Noise from the REM

Installation of mitigation measures

Technical presentation to the media

September 25, 2023

Réseau express métropolitain

Agenda

- Background
- Noise measurement campaign results
- Diagnosis: sources of noise
- Identified measures
- Timetable and next steps
- Question period

Background

A regulatory framework in place

Noise from the REM within a framework set by governmental authorities

Project decree requirements:

Creation of detailed sound modelling

Implementation of measures at the source and mitigation measures in case of significant impacts (medium to high)

Follow-up program during operation beginning in the first year

→ **deployed at the start of testing**

A response to exchanges with citizens

1. Implementing noise measurement campaigns and data analysis
   - Seven sound level meters installed between Île-des-Sœurs and Griffintown
   - Additional campaign directly on the tracks
2. Hiring of acousticians from SYSTRA, specialized in railway acoustics and having worked on several networks around the world, to carry out a diagnosis

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Mandate: identify targeted measures, sector by sector, to reduce noise for all

Noise measurement campaign results

(exemple by sector)

Summary

Seven sound level meters deployed, near the tracks

1. **1085, Smith Street**
2. **1330, Olier Street**
3. **100, Du Séminaire Street**
4. **Sainte-Madelaine Street,** near Le Ber, upstairs terrace
5. **Mullins Street** near De La Sucrerie, upstairs terrace
6. **255 av. Ash,** roof
7. **210 ch. du Golf**

REM route

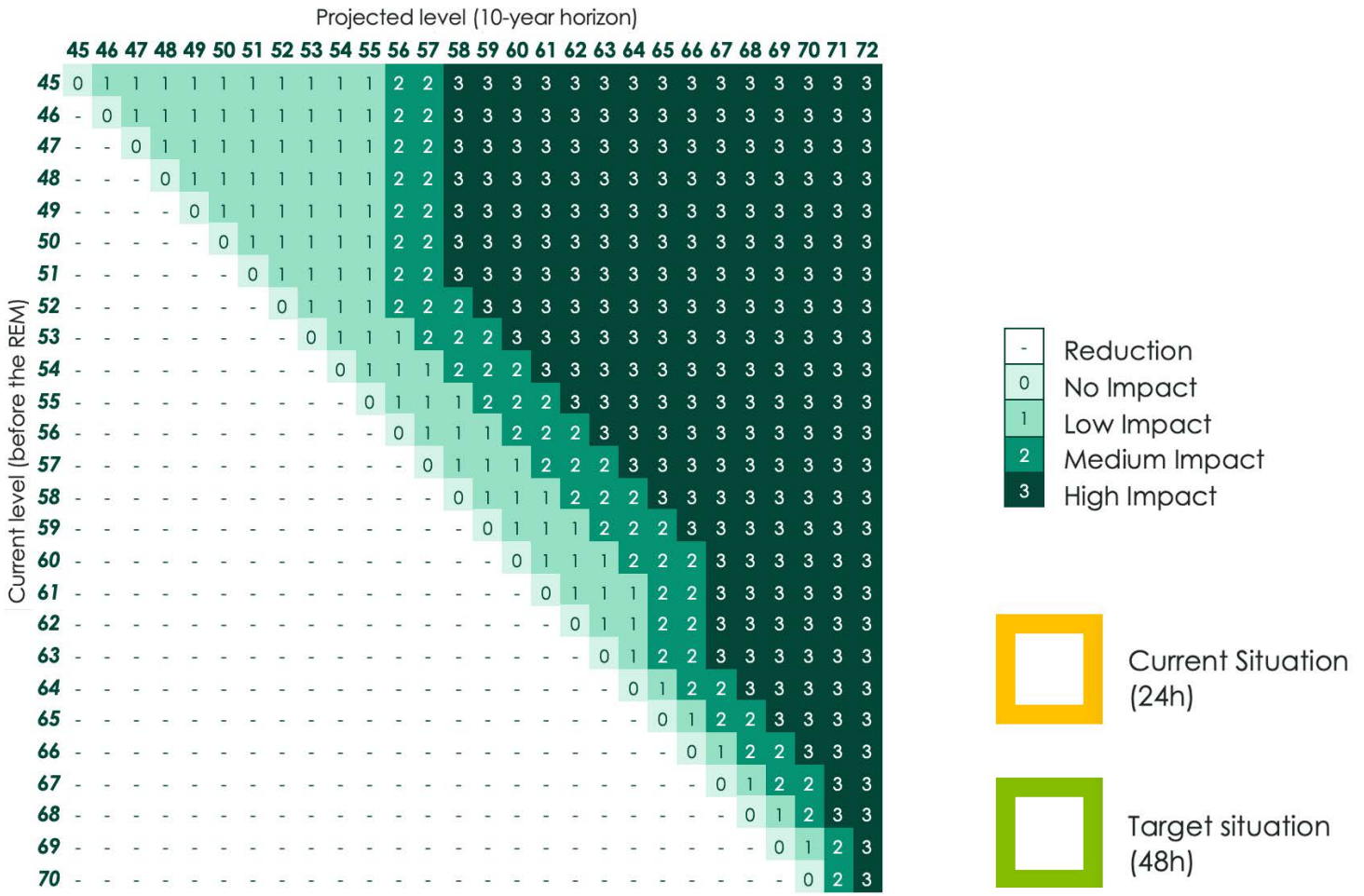
Presentation of results

MTQ road noise policy:
based on a 24-hour period

- Noise before the REM (ambient noise)
- Noise with the REM

Analysis grid used to assess noise impact

- Impact scale: none to high
- Significant impacts: medium to strong impact



Methodology:

data collected over several weeks to obtain representative data

Results:

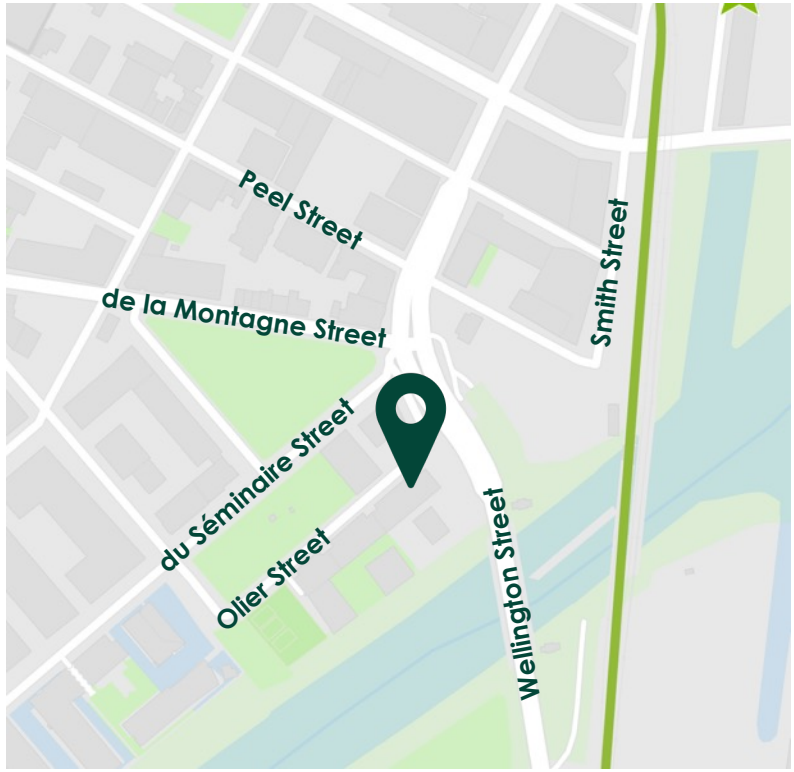
sound modelling data **higher than expected** in **some areas**

Approach:

act on the entire section, given the **integrated nature of the structure and the proximity of the neighbourhoods**

Griffintown, Olier Street

Summary of 2023 results



Ambient noise

55/56

dBA, Leq(A)24h

Ambient noise with the REM

60/61

dBA, Leq(A)24h

Griffintown, Olier Street

Noise impact grid

-	Decrease
0	No impact
1	Low impact
2	Moderate impact
3	Strong impact

Current situation (24 hours)

Target situation (24 hours)

Projected level (10-year horizon)

Current level (before the REM)

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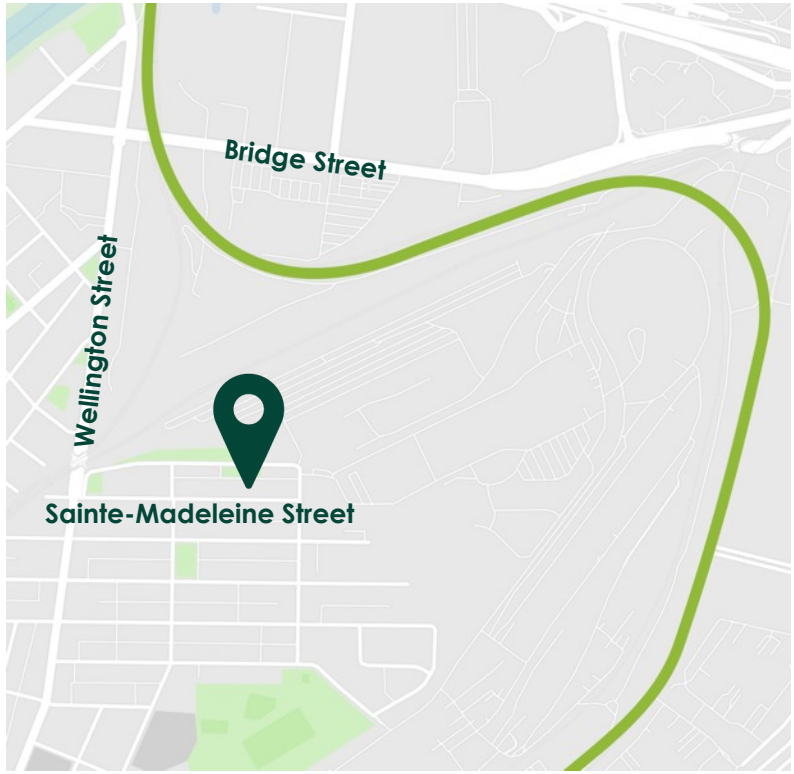
Pointe-Saint-Charles, Sainte-Madeleine Street

Summary of 2023 results



Ambient noise

53/55

dBA, Leq(A)24h

Ambient noise with the REM

55

dBA, Leq(A)24h

Pointe-Saint-Charles, Sainte-Madeleine Street

Noise impact grid

-	Decrease
0	No impact
1	Low impact
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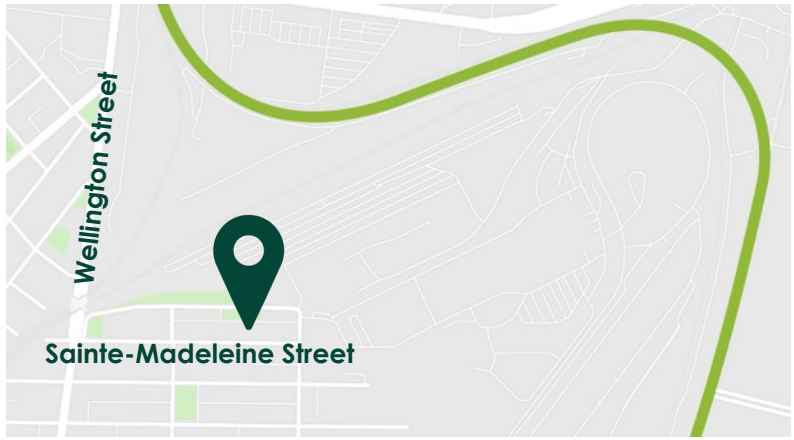
3	Strong impact

Current situation (24 hours)



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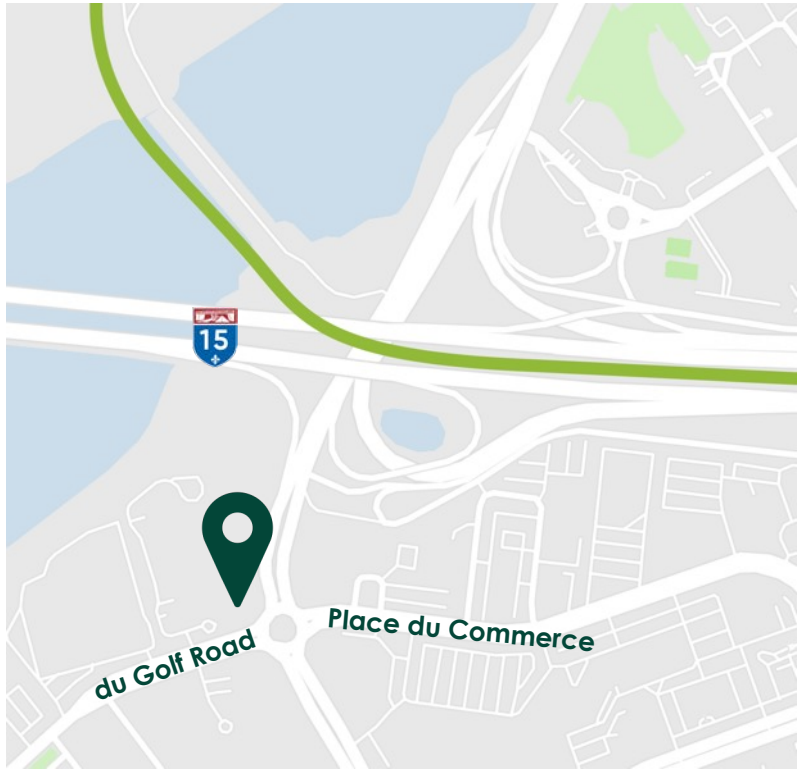
Île-des-Soeurs, Chemin du Golf

Summary of 2023 results



Ambient noise

68/69

dBA, Leq(A)24h

Ambient noise with the REM

69/70

dBA, Leq(A)24h

Île-des-Soeurs, Chemin du Golf

Noise impact grid

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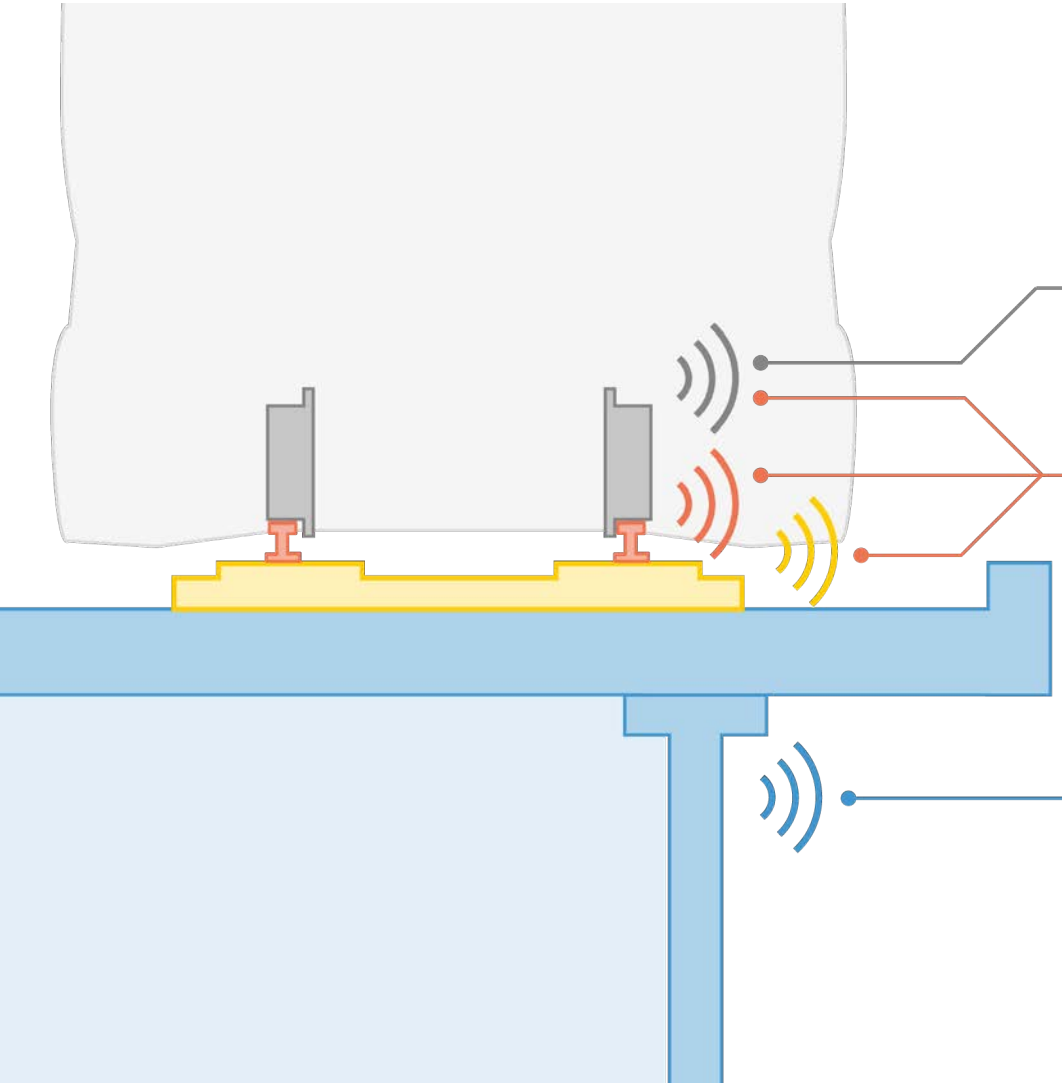
Diagnosis: sources of noise

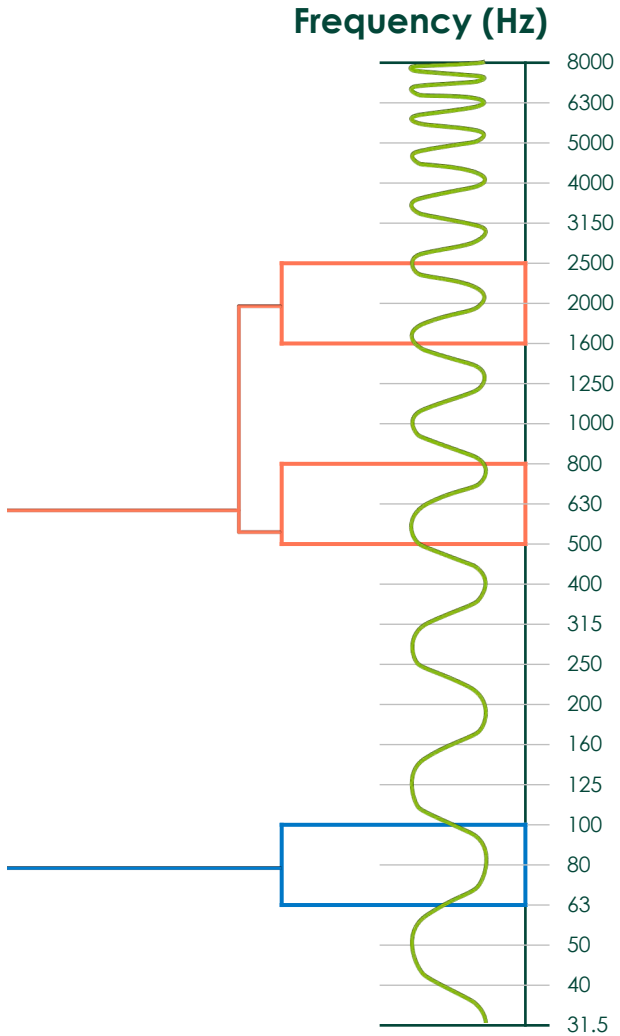
Noise generation mechanisms - Light metro systems



Traction noise:
motorization **and** auxiliaries

Rolling noise:
radiation of
wheels, rails **and** platform

Rumbling noise:
radiation from overhead structure



Sources of noise – the REM

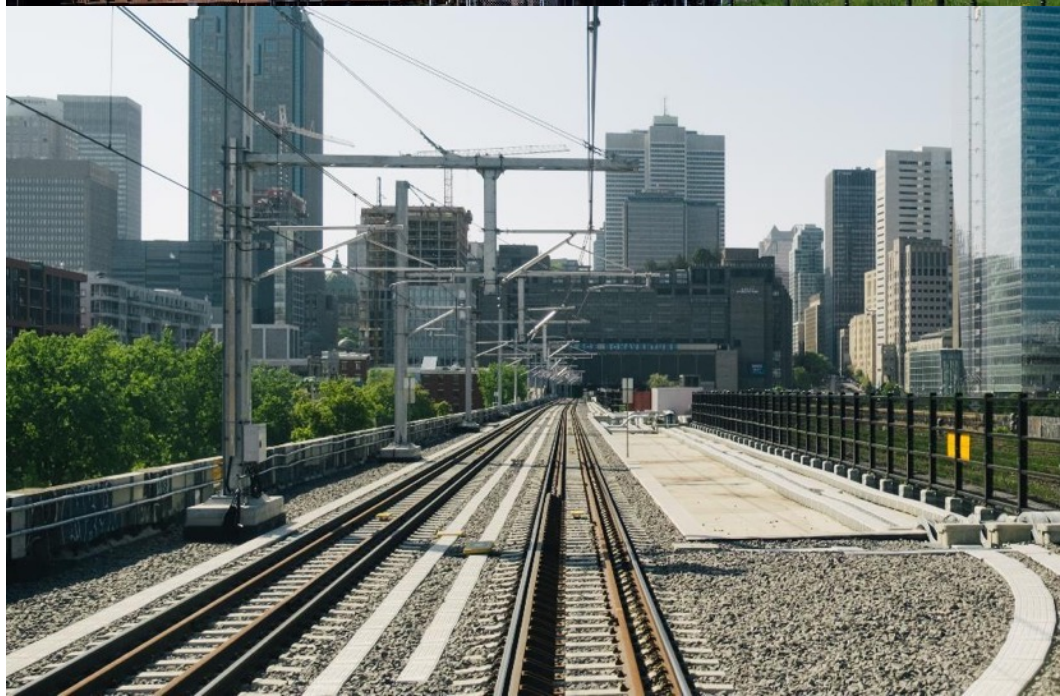
A specific infrastructure for this antenna

Two main types of structure: overhead structure and viaduct to Central Station

Various configurations and platforms in concrete or crushed stone

Main sources of noise from the REM:

- **Rolling noise**
  wheels, rails and platform
- **Rumbling noise**
  overhead structure



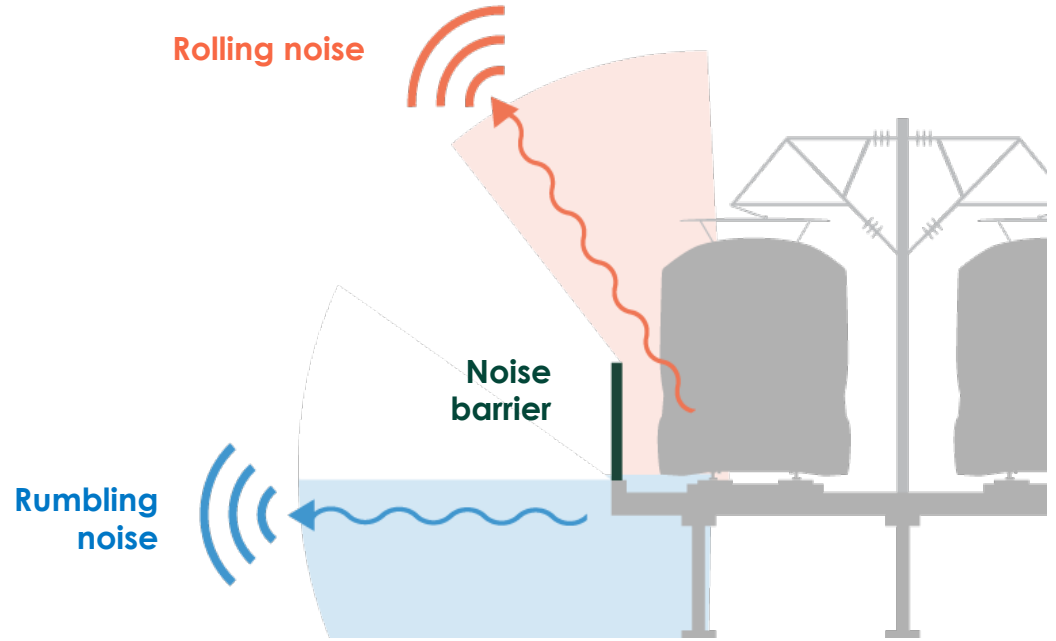
Identified mitigation measures

Noise barriers

Physical barrier that reduces noise propagation, possible from engineering standpoint but:

- **Few or no significant gains** expected for all residents, **given the type of built environment** (density and height)
- **Limited effectiveness** for high-rise buildings (**rolling noise**) and for attenuating **rumble noise**

Objective: reduce noise at source to benefit **all residents**



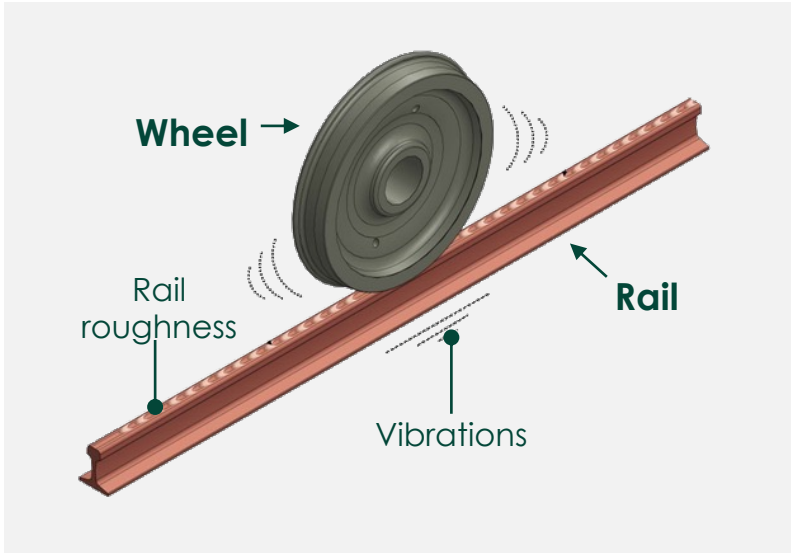
Identified mitigation measures

The most effective method of noise reduction for all residents:

at source,
targeted to the type of noise

1. Acoustic grinding
to reduce rail roughness

- **Rumbling noise**
- **Rolling noise**



2. Dynamic absorbers
to reduce rail radiation
(propagation of vibrations)

- **Rolling noise**

Identified mitigation measures

Target reduction of 5 to 10 dB at passage

depending on lane configuration

1. Acoustic grinding

2 to 5 dB

+

2. Dynamic absorbers

3 to 5 dB

Exponential noise reduction scale :

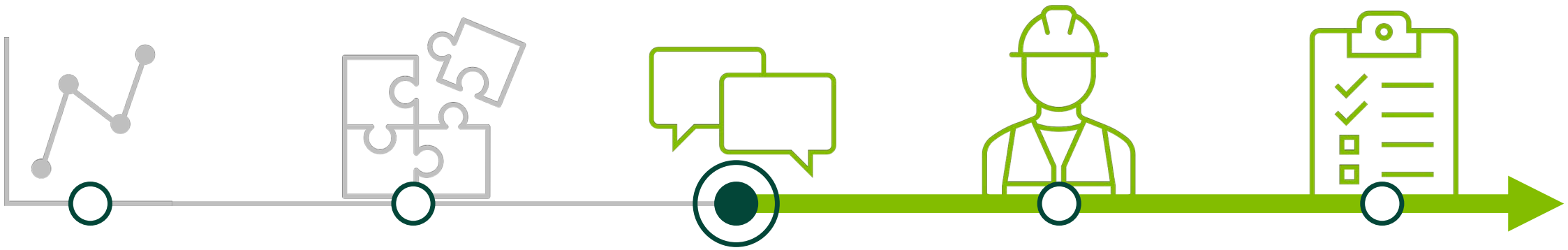
a small number of decreased decibels (dB) is equivalent to a large reduction in the noise emitted

-5 dB = **3x less** noise

-10 dB = **10x less** noise

Timetable and next steps

Next steps



Analysis of the situation
Sound surveys, acoustic diagnostics, on-site tests (Lachine Canal)

Identification of target measures

Public feedback

Deployment of measures from October to beginning of December

Feedback to the public on results

Question period

Réseau
express
métropolitain

REMgrandmtl

REMgrandmtl

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construction@rem.info

rem.info/en