

# Final pilot action report

## Port of Ortona

PP7, deliverable no. D.4.2.6

## **DISCLAIMER**

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This deliverable summarises the outcome of the pilot action implemented by PP7-ASVI in the framework of the SUSPORT – SUSTainable PORTs project, co-funded by the Interreg Italy-Croatia Programme, consisting in replacement of port lighting systems with LEDs.

## 1. Ex-ante situation

Relamping consists of replacing traditional lighting fixtures, such as halogen, incandescent or fluorescent lamps, with modern LED lamps (Light Emitting Diode), in order to achieve a decrease in energy consumption.

Today it is one of the key interventions when it comes to energy efficiency.

Very important in an intervention of LED relamping is the lighting design phase that must take into account some specific activities such as the maintenance of the system over time, as well as extreme operating conditions, the quality of light to ensure the highest levels of visibility, safety and comfort and, of course, replacing the lighting fixtures.

Relamping led interventions can be of two different types.

The relamping led plug & play, is the simplest one and consists of the simple replacement of traditional lamps with LED lamps that share the same type of connection. This type of intervention is also cheaper, since it does not involve any structural intervention on the existing lighting system. A greater effectiveness of the replacement is achieved by increasing the complexity of the intervention through the replacement of the entire lighting system and the redesign of the fitting in a given environment of light sources and light spots.

The features of the main areas of the Port of Ortona can be summarised as follows:

- RIVA NUOVA – area with commercial destination, functional merchant traffic, characterised, for the most part, by solid and dusty products in bulk, subject to the transit of heavy-duty vehicles and representing the work perimeter of mechanical lifting vehicles;
- RIVA NORD - area with commercial destination, functional to merchant traffic, characterised, for the most part, by solid and dusty products in bulk, subject to the transit of heavy-duty vehicles and representing the work perimeter of mechanical lifting vehicles;
- MOLO MANDRACCHIO, area for fishing vessels and port tugs;
- VIA CERVANA, vehicular and pedestrian transit area that runs along the RIVA NUOVA area.

The different port areas were characterised by different equipment and features of the public lighting system;

- Riva Nuova: for the lighting of the area there are 4 light towers 35 meters high in which are installed 48 SAP projectors of 1000w, with lighting parameters of “channels, locks and port facilities” areas and “goods check-in, loading and unloading” application;
- Riva Nord: for the lighting of the area there are 4 light towers 35 meters high and 1 light tower 10 meters high, in which are installed 27 LED projectors of 750w (approximately), 6 road armors 7 meters high on which are installed 7 lamps of 250w, with lighting parameters of “channels, locks and port systems” areas and “goods check-in, loading and unloading” application;

- Molo Mandracchio: for the lighting of the area there are 1 light tower 35 meters high in which 12 SAP projectors of 1000w are installed, with lighting parameters of “channels, locks and port facilities” areas and “goods check-in, loading and unloading” application.
- Via Cervana: for the lighting of the area there are 55 road armors 7 meters high in which 250w lamps are installed, with lighting parameters of “common transit in workplaces/outdoor workplaces” area and “regular transit of vehicles” application.
- Capitaneria di Porto: for the lighting of the area there are 1 light tower 35 meters high in which are installed 10 SAP projectors of 1000w, with lighting parameters of “common transit in workplaces/working places outdoors” area and “regular transit of vehicles” application.
- Road between Capitaneria di Porto and Riva Nuova: for the lighting of the area there are 10 road armors 10 meters high in which 30 SAP projectors of 400w are installed, with lighting parameters of the “common transit in workplaces/outdoor workplaces” area and “regular transit of vehicles” application.

## 2. Pilot action description

For the implementation of the pilot action a specific agreement was signed between PP7 ASVI and Central Adriatic Ports Authority (PP6 ADSPMAC), which manages the port areas mentioned above. Considering the investment available for the Pilot Action in the Port of Ortona, the Central Adriatic Ports Authority has planned at first to replace the equipment of only 4 light towers located in the facility area “Riva Nuova” and then in the area of “Via Cervana”; the lighting project, however, has been drafted assuming a complete replacement of the existing equipment included in the port areas managed by the Authority.

In the “Riva Nuova” Area, 48 SAP projectors of 1,000 W have been replaced with 26 LED projectors of 1.100 W as follows:

- general features

Projector for lighting of large sports areas with HDTV cameras, large areas.

Insulation class I.

Degree of protection IP66.

Degree of protection against external impacts: IK08.

- classification of photobiological risk

Risk group exempted according to EN 62471.

- certifications

Projector CE certification; projector ENEC certification; LED modules certified ENEC according to EN 62031; Construction standards according to: EN 60598-1, EN 60598-2-5.

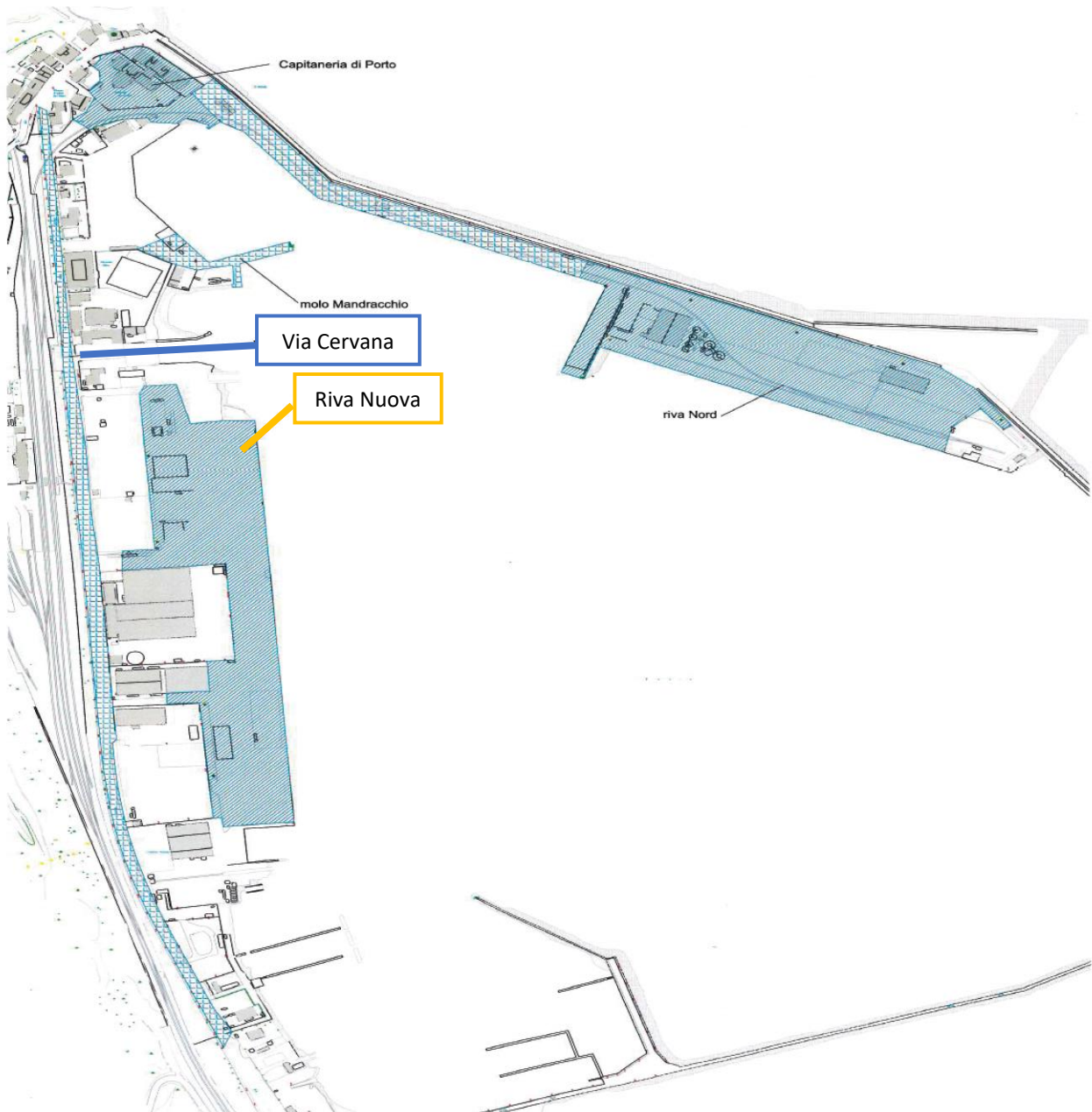
- power supply features

The power supply group consisting of drivers with lifetimes of 100.000h with only 10 % failure; Cable plate complete with easily replaceable electronic unit; High efficiency and durability electronic power supply designed for outdoor use; Full load power correction factor > 0.9; THD & 20 % at full

load; Led driver with thermal protection and short circuit protection; Power supply 220-240V/50-60 Hz VAC and, on request, also available at 400V.

In the “Via Cervana” Area, 57 High Pressure Sodium lighting points of 250 W have been replaced with 57 LED lighting points of 75 W that can be identified as follows:

- lighting points FAEL Luce art. 72412 PROX-CY Led - 36 led MD 4K 350WAY L10 75W PRG.



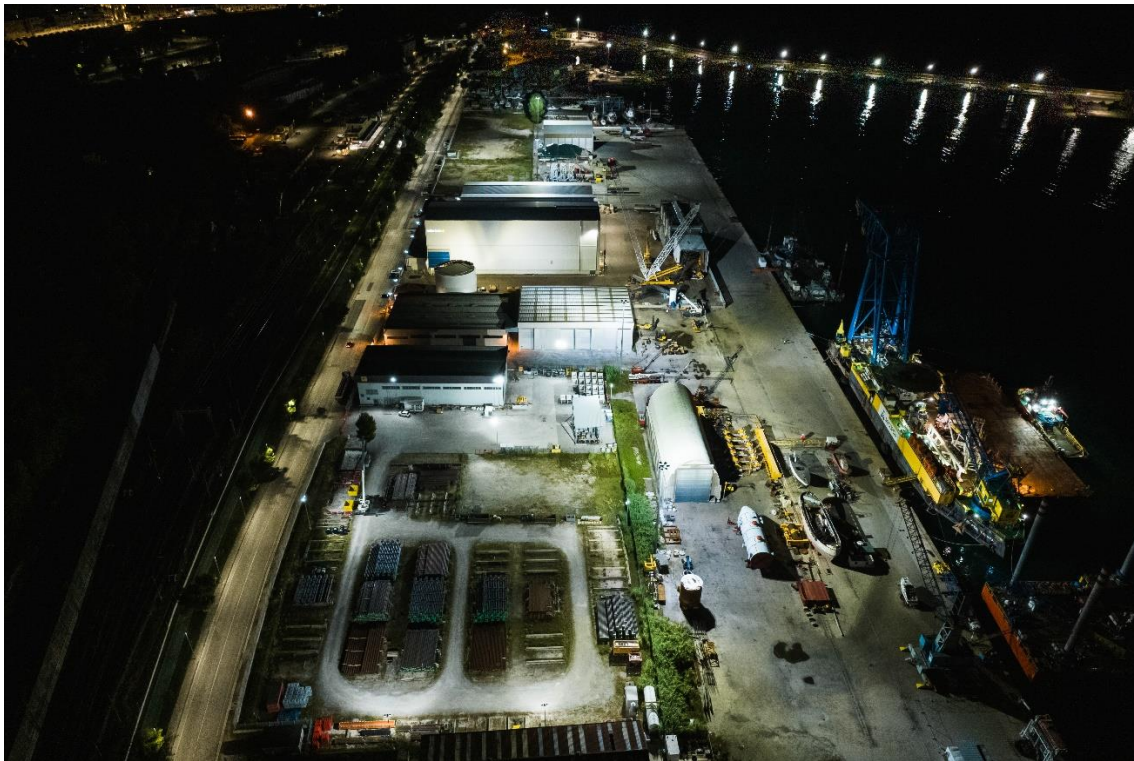
### 3. Conclusions

The realisation of the pilot actions within the SUSPORT project allowed ASVI to achieve specific green targets in terms of CO2 emission reduction in line with expected results.

Thanks to the pilot action the Port of Ortona moved his first step on the way to achieve energy and operational sustainability of ports being fully aware that it is necessary for them to implement a mix of actions by exploiting other new technologies and new sources of renewable energy from cold ironing, to the purchase of electric vehicles beside the replacement of lighting systems with LED technology.







The following table summarises the results achieved by the pilot action in reducing CO2 emissions

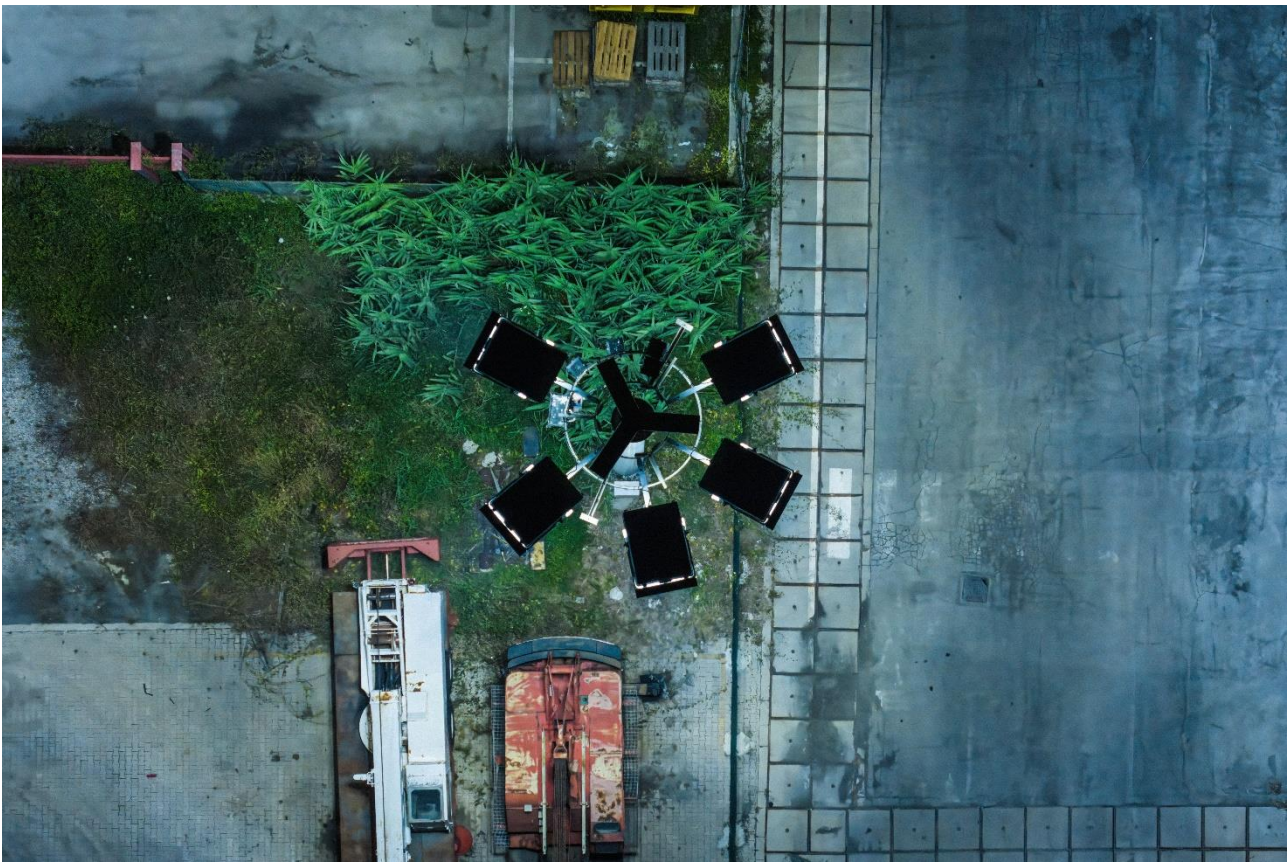
Riva Nuova" area	ex ante	ex post
	48 SAP projectors of 1.000 W	26 LED projectors of 1.100 W
	Annual consumption in kWh with operating life of 8 hours	Annual consumption in kWh with operating life of 8 hours
	$48 \times 1.000 \times 8 \times 365 = 140.160$ kWh	$26 \times 1.100 \times 8 \times 365 = 83.512$ kWh
	CO2 emissions in one year $140.160 \times 0.483 = 67.697$ kg	CO2 emissions in one year $83.512 \times 0.483 = 40.336$ kg
CO2 emissions in one year reduced of 27.361 kg		
Via Cervana" area	ex ante	ex post
	n. 57 HPS lighting points for public road, power 250 W	n. 57 LED lighting points for public road, power 75 W
	Annual consumption in kWh with operating life of 8 hours	Annual consumption in kWh with operating life of 8 hours
	$57 \times 250 \times 8 \times 365 = 41.610$ kWh	$57 \times 75 \times 8 \times 365 = 12.483$ kWh
	CO2 emissions in one year $41.610 \times 0.483 = 20.098$ kg	CO2 emissions in one year $12.483 \times 0.483 = 6.029$ kg
CO2 emissions in one year reduced of 14.069 kg		



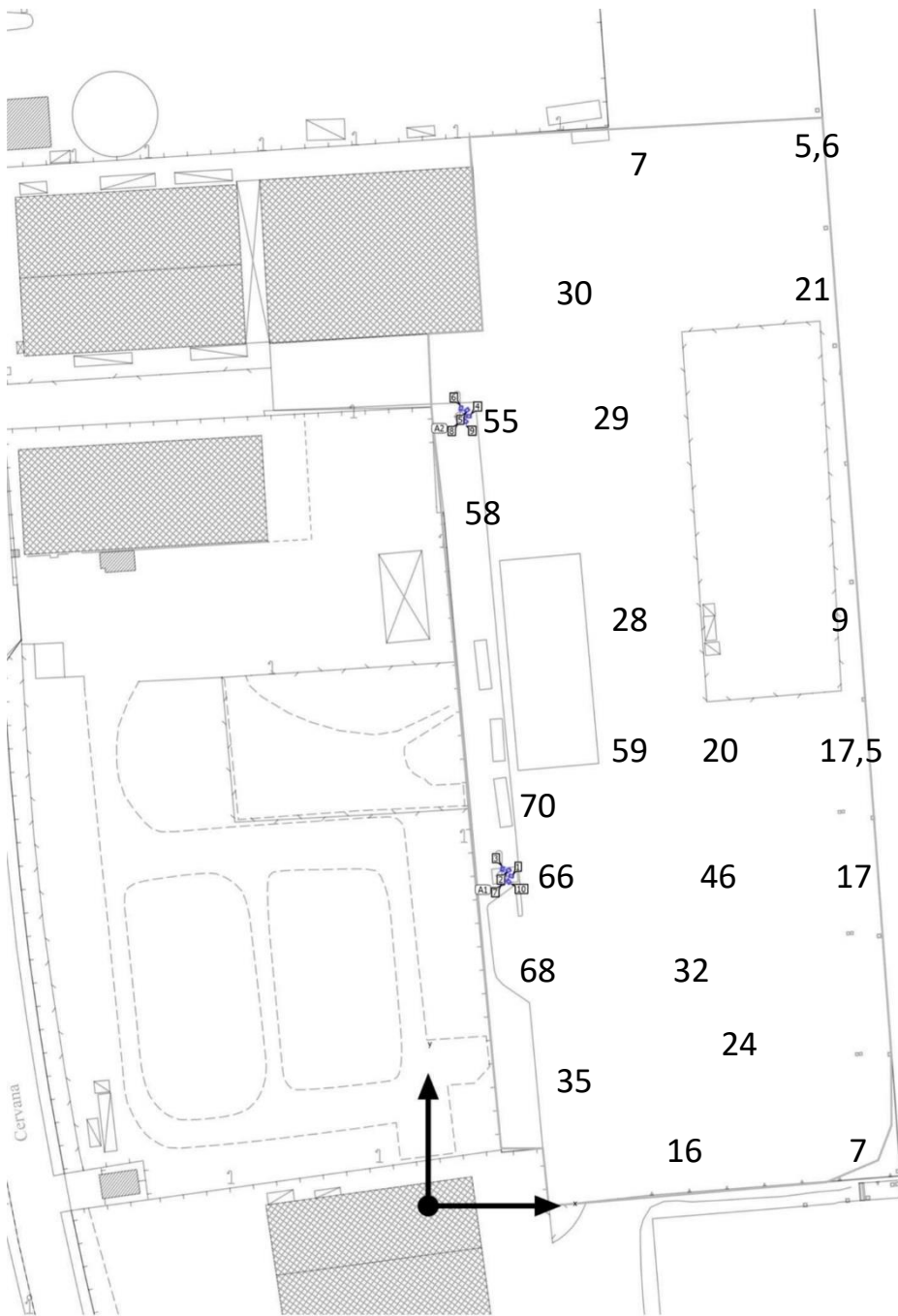
Thanks to SUSPORT the Port of Ortona will be able to reduce CO2 emissions by a total of 41,430 t/year.

## LIGHTING VALUES MEASURED

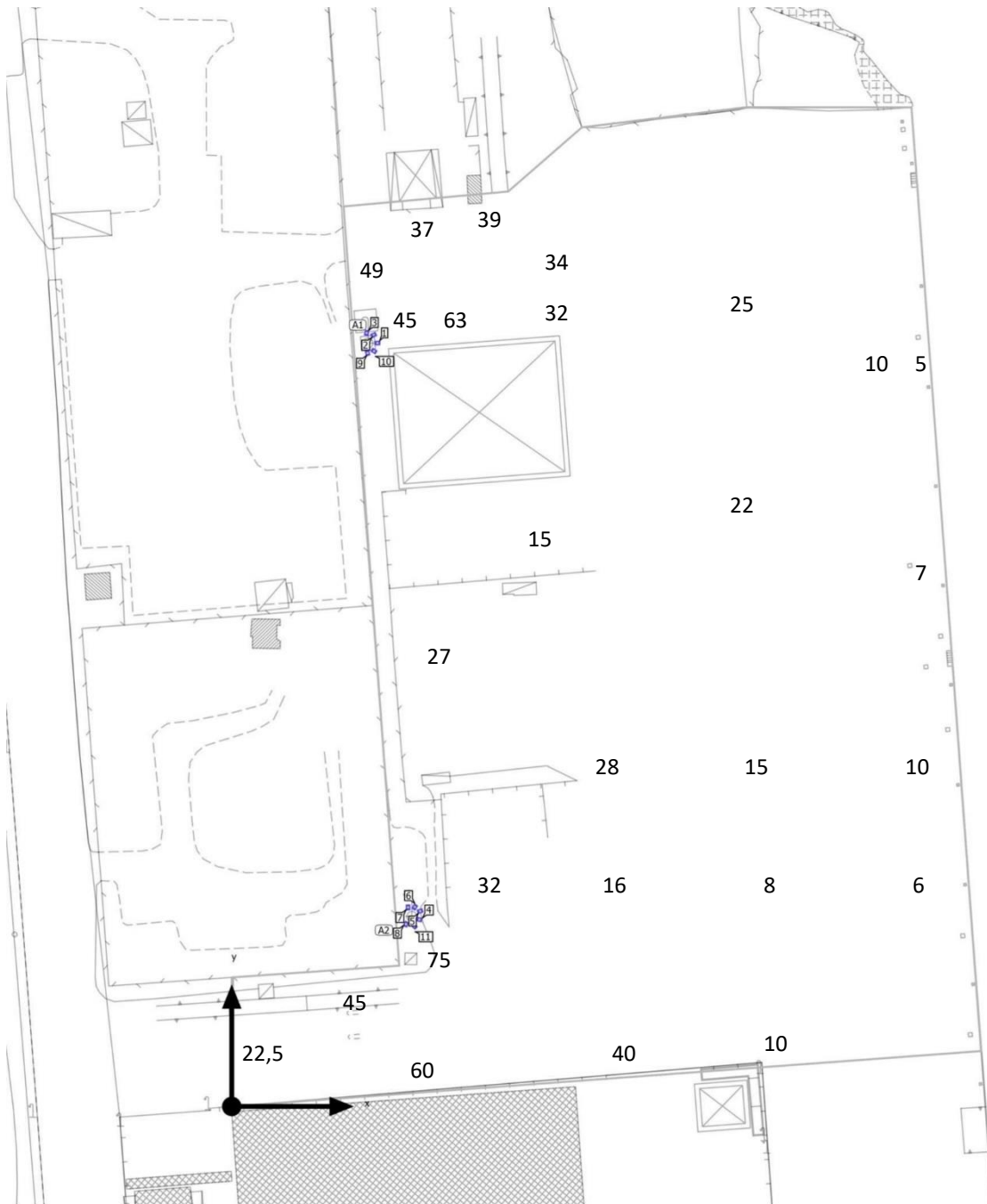
The lux levels provided by Technical Staff Fael Luce, are considered upon customer data. By changing type products installation, area dimension, the presence within the lighting area of obstacles, all of them produce some changing size of lighting. The lux levels can be changed by also tolerance of products' photometric values, lighting dazzling by light sources, reflecting properties of the planes and by alternating of power supply. The lighting project is done following the customer technics data.



LIGHTING VALUES Riva Nuova (SUD)



LIGHTING VALUES Riva Nuova (Nord)



This results together with those obtained by the other Ports in the Programme area will strengthen environmental protection and decreasing GHG emissions of the cross-border maritime transport.