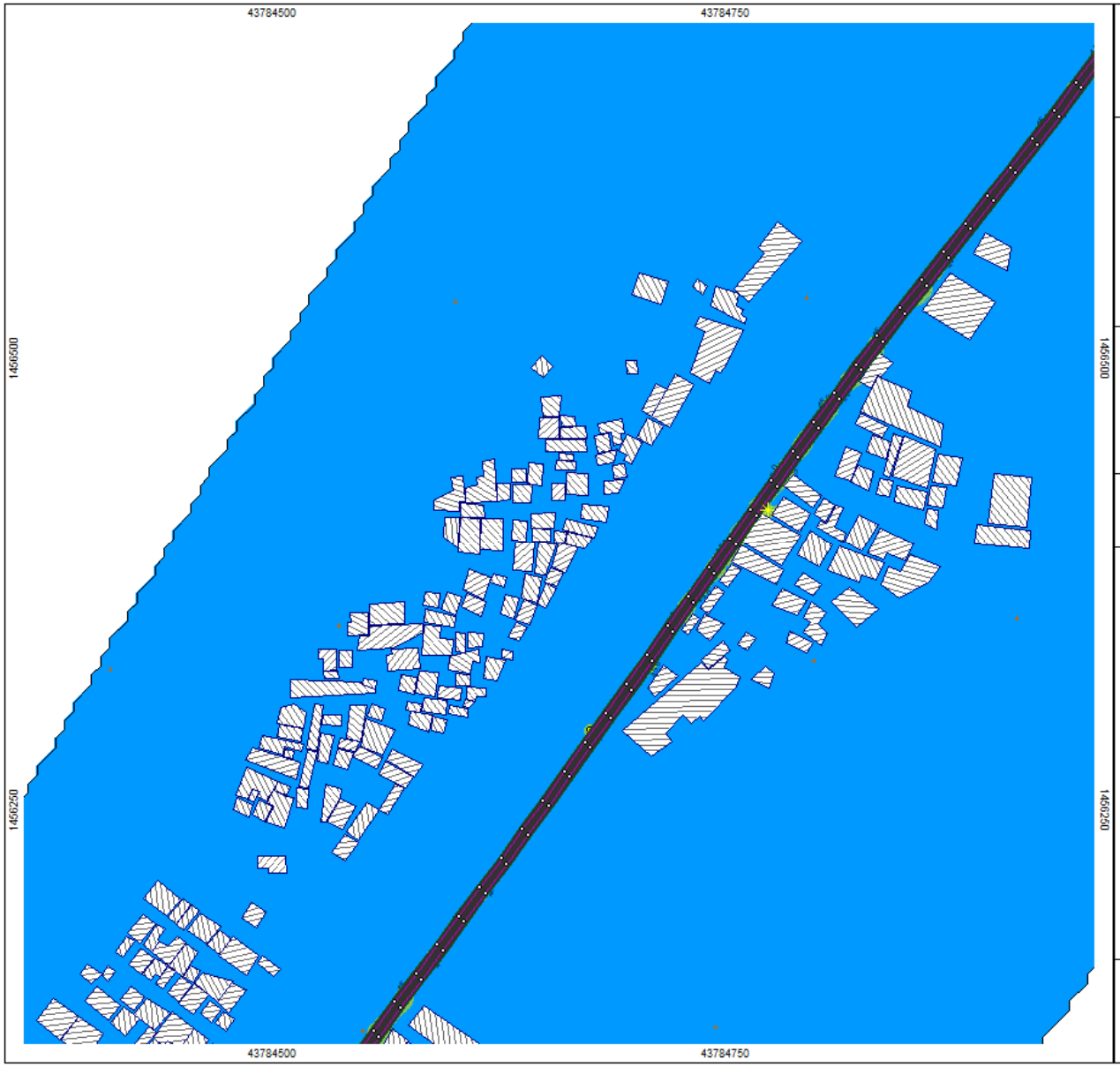

KR Puram to Kempegowda International Airport

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 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)

	< 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 1:2109

0 20 40 80 120 1

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KR Puram to Kempegowda International Airport

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

120 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)

	< 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

N

Length scale 1:2109

0 20 40 80 120

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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 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)

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

Signs and symbols

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

Length scale 1:2109
0 20 40 80 120 1

N

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KR Puram to Kempegowda International Airport

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

120 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)

	< 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 1:2109

0 20 40 80 120 1

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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 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)

	< 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 1:2109

0 20 40 80 120 1

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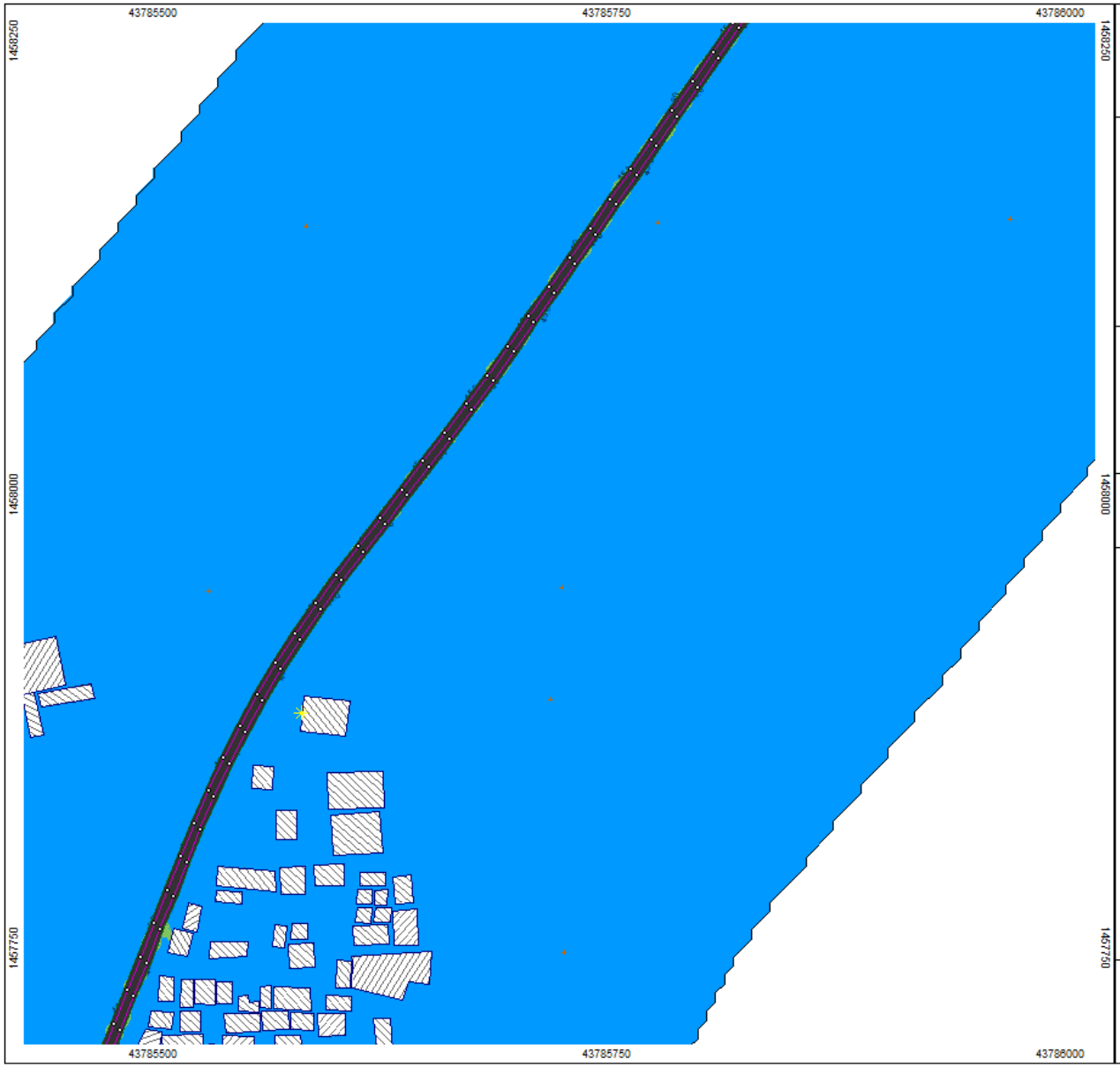

KR Puram to Kempegowda International Airport

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 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)

< 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 1:2109

0 20 40 80 120 1

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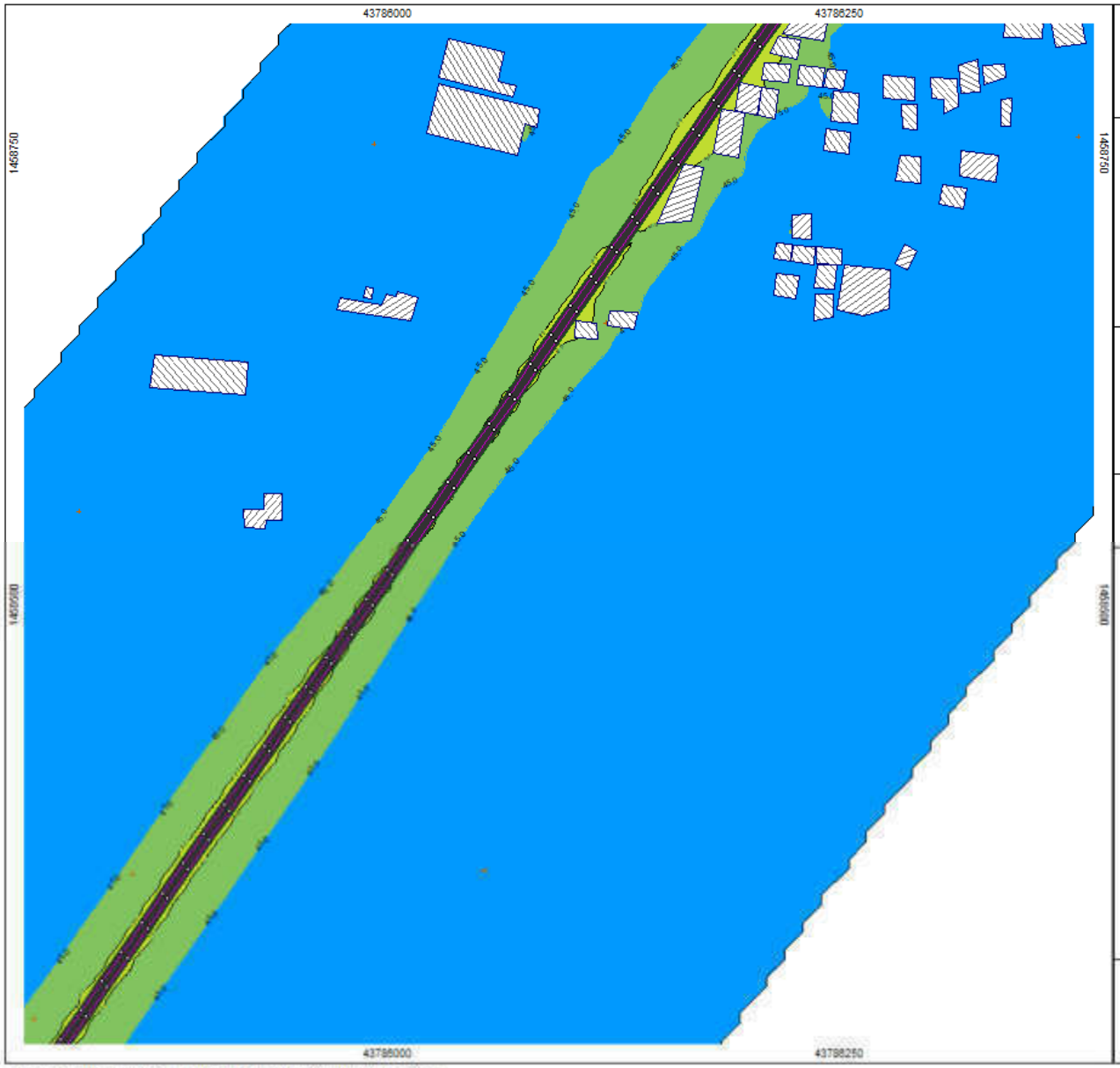

KR Puram to Kempegowda International Airport

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 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)

< 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
Bottom of hole

Length scale 1:2109
0 20 40 80 120

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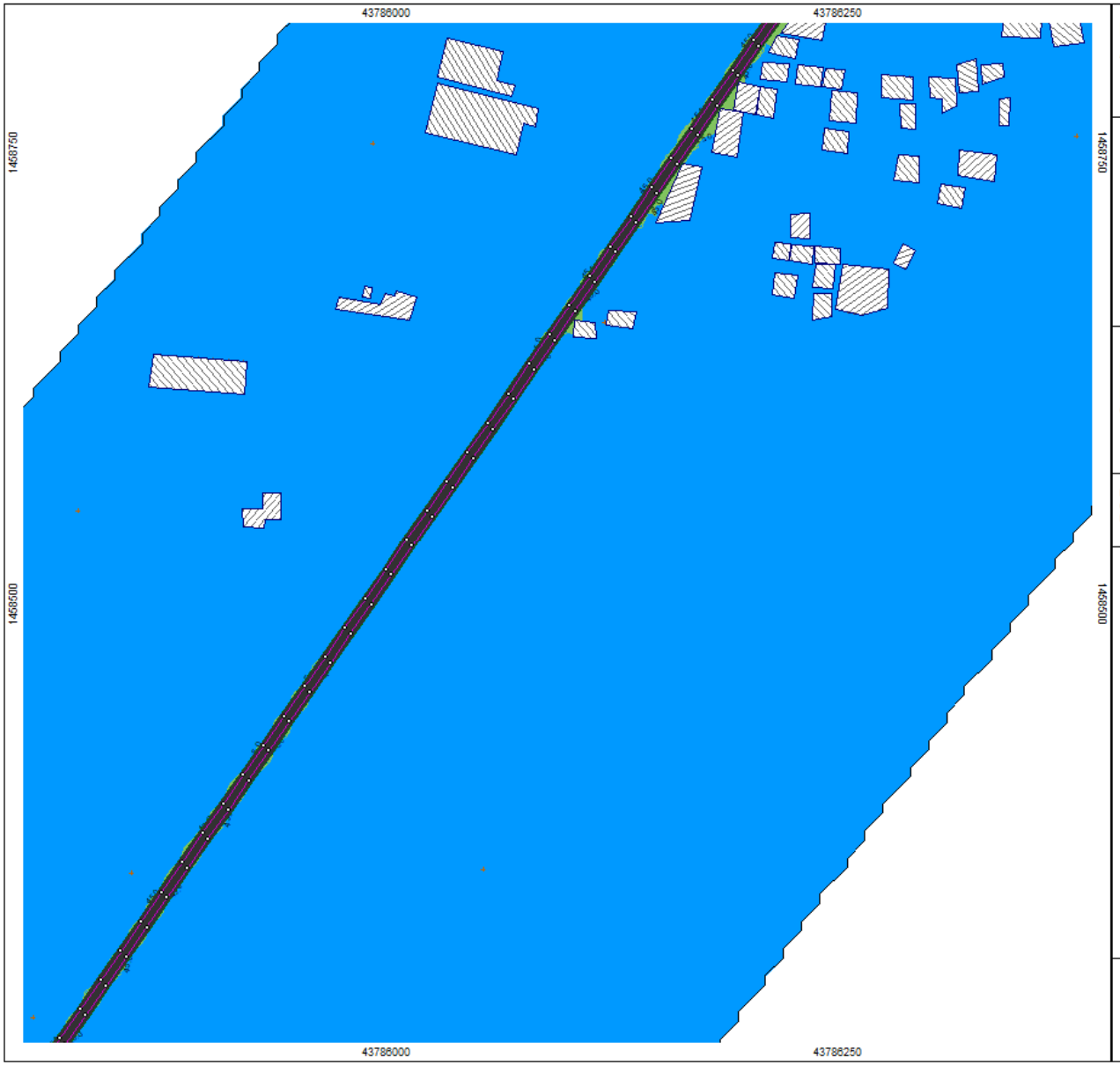

KR Puram to Kempegowda International Airport

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 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)

	< 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 1:2109

0 20 40 80 120

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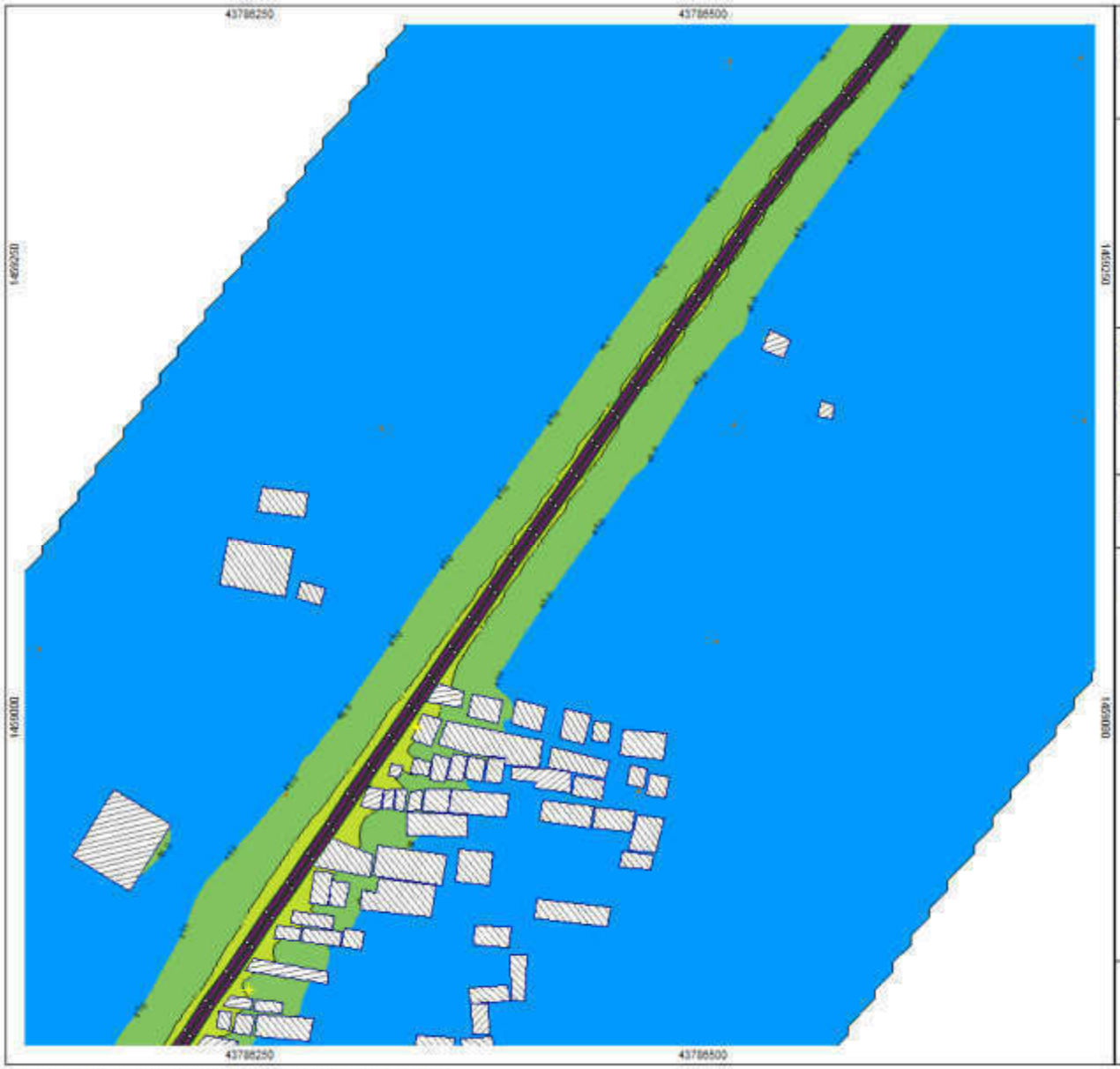

KR Puram to Kempegowda International Airport

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 Possibility 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)

	< 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
- Bodenoffekte

N

Length scale 1:2109
0 20 40 80 120

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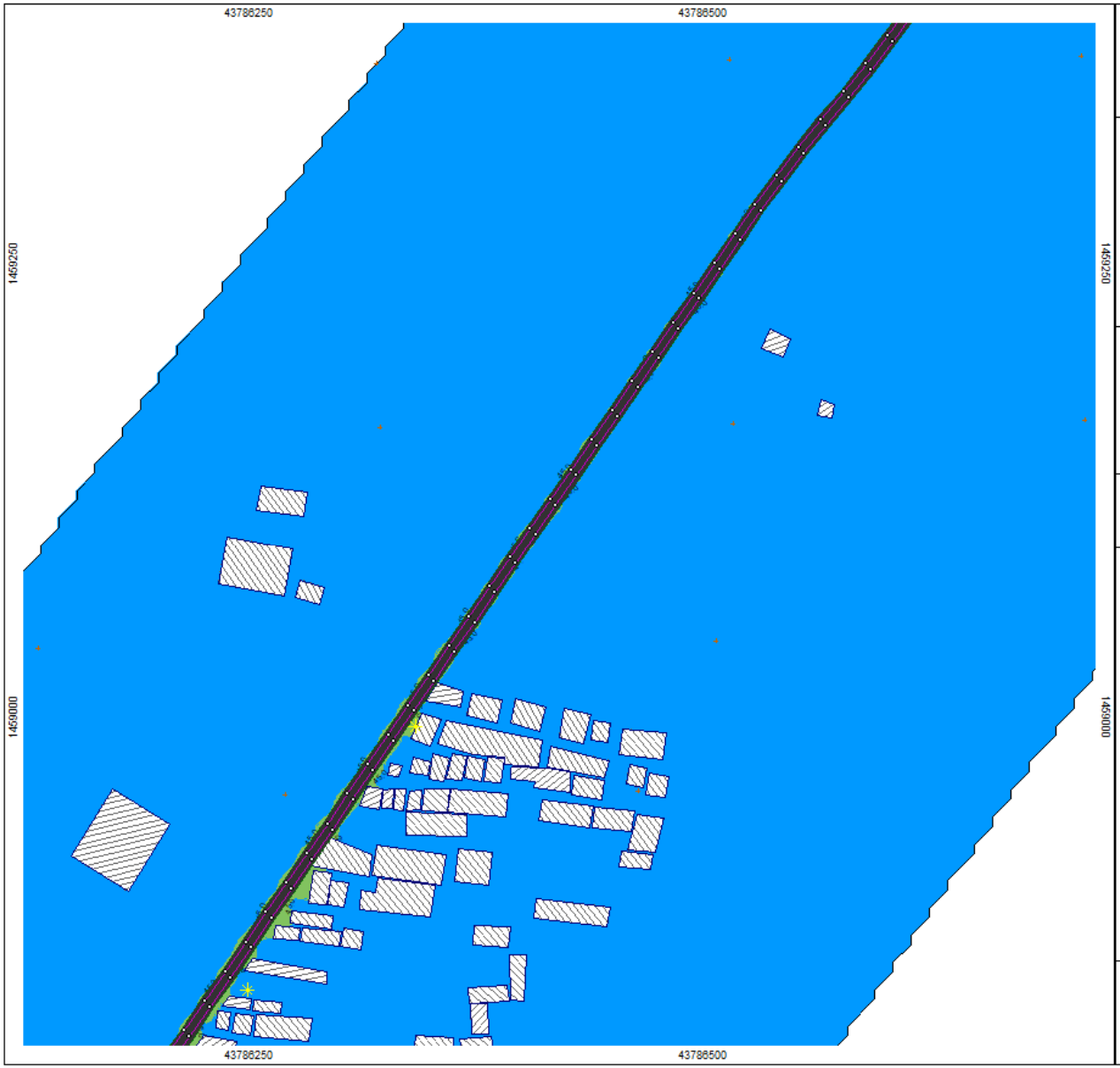

KR Puram to Kempegowda International Airport

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 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)

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

Signs and symbols

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

Length scale 1:2109
0 20 40 80 120 1

N

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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 2024 2B 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

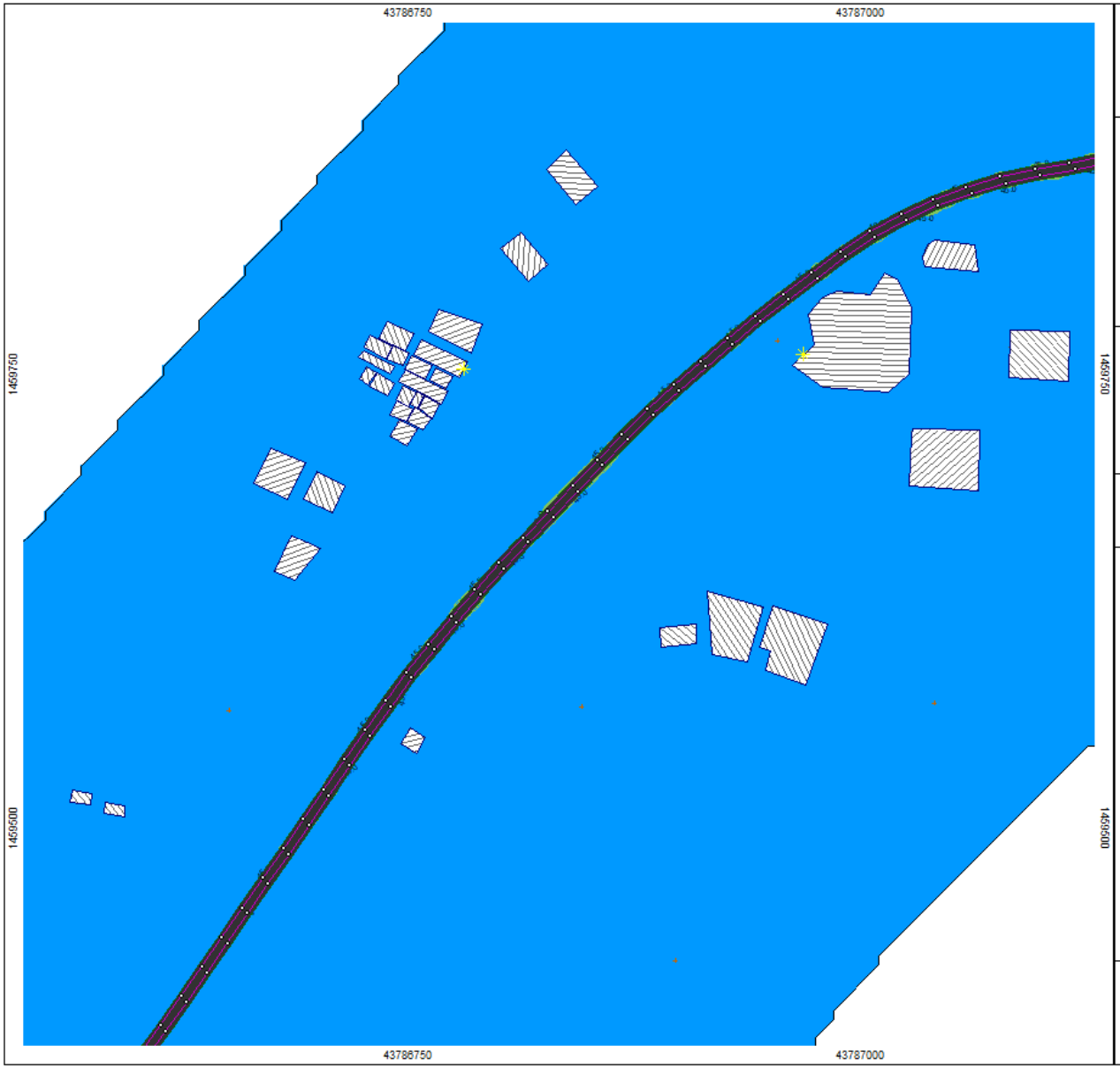
Levels Leq,d
in dB(A)

< 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
Deviation point
Bodeneffekte
Noise calculation area

Length scale 1:2109



KR Puram to Kempegowda International Airport

Operational Noise.
Buildings from Street Map and Google Earth.
Train noise power levels taken from EMU Soundplan 8.1 Library and 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)

	< 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 1:2109

0 20 40 80 120 1

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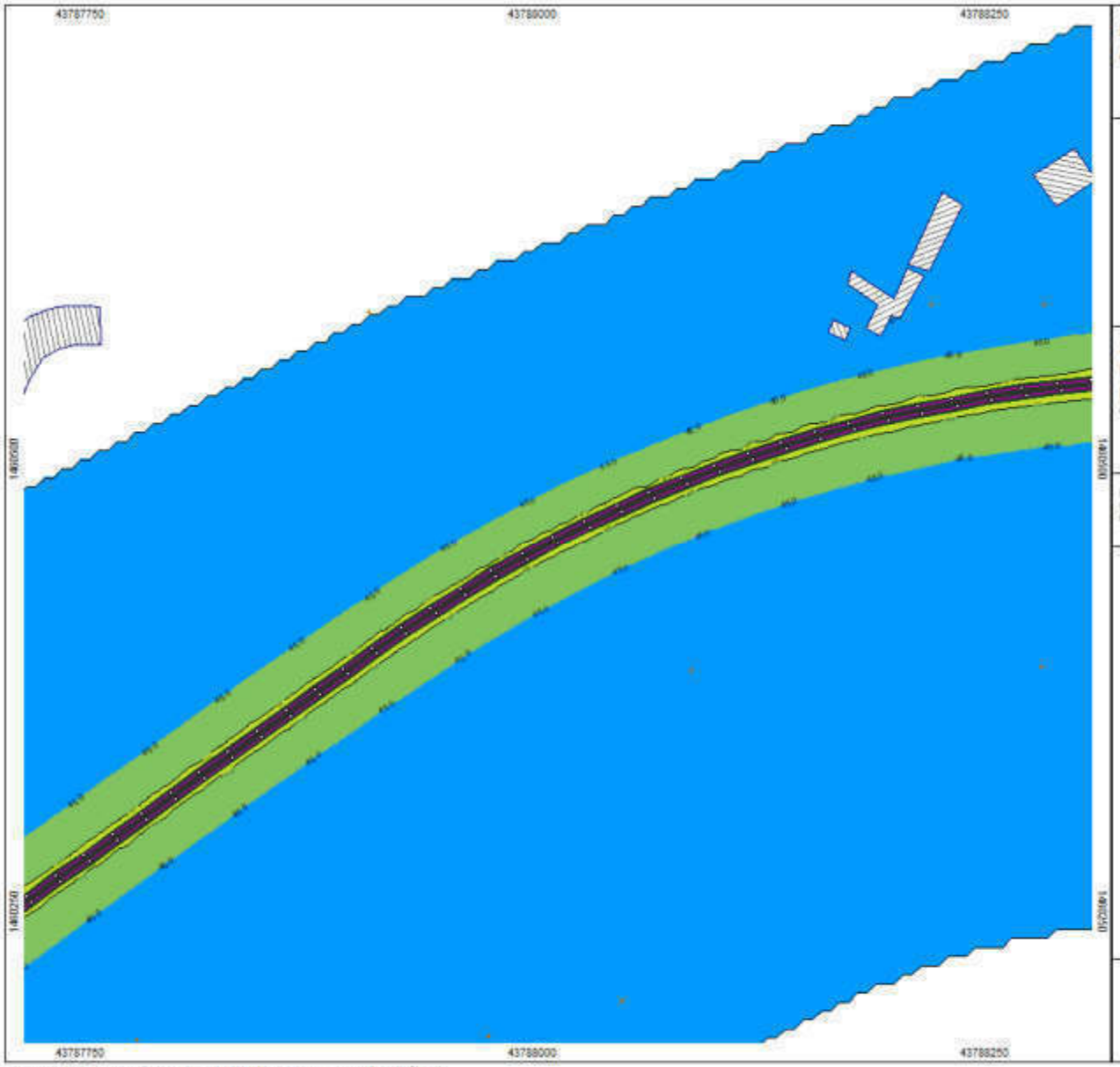

KR Puram to Kempegowda International Airport

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

120 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)

	< 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
- Buildingeffekte

N

Length scale 1:2109

0 20 40 80 120

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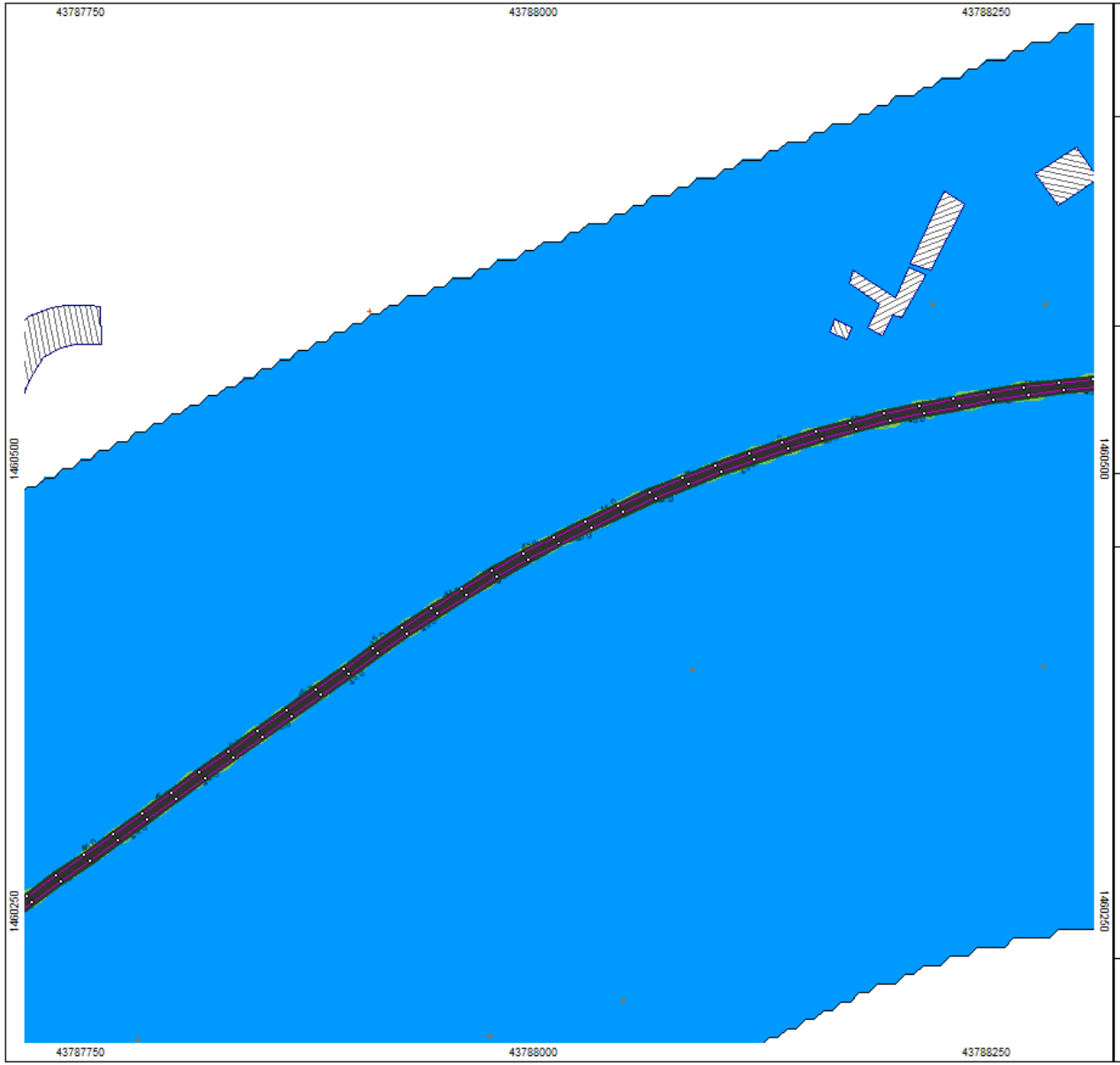

KR Puram to Kempegowda International Airport

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 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)

< 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 1:2109

0 20 40 80 120 1

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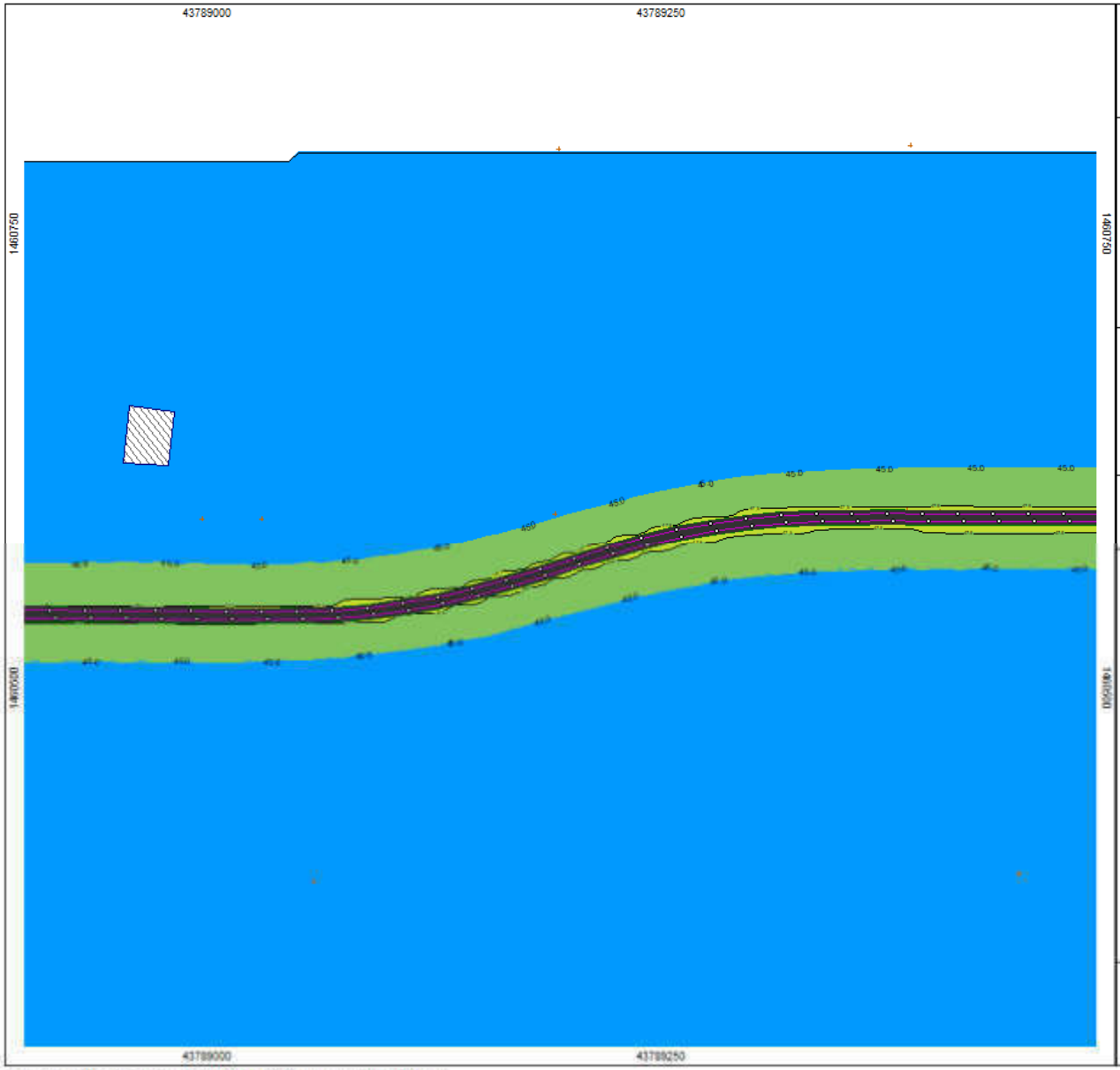

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KR Puram to Kempegowda International Airport

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 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

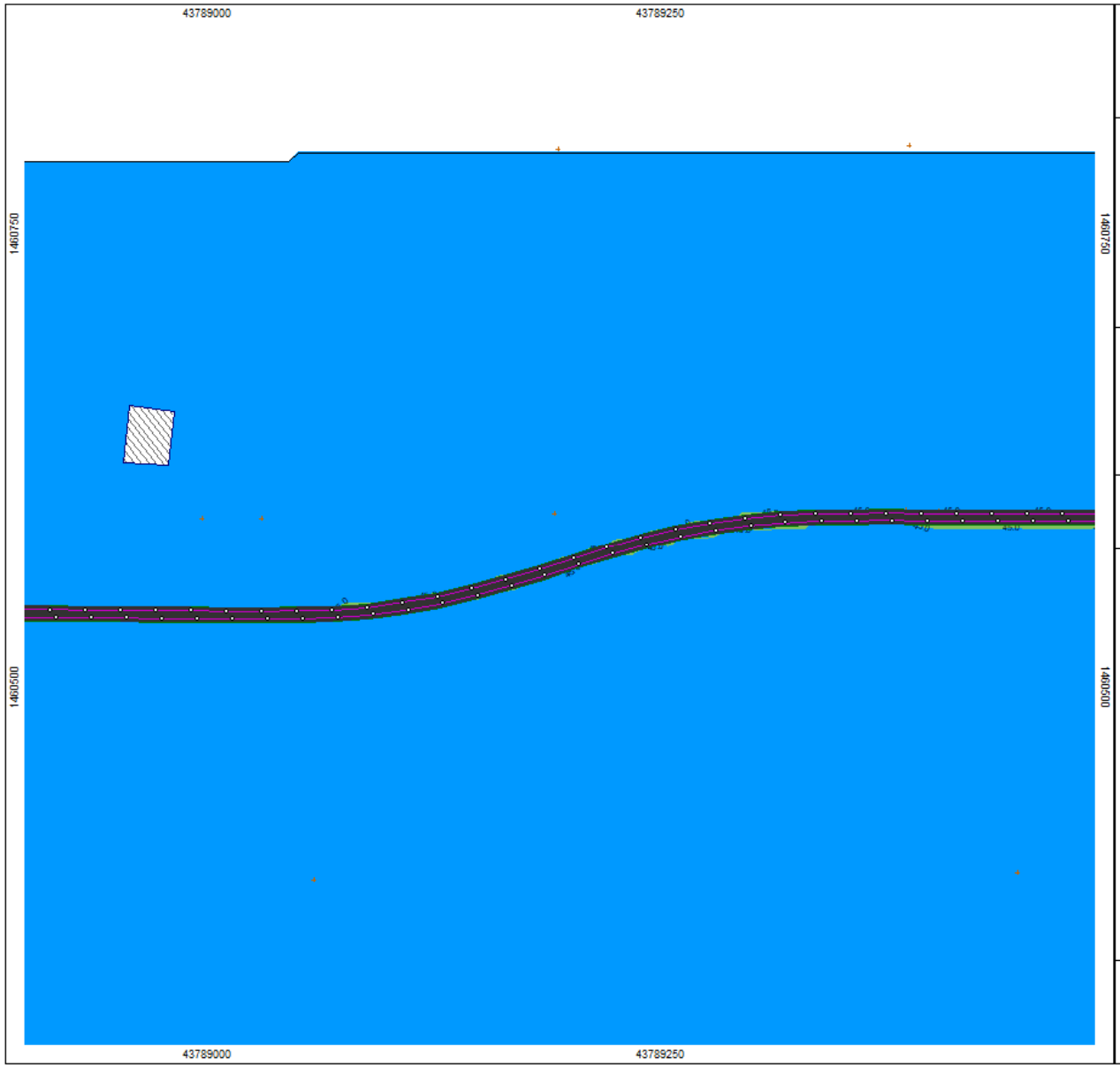
Levels Leq,d
in dB(A)

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

Signs and symbols
Wall
Construction Equip
Main building
Point receiver
+3dB(A) increase from
Point Source
Line source
Geometry bitmap
Wall
Wall
Elevation point
Bodeneffekt

N

Length scale 1:2109
0 20 40 80 120



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)

	< 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 1:2109

0 20 40 80 120 1

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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 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)

	< 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 1:2109

0 20 40 80 120 1

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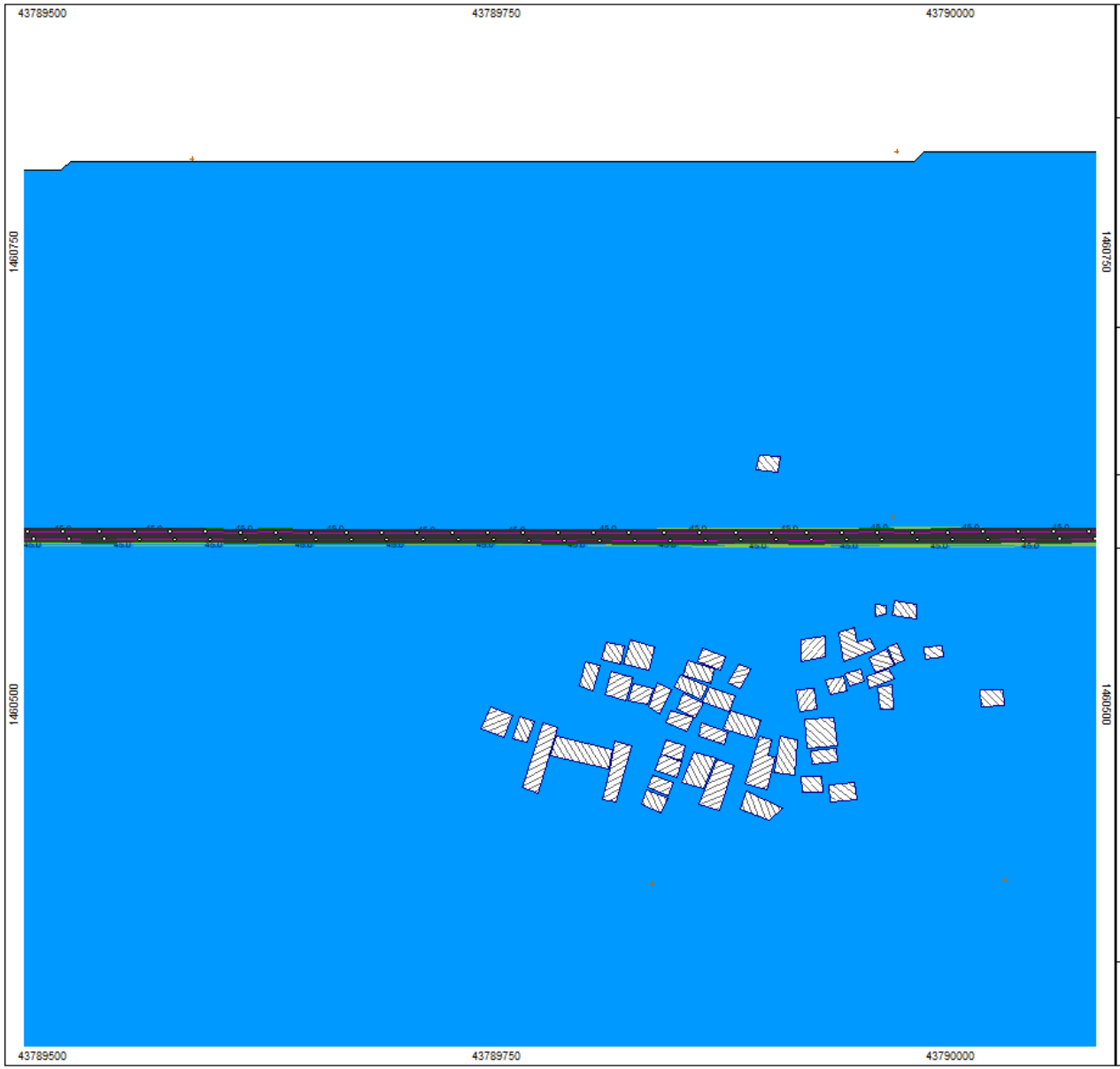

KR Puram to Kempegowda International Airport

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 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)

< 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 1:2109
0 20 40 80 120 1

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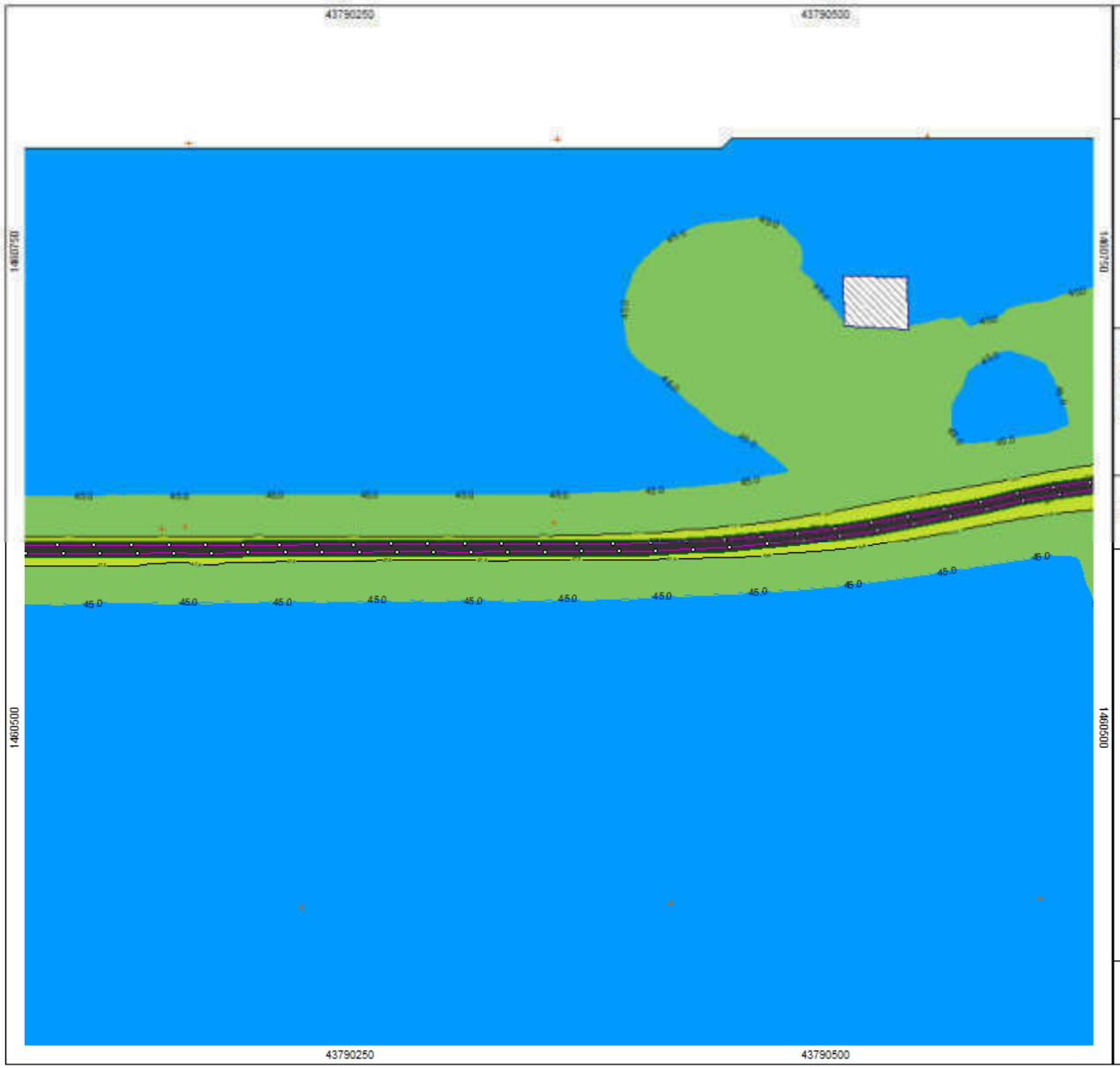

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Noise Contour Map
Leq,d
Calculation in 1.5 m above ground

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

Levels Leq,d
in dB(A)

	< 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 1:2006

0 15 30 60 90 120 m

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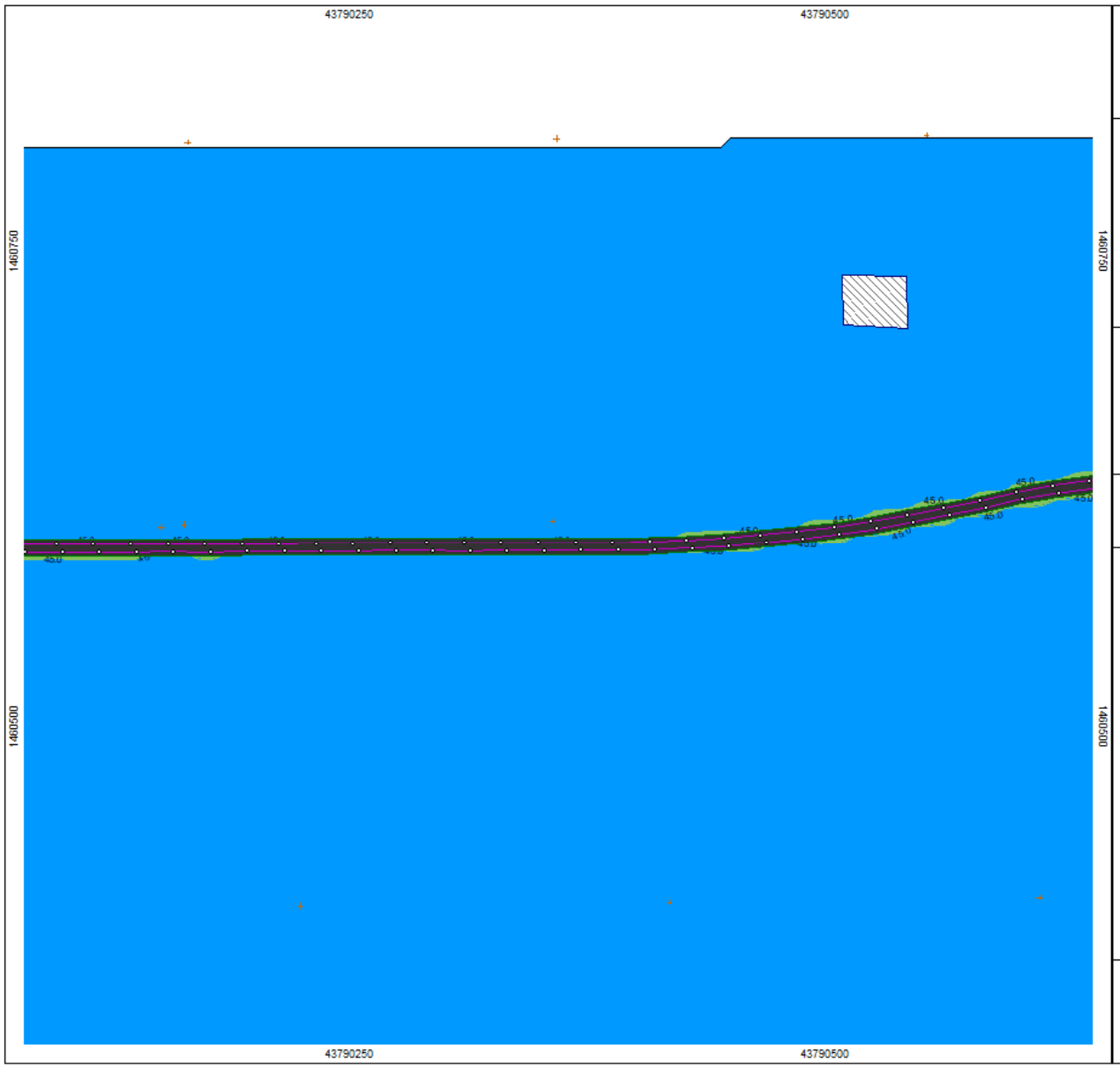

KR Puram to Kempegowda International Airport

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 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)

	< 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 1:2006

0 15 30 60 90 120 m

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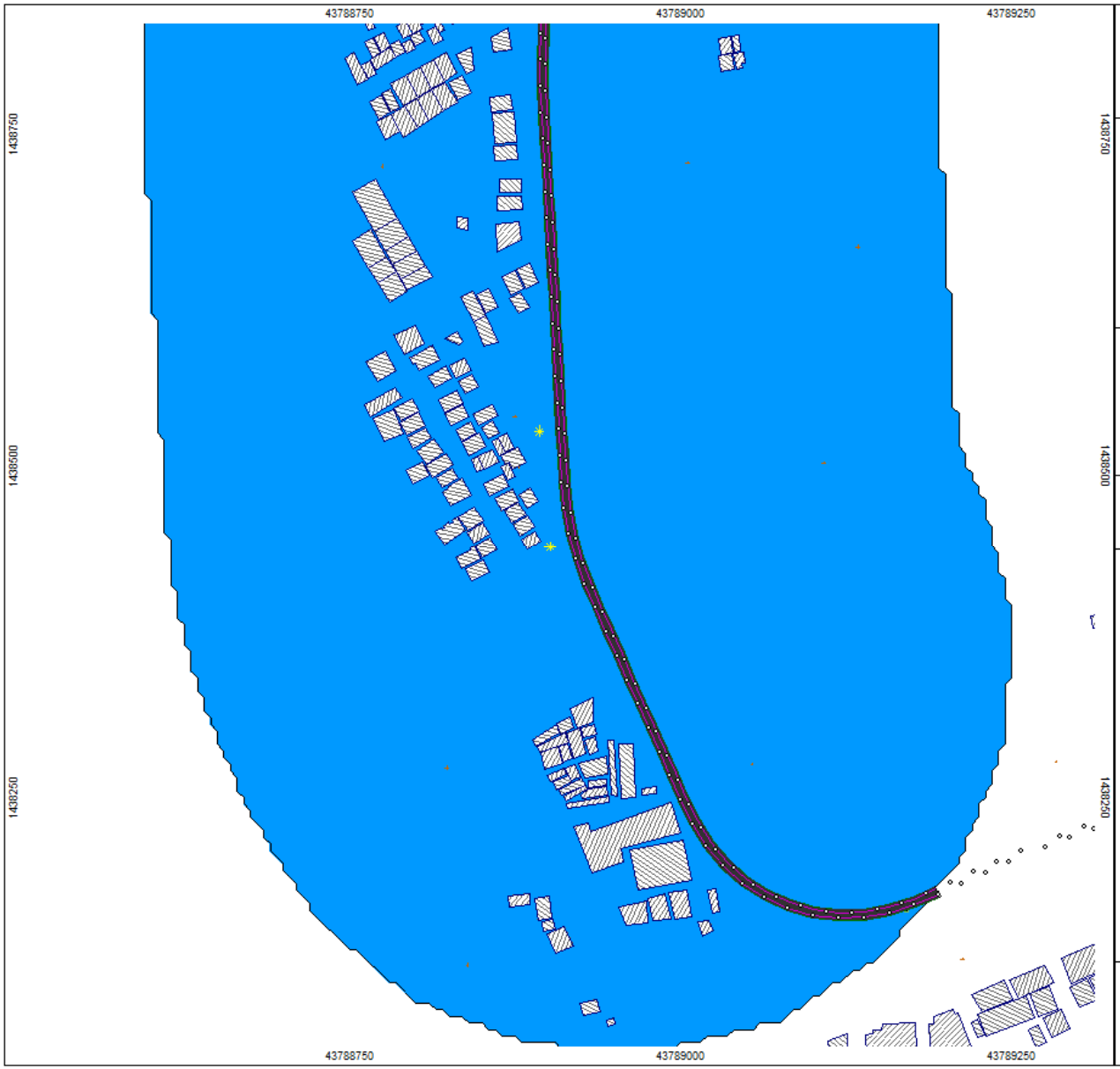

KR Puram to Kempegowda International Airport

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 2031 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)

	< 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 1:2887

0 25 50 100 150 200 m

N

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KR Puram to Kempegowda International Airport

Operational Noise.
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120 2031 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)

	< 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 1:2887

0 25 50 100 150 200 m

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2031

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

N

Length scale 1:2887

0 25 50 100 150 200 m

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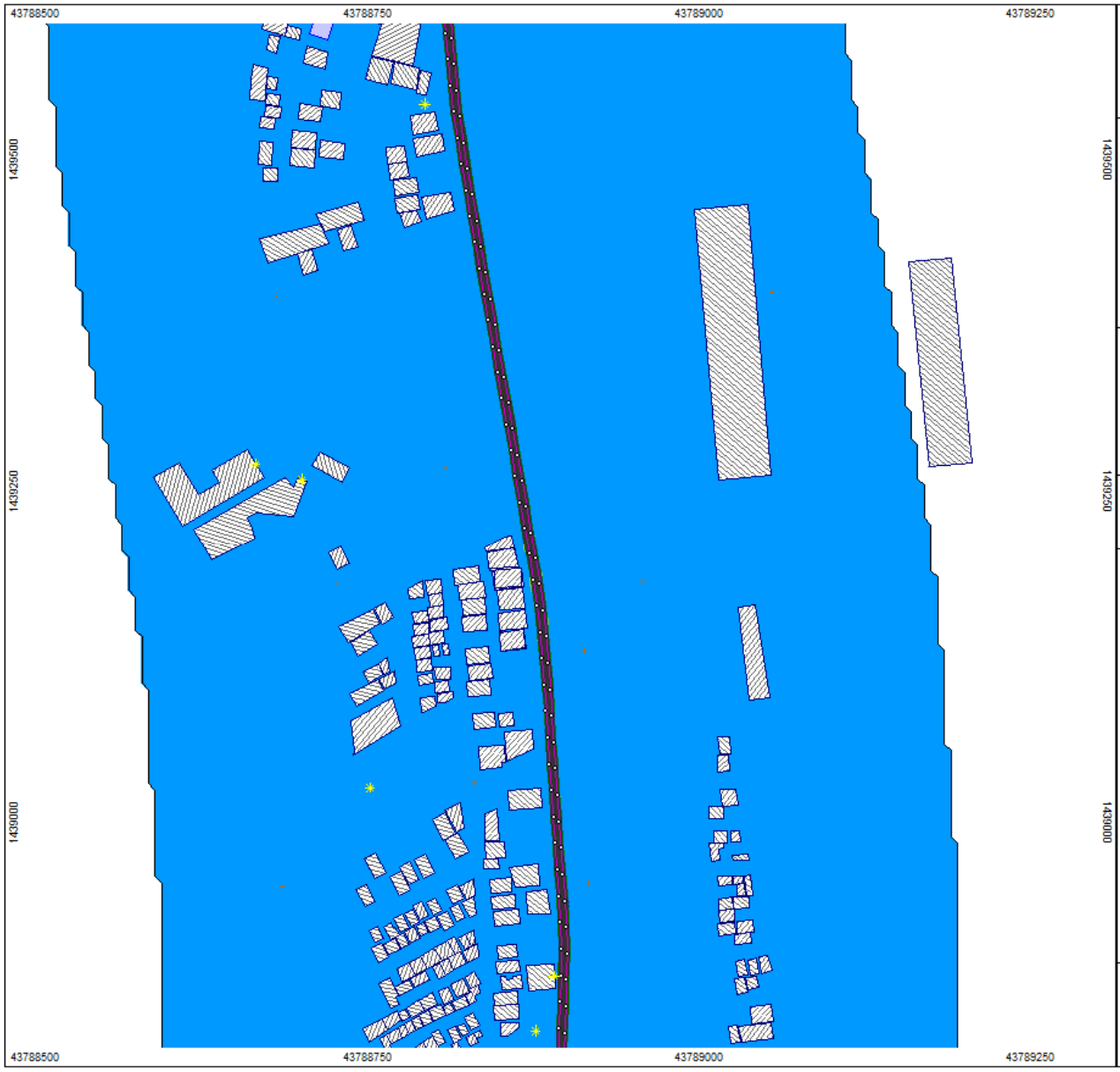

KR Puram to Kempegowda International Airport

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 2031 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)

	< 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 1:2887

0 25 50 100 150 200 m

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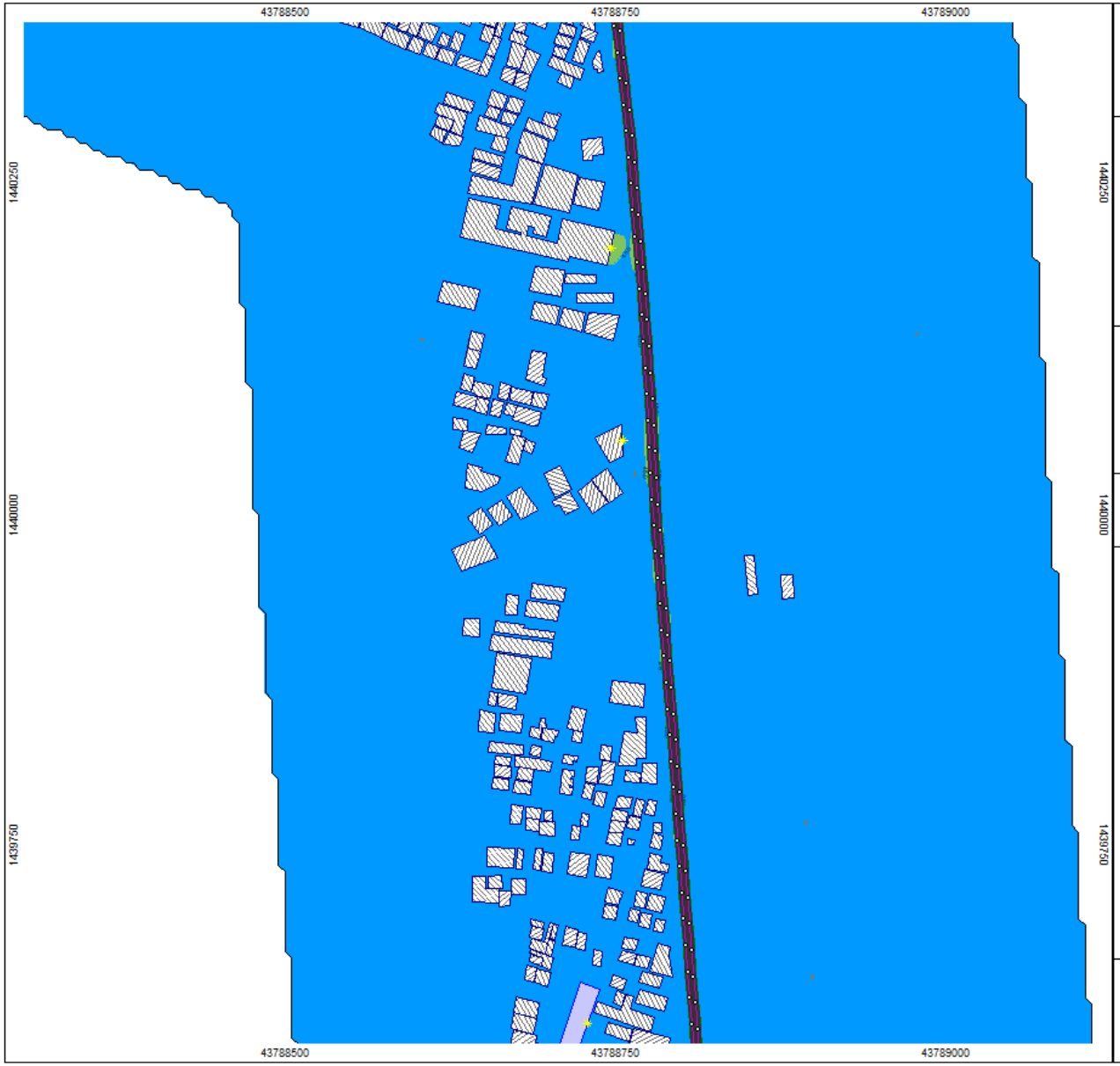

KR Puram to Kempegowda International Airport

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.

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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 1:2887

0 25 50 100 150 200 m

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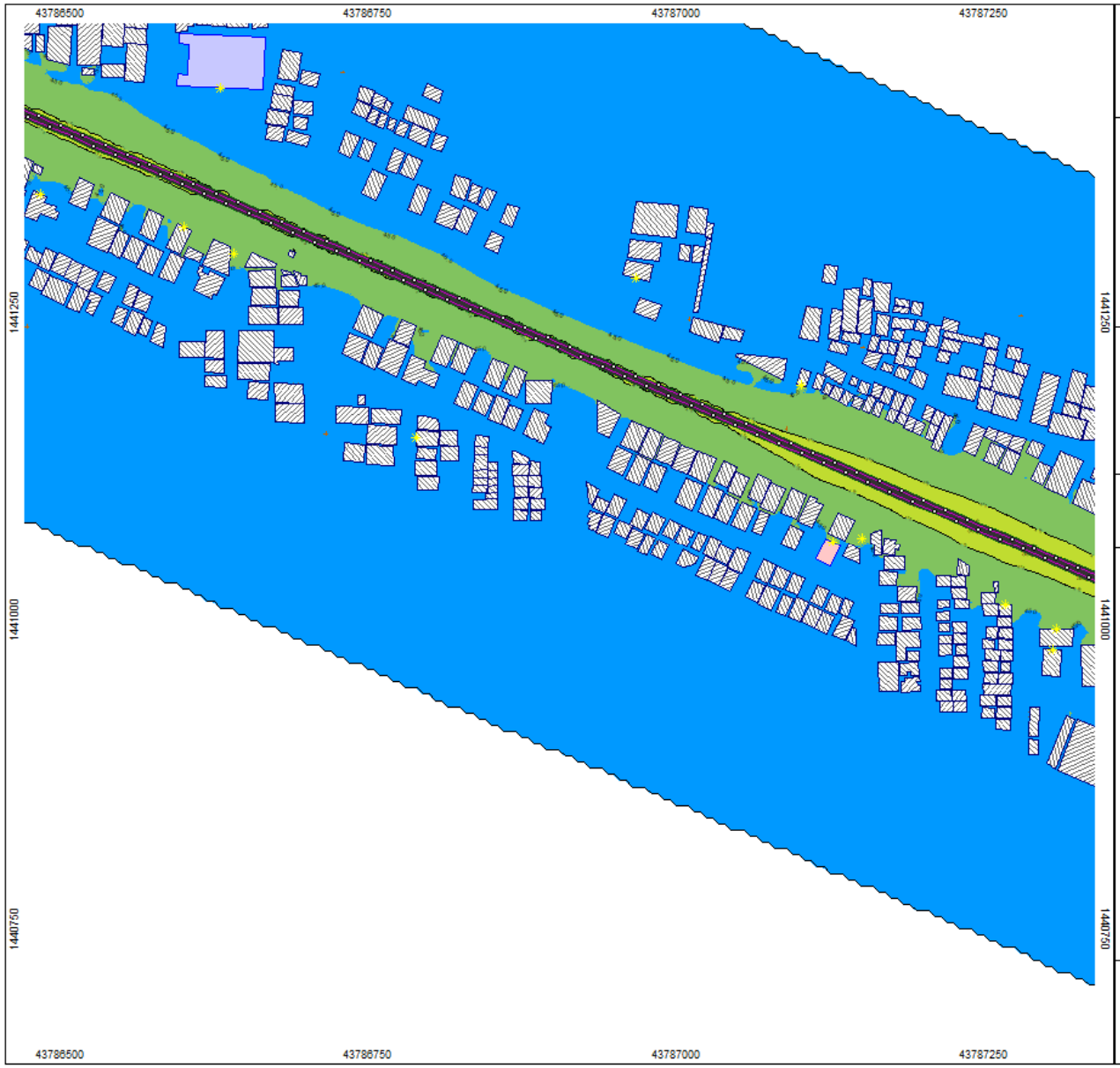

KR Puram to Kempegowda International Airport

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Calculation in 1.5 m above ground

Project engineer: CMR
Created: 9/10/2020
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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

N

Length scale 1:3101

0 25 50 100 150 200 m

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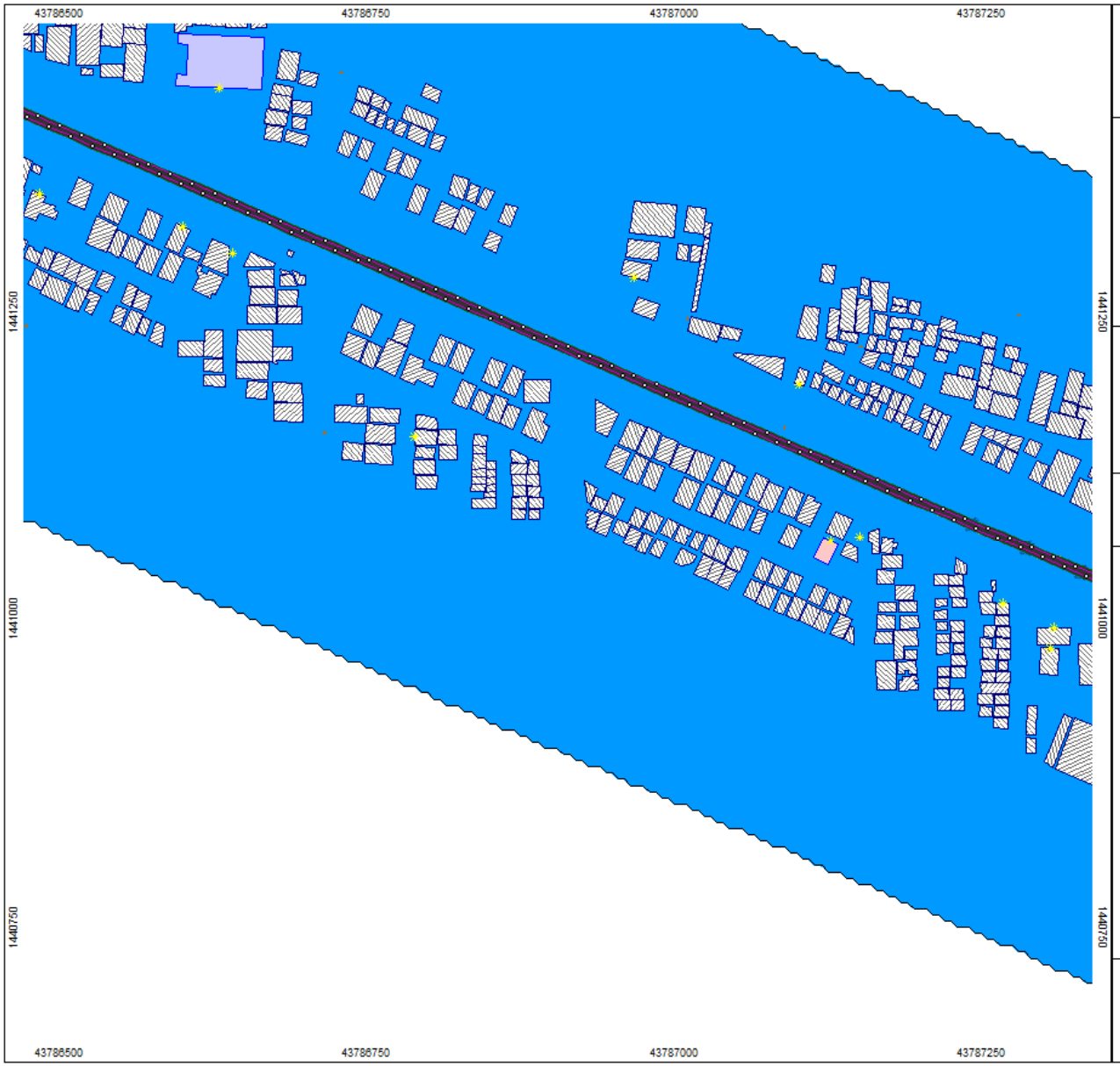

KR Puram to Kempegowda International Airport

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Leq,n
Calculation in 1.5 m above ground

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Created: 9/10/2020
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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 1:3101

0 25 50 100 150 200 m

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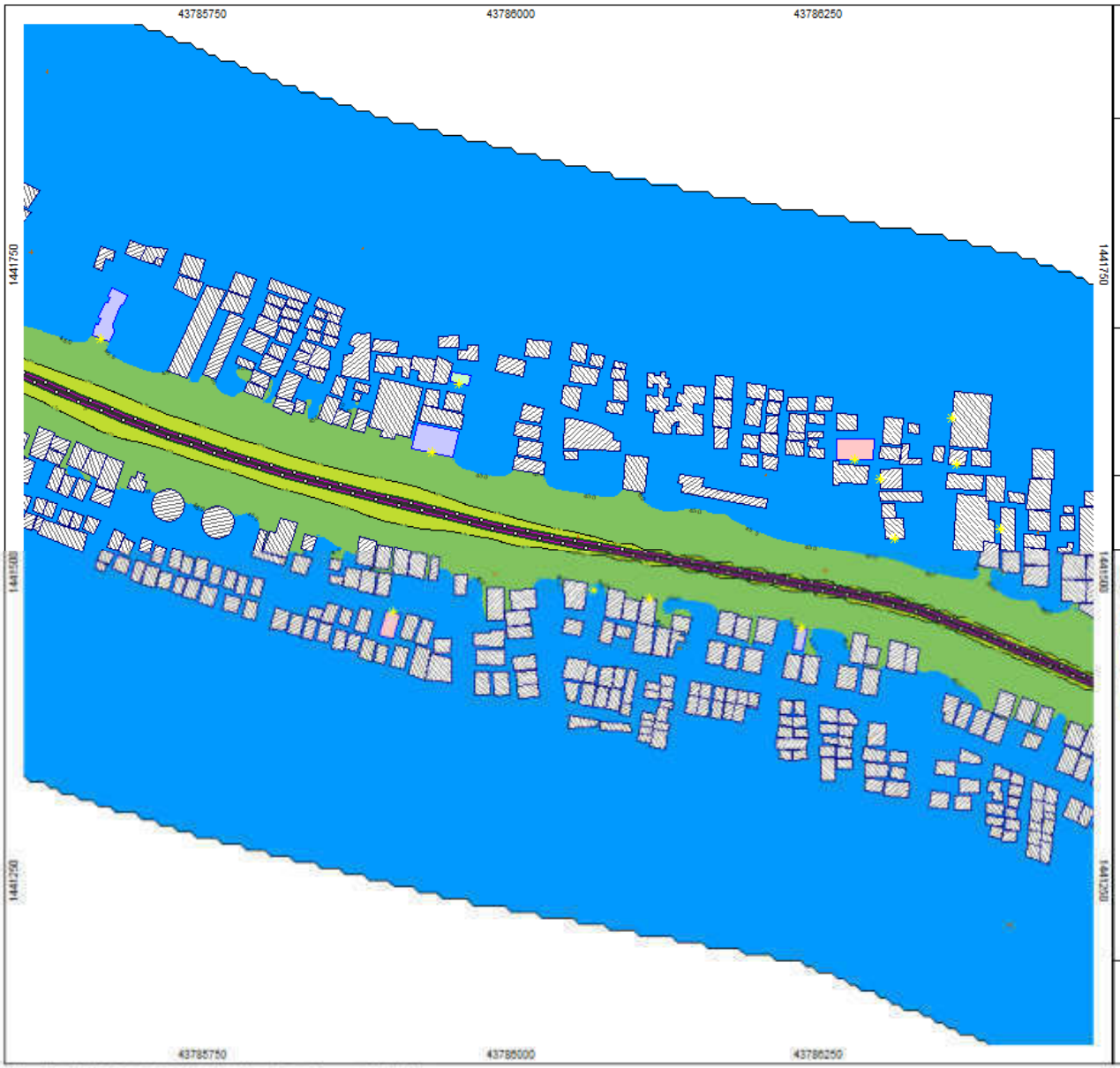

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KR Puram to Kempegowda International Airport

Operational Noise.
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Project engineer: CMR
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

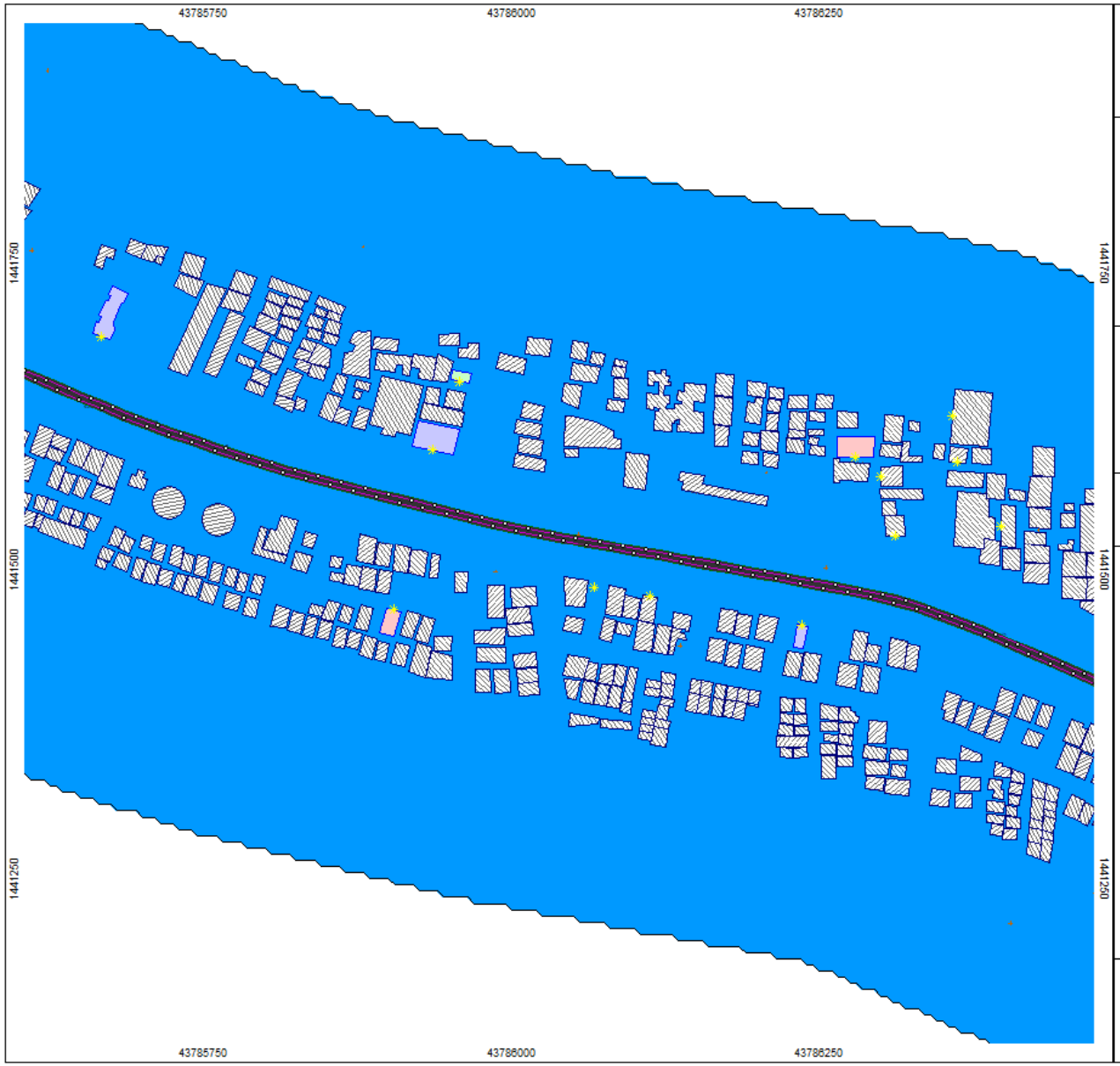
Signs and symbols

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

N

Length scale 1:3101

0 25 50 100 150 200 m



KR Puram to Kempegowda International Airport

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

N

Length scale 1:3101

0 25 50 100 150 200 m

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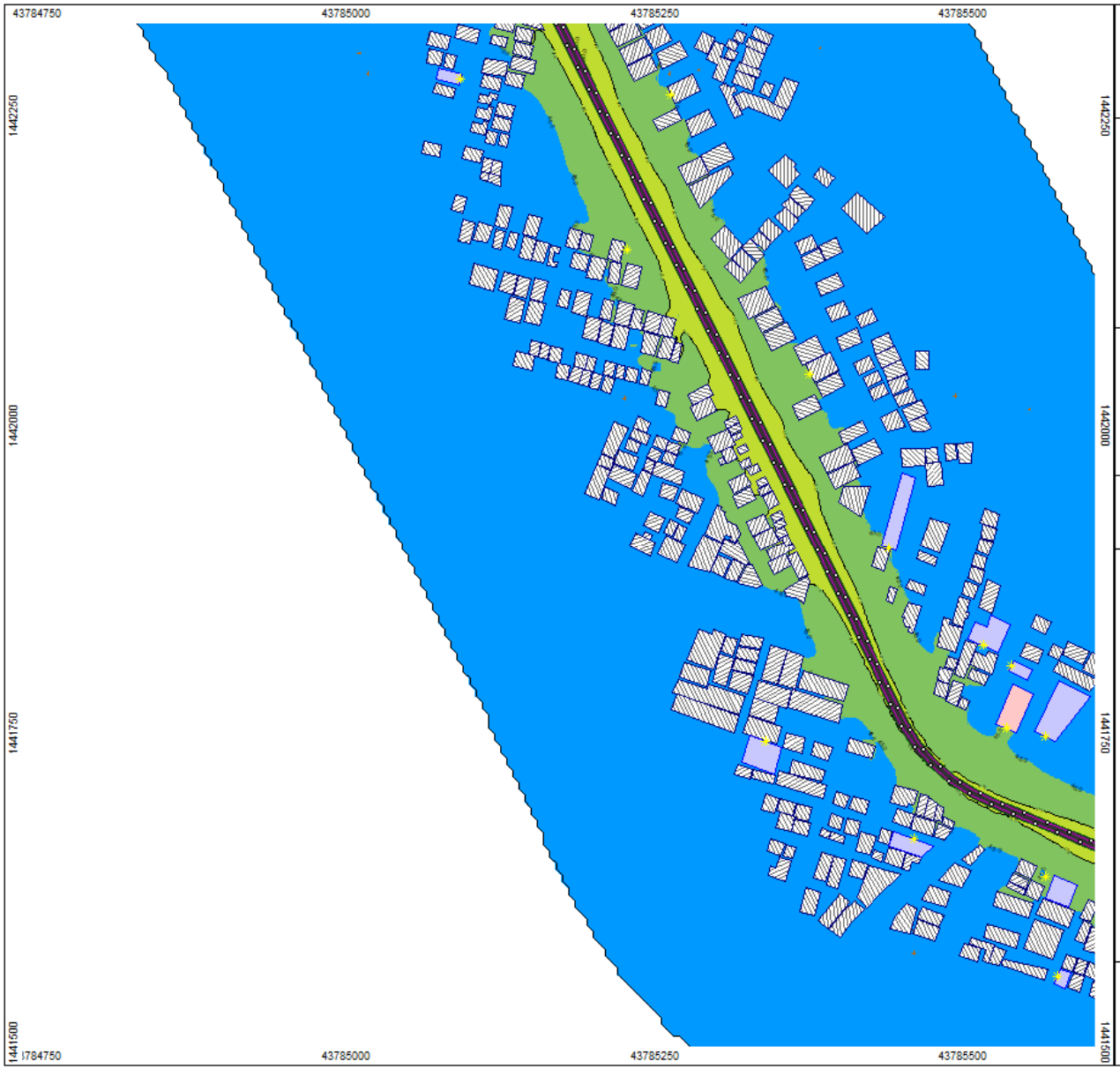

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Length scale 1:3101

0 25 50 100 150 200 m

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