NEWRAIL:
research into solar panels and noise barriers

ProRail

gemeente HORST A/D MAAS

DE HAAGSE HOGESCHOOL

TNO innovation for life

Energie van jouw regio Reindonk energie & Co

Dorpsraad America

Rijksdienst voor Ondernemend Nederland

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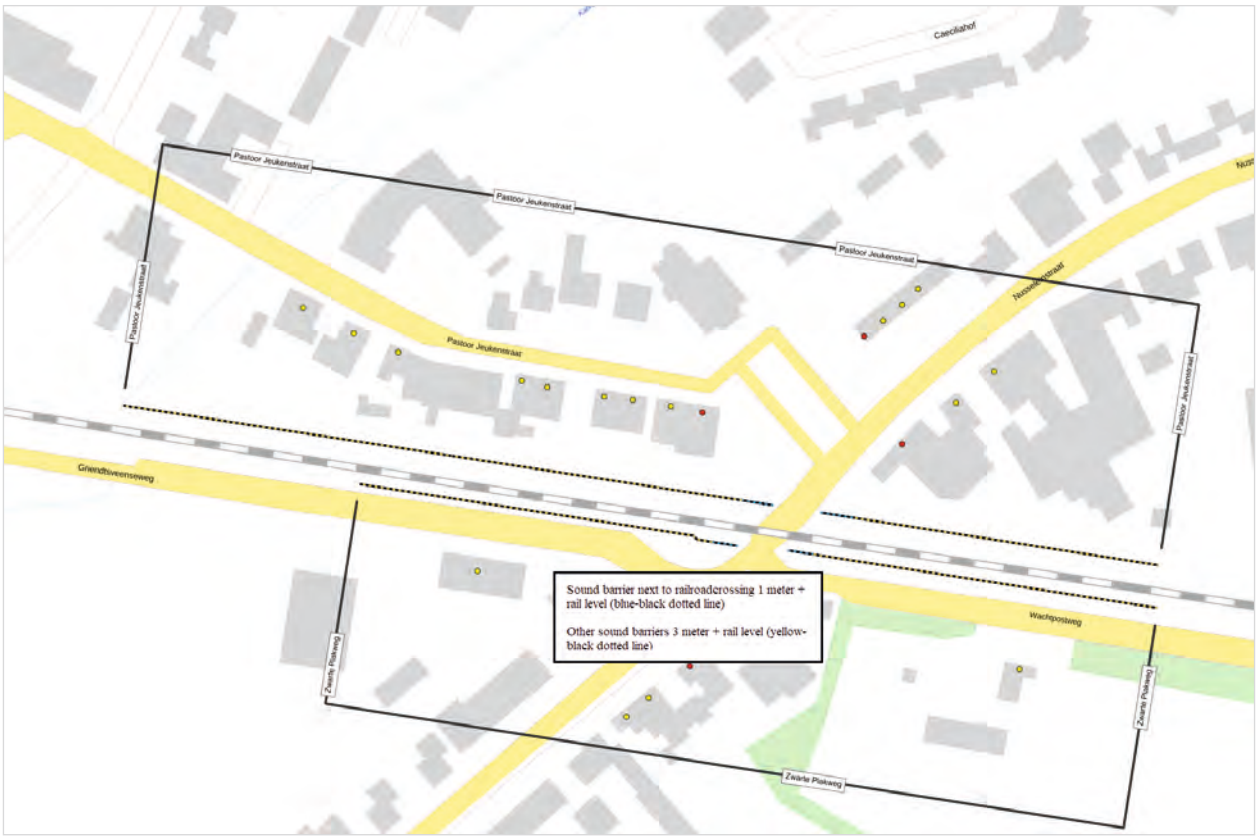
The Dutch municipality of Horst on the Maas and ProRail are keen to stimulate the generation of renewable energy. As partners in NEWRAIL (Noise Energy Wall Rail America in Limburg), they are testing innovations that will deliver high energy yields. This research involves mounting solar panels on both new and existing sound barrier walls. The sound barriers ProRail will build in the village of America in Limburg in 2021 will be the first. Residents in the area are invited to contribute ideas.

Currently, sound barriers can be found along 550 kilometres of the Dutch rail network. In the next few years about 150 kilometres will be added. Solar panels installed on such a large area would be a considerable source of solar energy. This would also utilise the country's scarce available space in an optimal way. How exactly will such a configuration work? To find out we set up the innovative project NEWRAIL.

What is NEWRAIL?
Mounting solar panels on sound barriers is a new and ground-breaking idea. That's why more research is needed to find the best method of installation. The innovative project NEWRAIL (Noise Energy Wall Rail America in Limburg) is an initiative of ProRail in collaboration with the municipality of Horst aan de Maas, TNO (Netherlands Organisation for Applied Scientific Research), energy cooperative Reindonk Energie, and The Hague University of Applied Sciences. The goals of the project are to gain experience with, and insight into, the technical possibilities and related risks of installing solar panels – on both the railway side of the barriers and the non-railway side.



BS = Rail top: the height of the sound barriers is always measured from the top of the rails; this measurement does not depend on the local situation.

Sound barriers in 'America'

America, a village in the province of Limburg, will be the first to test this innovative source of energy. Two barriers will be set up on each side of the railway line, a total of four (see map). Each barrier will be three metres high. The two barriers on the north side will be 190 and 90 metres long, respectively. The two barriers on the south side will both be 110 metres long.

The height and length were set in ProRail's noise reduction plan. This plan will be available for inspection at the BSV (the Traffic Noise Abatement Office), with the ultimate decision being taken by the Minister of Infrastructure and Water Management. Residents in the area have a period of six weeks to submit their views on the noise reduction plan, and, if applicable, lodge an objection. BSV and ProRail will be informing local residents of the start date of this period by letter and other means.

Construction of the sound barriers forms part of the nation-wide multi-year programme on noise reduction (MJPG). Construction is expected to begin in 2021, with installation and connection of the solar panels by the end of 2021.

For and with residents

- Local residents are invited to get involved in designing the sound barriers. We are eager to hear from residents and include their wishes and insights in the final results. We want to discover together what works and is acceptable. Only the height and length of the sound barriers fall outside this process because there are already formal public consultations for this purpose.
- After the project goes into operation, local residents can become participants in the energy production. ProRail has no interest at all in this aspect; the solar panels will become the property of the local energy cooperative Reindonk Energie.

What are the requirements for the installation?

- The system for mounting the solar panels must be strong, modular and flexible; it must be able to be installed at different locations, on both new and existing sound barriers.
- The safety and reliability of train traffic is essential. Train traffic must not experience any interference from the installation, and the railway verges, sound barriers, and solar panels themselves must remain accessible for maintenance purposes.

What are the next steps?

‘American electricity’ and the power grid
The electricity generated by the solar panels will supply the power grid. In the case of America, this will be the network of Enexis. ProRail is also looking at the possibility of mounting solar panels on the overhead cable network. Those involved in the NEWRAIL project will map out this option and research how to get optimal results (costs and benefits) from the solar panels. This might include different ways of mounting them or the choice of electronic equipment and cables for electrical transmission. Since the energy cooperative Reindonk Energie is already supplying power in the area, ‘American electricity’ will be a local product!

Sound barrier & solar panel construction
The Dutch scientific research organisation TNO and The Hague University of Applied Sciences are going to design the solar panels and electrical installation. ProRail is responsible for tendering and construction of the sound barriers, and for installation of the system of solar panels. Construction will be part of a framework agreement with a contractor, who will have the task of supplying several locations. ProRail will put the installation of the solar panels out to tender separately.

Two years of testing by TNO
Once the project is up and running, research organisation TNO will monitor the solar panels for a full two years to make sure the system is functioning properly, and make adjustments when necessary. They will also make sure that proper maintenance can be carried out safely, test what effects passing trains have on the solar panels, and how much the solar panels contribute to the barriers’ noise reduction. The Hague University and energy cooperative Reindonk Energie will survey area residents to find out how they like using their own ‘American electricity’. After two years Reindonk Energie will be given control of the solar panels; they will operate them on behalf of local residents. The sale to Reindonk Energie will of course only take place if the system is working according to expectations.

Sharing and communicating know-how
A dossier of the NEWRAIL project will be kept, containing all the lessons learned and guidelines that will be useful for future projects, involving both new and existing barriers. The NEWRAIL partners will also regularly be sharing useful information. This information will also be shared with the public and others with interests in the project, such as the Department of Waterways and Public Works (Rijkswaterstaat), UIC (Union Internationale des Chemins de fer), other energy cooperatives, municipalities and provinces.

Any questions?
The ProRail public relations team would be happy to answer any questions you may have about this project. Please send your questions about this project by email to newrail@prorail.nl.

Schedule

	2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Design solar panels on noise barrier																
Engineering connection to energy grid																
Participation neighbourhood																
Tendering and construction noise barrier & solar panels																
Monitoring solar panels																
Exploitation solar panels by Reindonk Energie																

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