Fire safety instruction Zonnepark Lanakerveld

This document contains the fire safety instruction for Zonnepark Lanakerveld, a 41 ha ground mounted PV solar park located in the municipality of Maastricht.

PV solar power present a unique challenge for fire fighters. Unlike a typical electrical or gas utility, a PV array does not have a single point of disconnect. Whereas there are disconnects that will de-energize select parts of the system. As long as the PV panels are illuminated, the individual strings of PV panels are energized and capable of producing up to 1,500 volts. This is not just limited to PV panels being illuminated by the sun; illumination by artificial light sources, such as fire department lights, or the light for the fire itself are capable of producing electrical power sufficient to cause a lock-on hazard.

A more detailed procedure (including responsible parties and contact information) will be shared with the fire department before the start of operation.

Components within a solar park

A solar park primarily consists of solar panels (*zonnepanelen*), inverters (*omvormers)*, transformers (*transformatoren)* and a purchasing station *(purchasing station)*.

Solar panels
Zonnepanelen

A solar panels converts sunlight into electricity. One solar panels can generate a power of 400-600 W at a voltage of 40-50 V. Multiple panels are connected in string to create voltages of approximately 1000 Vdc. Bifacial solar panels will be used which are panels enclosed in glass on both sides.

Inverter
Omvormer

An inverter converts the direct current (*gelijkstroom)* from the solar panels into alternating current (*wisselstroom*) which can be imported into the electricity grid. The inverters are placed underneath the solar panels

Transformer
Transformator

A transformer converts the low voltage electricity from the inverters (800 V) to high voltage (10,000 V). Transformers are typically placed in a container

Purchasing station
Inkoopstation

The purchasing station combines the output of multiple transformers and puts it on the grid. The purchasing station is placed by grid operator Enexis

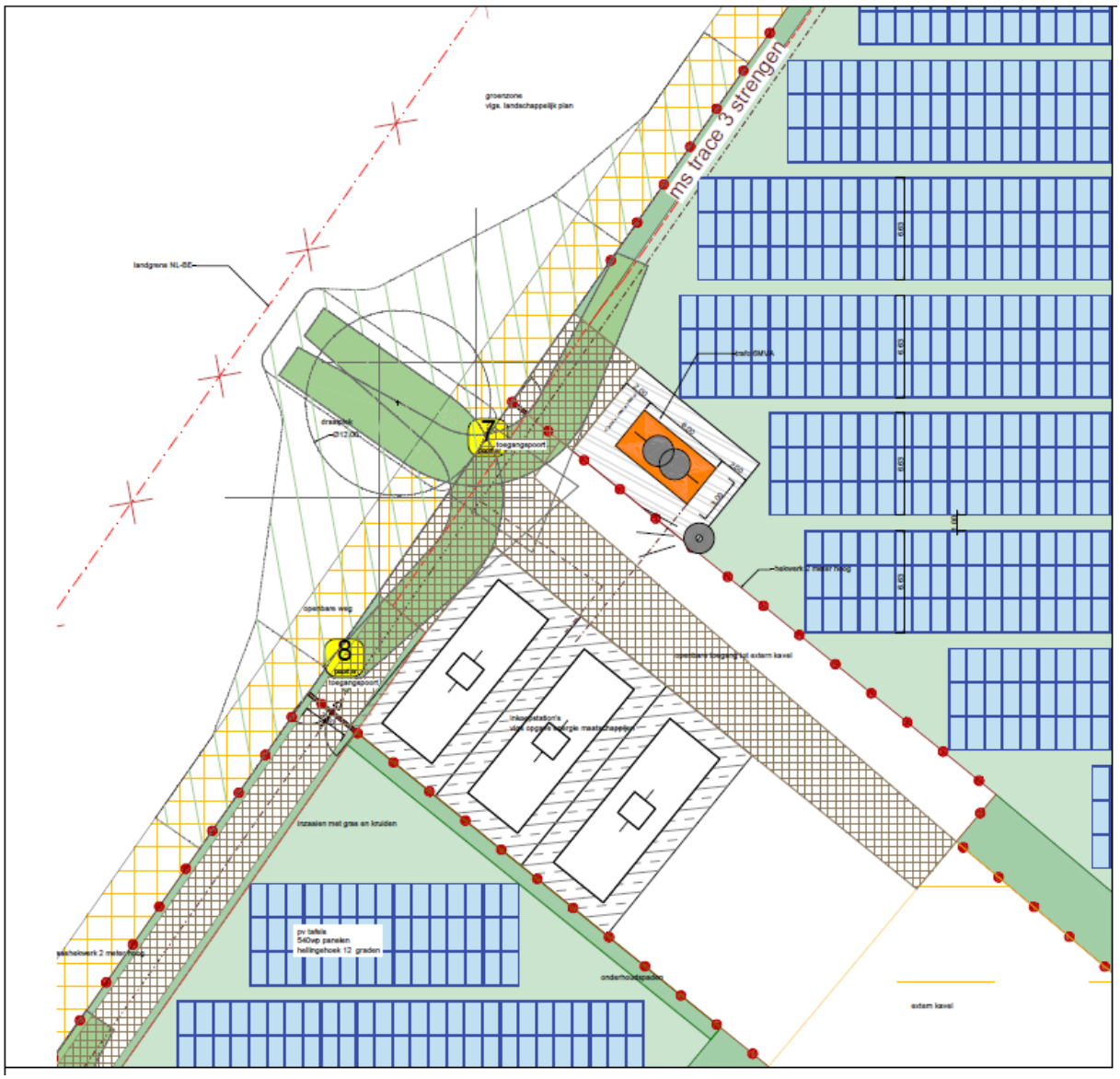
AC Isolation: (Safety instruction in case of fire in transformer, purchasing station and underground cabling)
In case of fire in the transformer or Purchasing Station than inform the grid operator immediately and wait until grid operator arrives to turn off the main switch in the Purchasing station.

In the event of a fire or an emergency, there are basically 2 options:

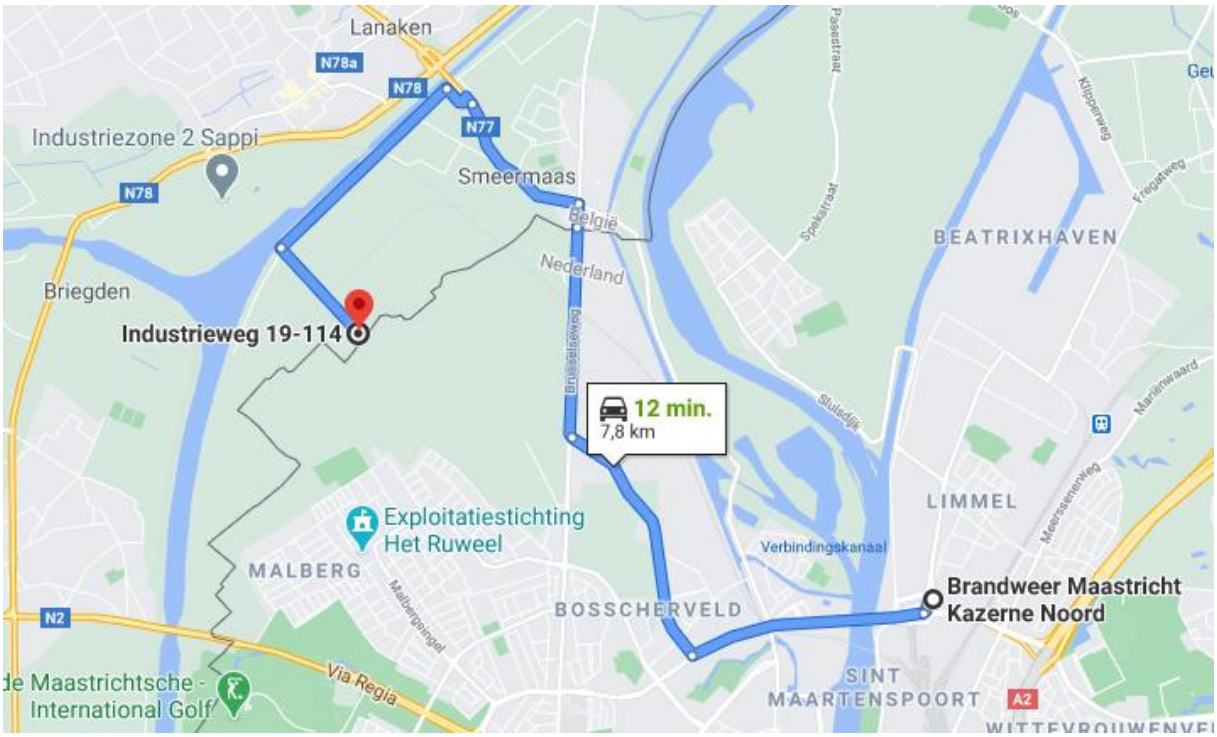
1. Grid Operator switches off the entire park in one go at the Purchasing Station. Plant operator cannot do this.
2. Plant operator switches off the MS switch at the relevant transformer station(s). This can be all stations, but can also be one individual transformer station After this the fire can be put out.

DC Isolation: (Safety instruction in case of fire in solar panels, inverter or cabling in-between)
In the event of a fire, the fire brigade cannot do much yet; as long as sunlight falls on the panels, voltage remains on it up to the inverter. After the inverters have been switched off, (that part of) the system is voltage-free. Only at nighttime and when the transformers have been manually shutdown can the fire be put out.

Accessibility
The solar park is accessible from the Industrieweg in Lanaken, Belgium. A road will be constructed starting at the Industrieweg (coordinates 50.875601, 5.654374) near the border with The Netherlands. At the border a pole will be placed with a key safe (*sleutelkluis*) nearby to allow a removal of the pole. The main road will run alongside the northern sides of the solar park as depicted in the technical drawings. From the main road, paths will lead to the transformers. Gates will be made in the fence where applicable, which can be opened with a key safe (*sleutelkluis*).



Entrance from the main road into the solar park. See technical drawing D02.



Path from nearby fire stations to the solar park

Fire Station	Address	Distance from Project Site
Brandweer Kazerne Maastricht-Noord	Willem Alexanderweg 101, 6222 EL, Maastricht	8 km from site

Design roads

The roads will be designed following the Bouwbesluit 2012. The roads will be constructed using mixed granulate (*menggranulaat*) 0/31.5 with a thickness of 30 cm on road cloth (*wegen doek)* with a density of 200 gr/m2 (or a material of equivalent strength).

The roads will have a width of at least 4.00m of which at least 2.60m will be covered with the described mixed granulate. The remaining width (max 1.40m) will be reinforced. Additionally 0.50m will remain free from obstacles to create an obstacle free width of 4.50m. A firefighting installation location (*opstelplaats)* will have a surface area of 5x10m (=50m2) to allow for an efficient fire fighting response.

The height above the roads will be kept free for at least 4.2 m and the roads will have an effective drainage.