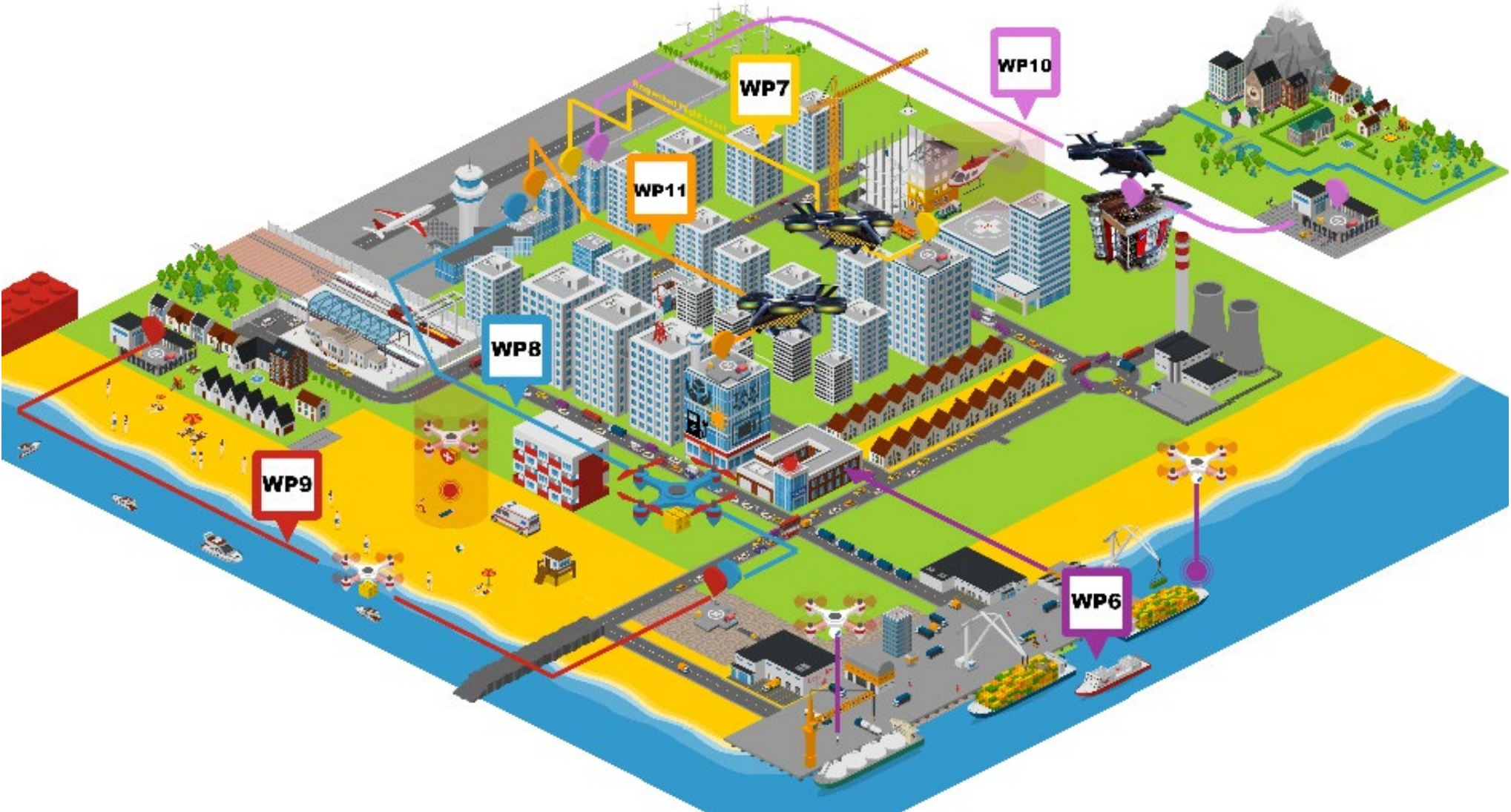


WP6 – Belgian VLD

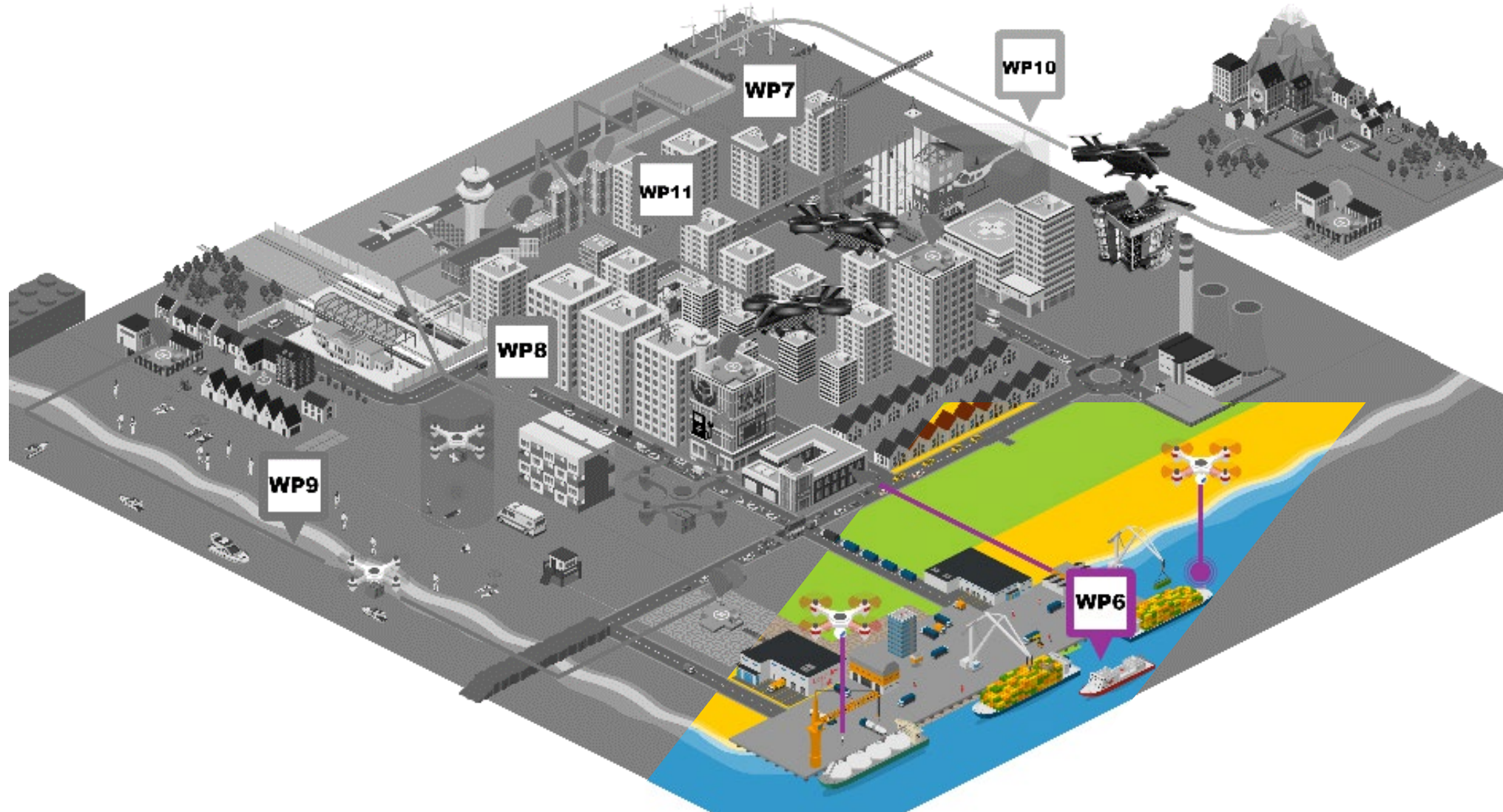
Demo activities

Context

6 VLDs



6 VLDs



WP6 scope

WP6 – Belgian VLD

This VLD is focused on developing guidelines for safe UAM operations at urban ports, in particular in the urban areas around the Ports of Zeebruges and Antwerp. Ports are one of the critical infrastructures that benefit the most from the use of drones, and the Belgian VLD tests the two main applications of these technologies in the port environment: surveillance and infrastructure-inspection operations. Making maximum use of 5G, the demonstration plans to provide surveillance and first response images to the city-infrastructure management centres. Additionally, the ports are located close to the international airports of Ostend and Antwerp, enabling interoperability solutions between ATM and U-space to be tested.

WP6 scope

WP6 – Belgian VLD

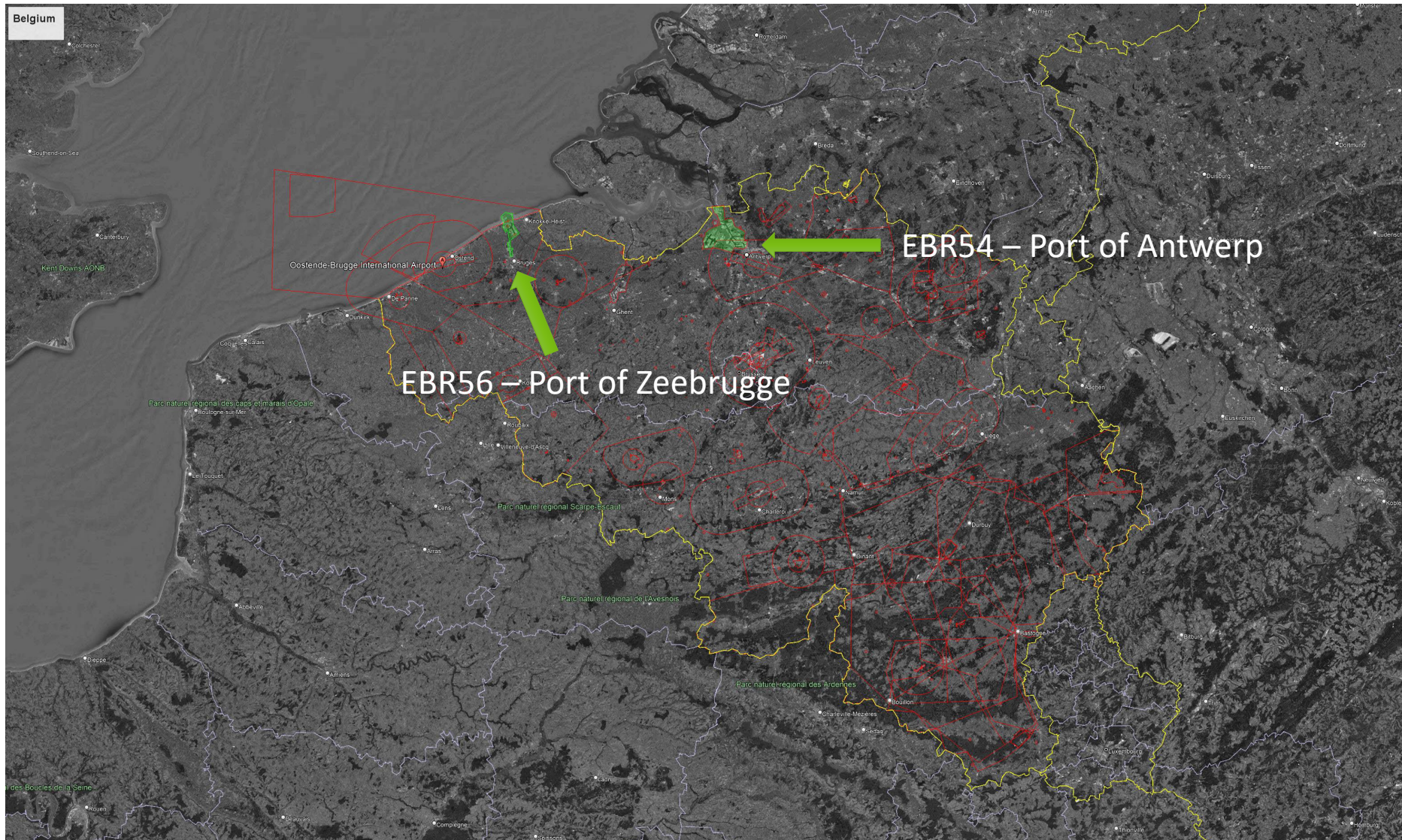
This VLD is focused on developing guidelines for **safe UAM operations at urban ports**, in particular in the urban areas around the Ports of Zeebruges and Antwerp. Ports are one of the critical infrastructures that benefit the most from the use of drones, and the Belgian VLD tests the two main applications of these technologies in the port environment: **surveillance and infrastructure-inspection operations**. Making **maximum use of 5G**, the demonstration plans to provide surveillance and first response images to the city-infrastructure management centres. Additionally, the ports are located close to the international airports of Ostend and Antwerp, enabling **interoperability solutions between ATM and U-space** to be tested.

UAS in surveillance and emergency response scenarios



WP6 – Belgian VLD

Location



WP6 Objectives

- **[EX1-OBJ-CORUSXUAM-01]**
Conduct surveillance and first response flights within controlled airspace complying with required safety level and ATC requirements
- **[EX1-OBJ-CORUSXUAM-02]**
Demonstrate that First Response flights are beneficial for improving situational awareness of the first responders
- **[EX1-OBJ-CORUSXUAM-03]**
Demonstrate that Surveillance flights improves monitoring capabilities of authorities in their area of interest
- **[EX1-OBJ-CORUSXUAM-04]**
Airspace is protected by U-space services in order to:
 - prevent unauthorised users access to the airspace
 - Support authorised operators with U-space services
- **[EX1-OBJ-CORUSXUAM-05]**
Demonstrate that 5G Telecommunication improves the datalink capabilities of BVLOS operations
- **[EX1-OBJ-CORUSXUAM-06]**
Demonstrate that U-space is beneficial for UAM Authorities like the Ports and Operators operating in that airspace

Partners

- Scope
 - Emergency response flights
 - Surveillance flights
- Partners
 - Citymesh – operator
 - SABCA – operator
 - Unifly – Technology provider
 - SkeyDrone – Future USSP



 CITYMESH



SABCA

 skeydrone
Enabling safe drone operations

 UNIFLY

WP6 Demonstration Particulars

- Organisations/People involved

- WP leader: SKEYDRONE (Tom Snyers, Bjorn Geuns)
- U-space Service Provider: SKEYDRONE (Jean-Pierre De Muyt, Tanguy Dewaele, Benoit Salpéteur)
- UTM Technology Provider: UNIFLY (Jürgen Verstaen, Zakariya Laftit)
- UAM Operator: SABCA (Greet Illegems, Davide Massuti)
- UAM Operator: CITYMESH (Jon Verbeke, Rolf Koedam)

- Key external stakeholders

- Port Authorities and linked partners (police, port security, SAR, Port associated Companies...)
- Belgian Civil Aviation Authority
- Cities and linked partners (police, Fire brigade, Emergency Response officers)
- Corus-XUAM Project Support
- → Local Demonstration Board

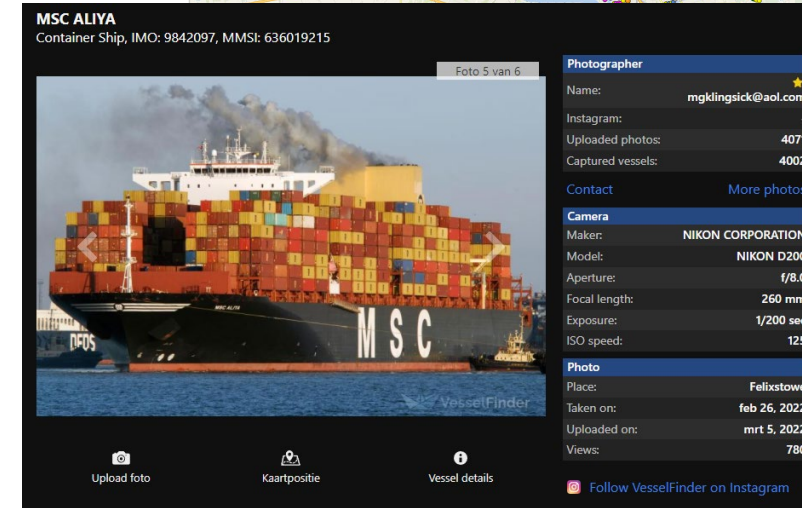
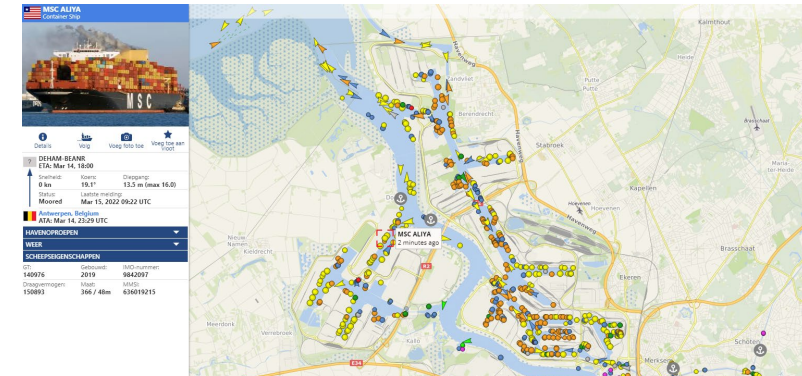
- Schedule

- | | | |
|--|---------------------|------------------------|
| • Task 6.1 Planning, Set-Up, Organisation, Reporting | May 2021 – Oct 2022 | → VLD Plan & Report |
| • Task 6.2 Safety-case, Authorisation | Aug 2021 – Apr 2022 | → Authorisation to Fly |
| • Task 6.3 VLD Execution | May 2022– Jun 2022 | → Demo Findings |

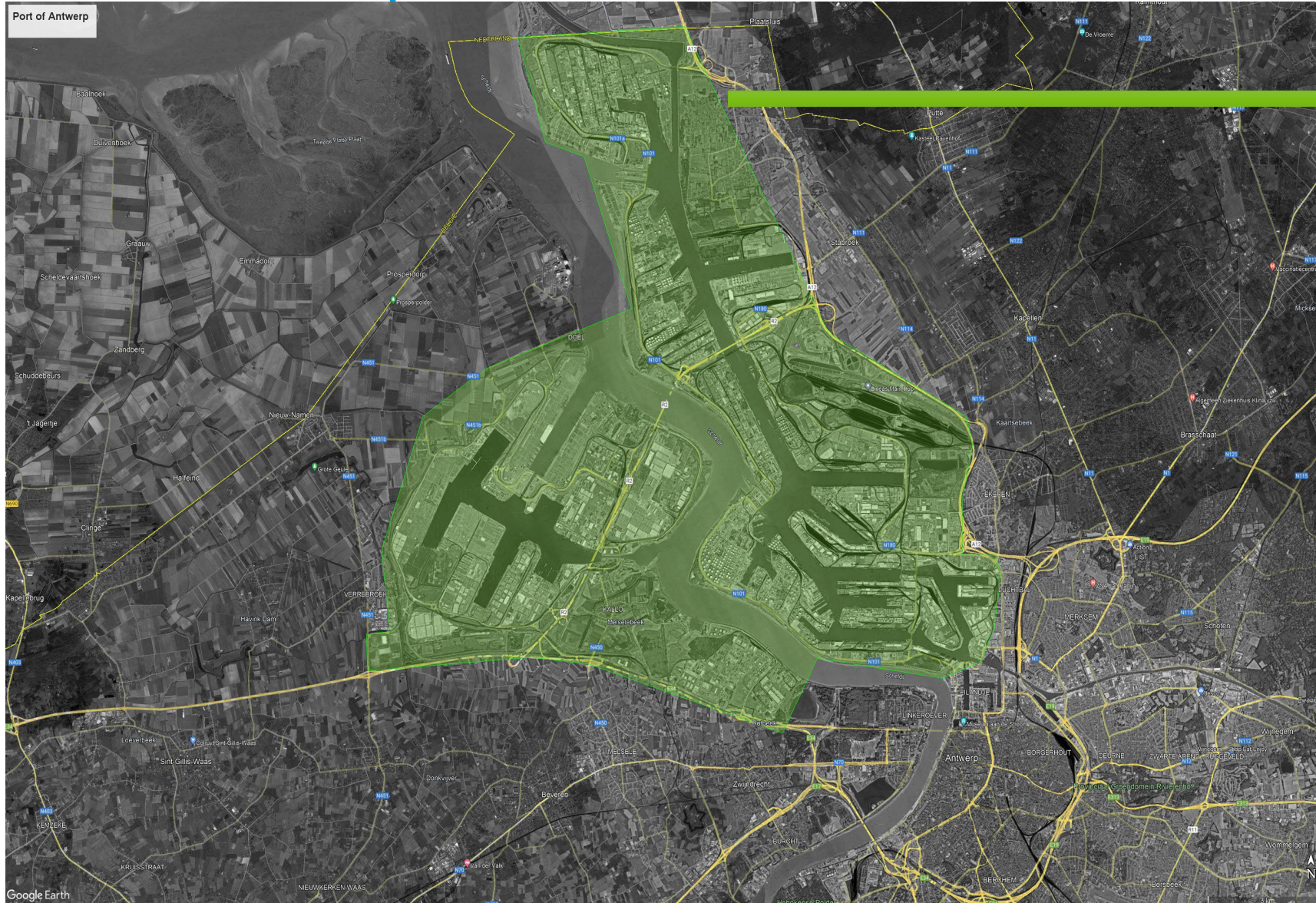
Port of Antwerp



Results Port of Antwerp 2021

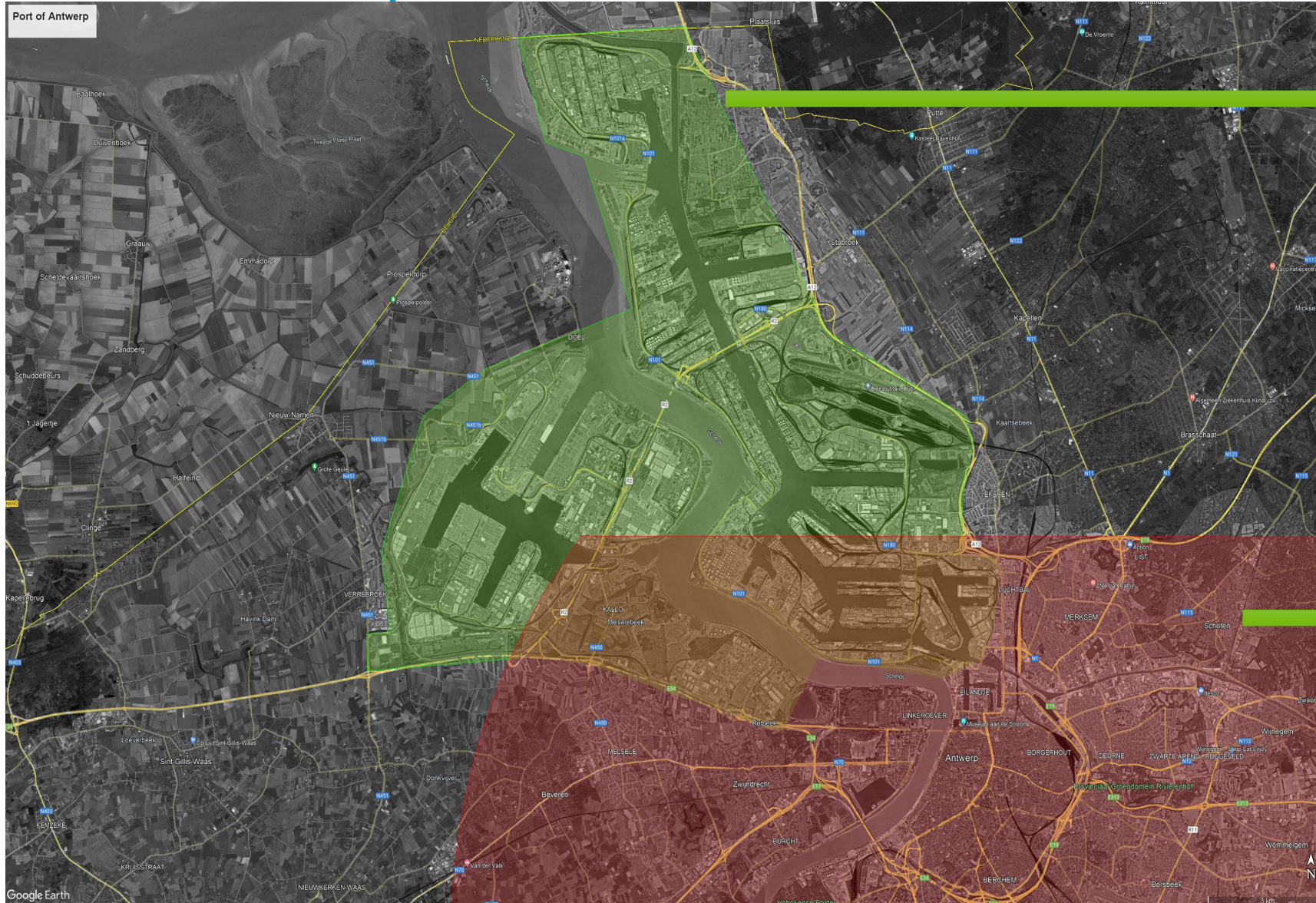


Port of Antwerp



EBR54 – Port of Antwerp

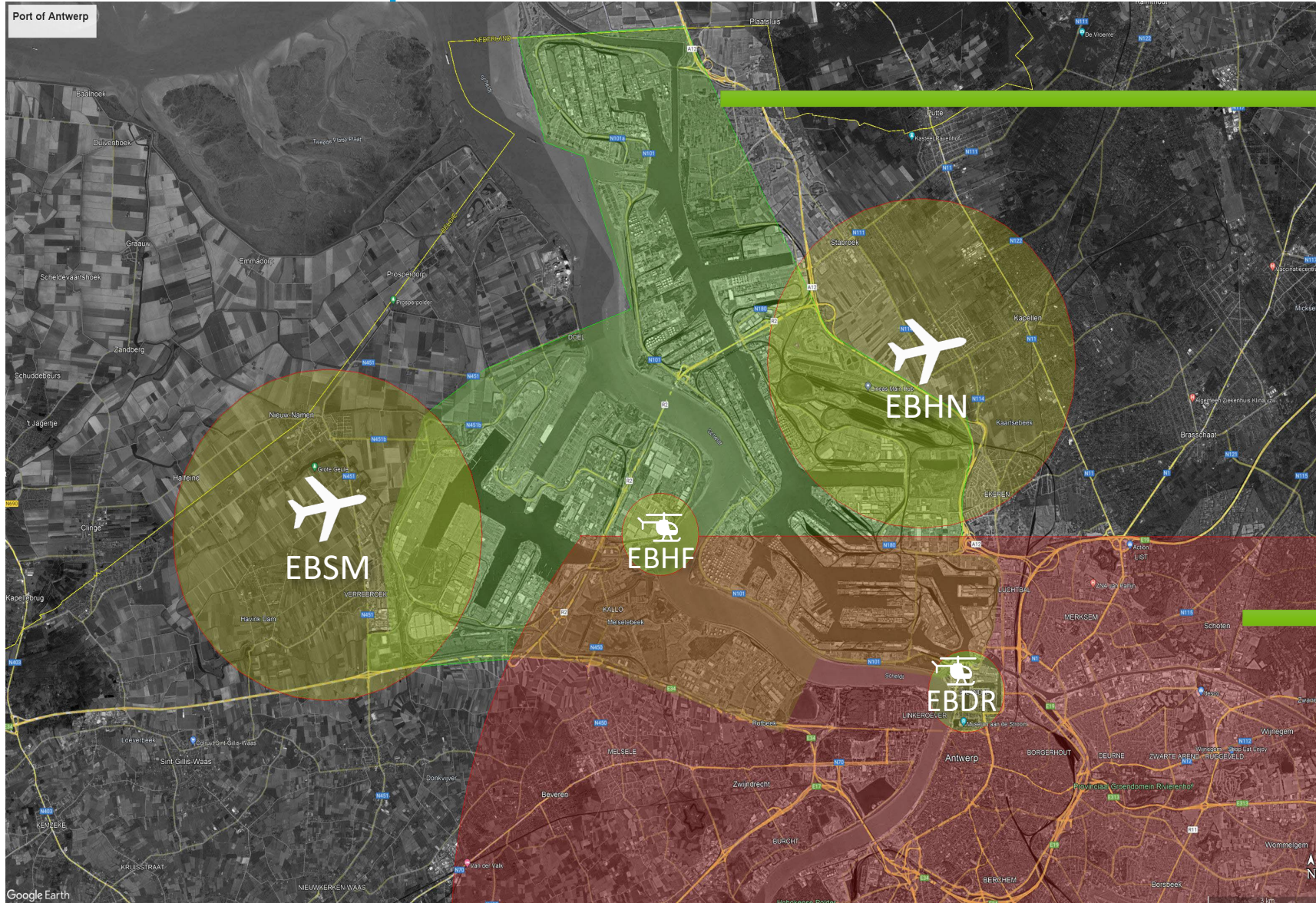
Port of Antwerp



EBR54 – Port of Antwerp

EBAW – Antwerp CTR

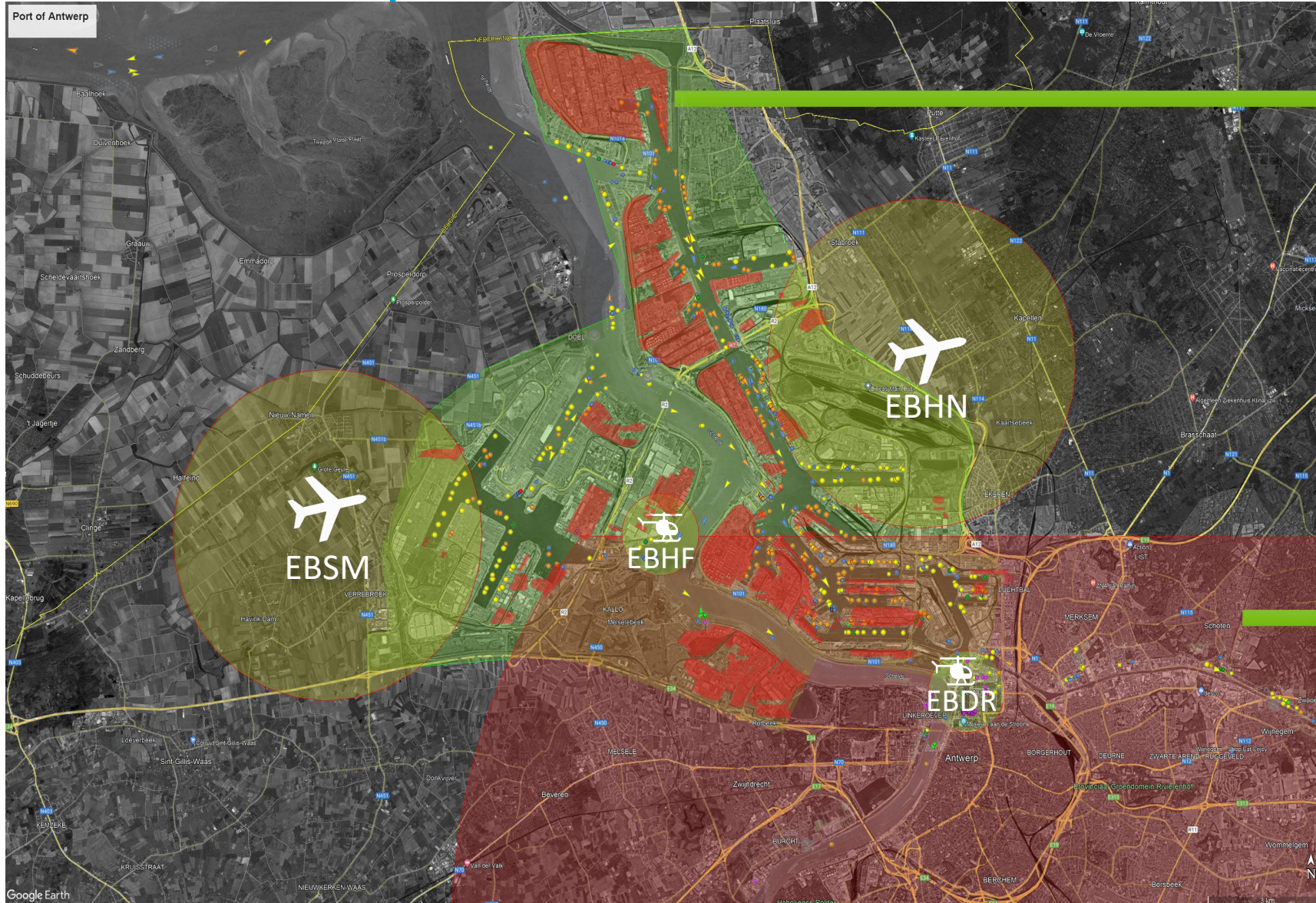
Port of Antwerp



EBR54 – Port of Antwerp

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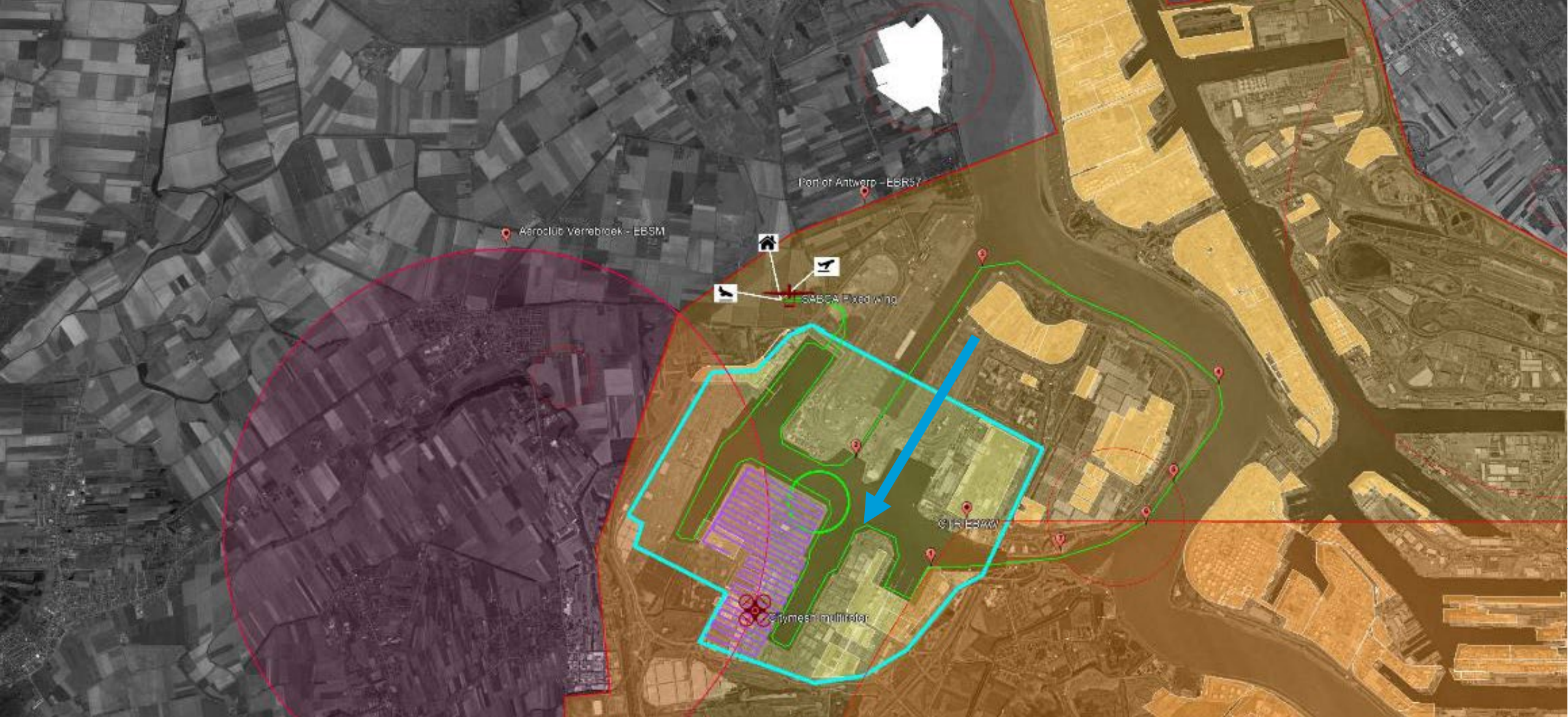
Port of Antwerp



EBR54 – Port of Antwerp

EBAW – Antwerp CTR

Large scale calamity – Port of Antwerp



Port of Zeebrugge



Cargo flows

49,1 MILLION TONS/2021

PORT OF ZEEBRUGGE

2.261.096  per year



1.905 employees
346.102 shifts

Port of Zeebrugge

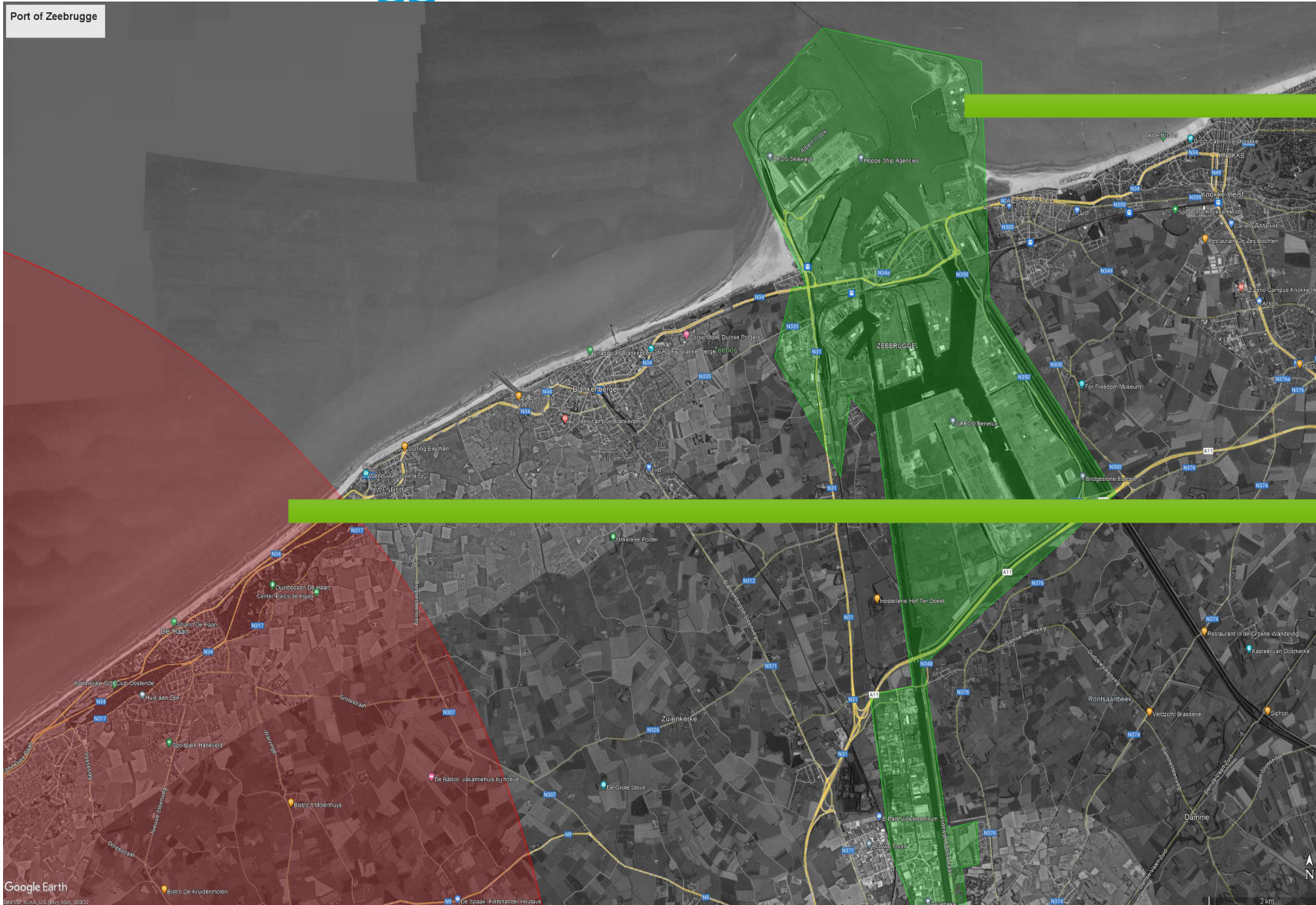
Port of Zeebrugge



EBR56 – Port of Zeebrugge

Port of Zeebrugge

Port of Zeebrugge



EBR56 – Port of Zeebrugge

EBOS – Ostend CTR

Port of Zeebrugge

Port of Zeebrugge



EBR56 – Port of Zeebrugge

EBOS – Ostend CTR

Chemical Leaks from Container on Board RoRo in Zeebrugge

October 30, 2018

A chemical has leaked from a container carried on board Finnish Ro-Ro M/S Mistral at the Port of Zeebrugge, Belgium, in the afternoon of October 29.

“We can confirm that one of the containers on board M/S Mistral leaked a substance. The container was immediately removed from the ship and intervention teams were present instantly. The contents of the container was pumped into another container. The situation was solved safely and quickly,” spokesperson of the Port of Zeebrugge told World Maritime News.

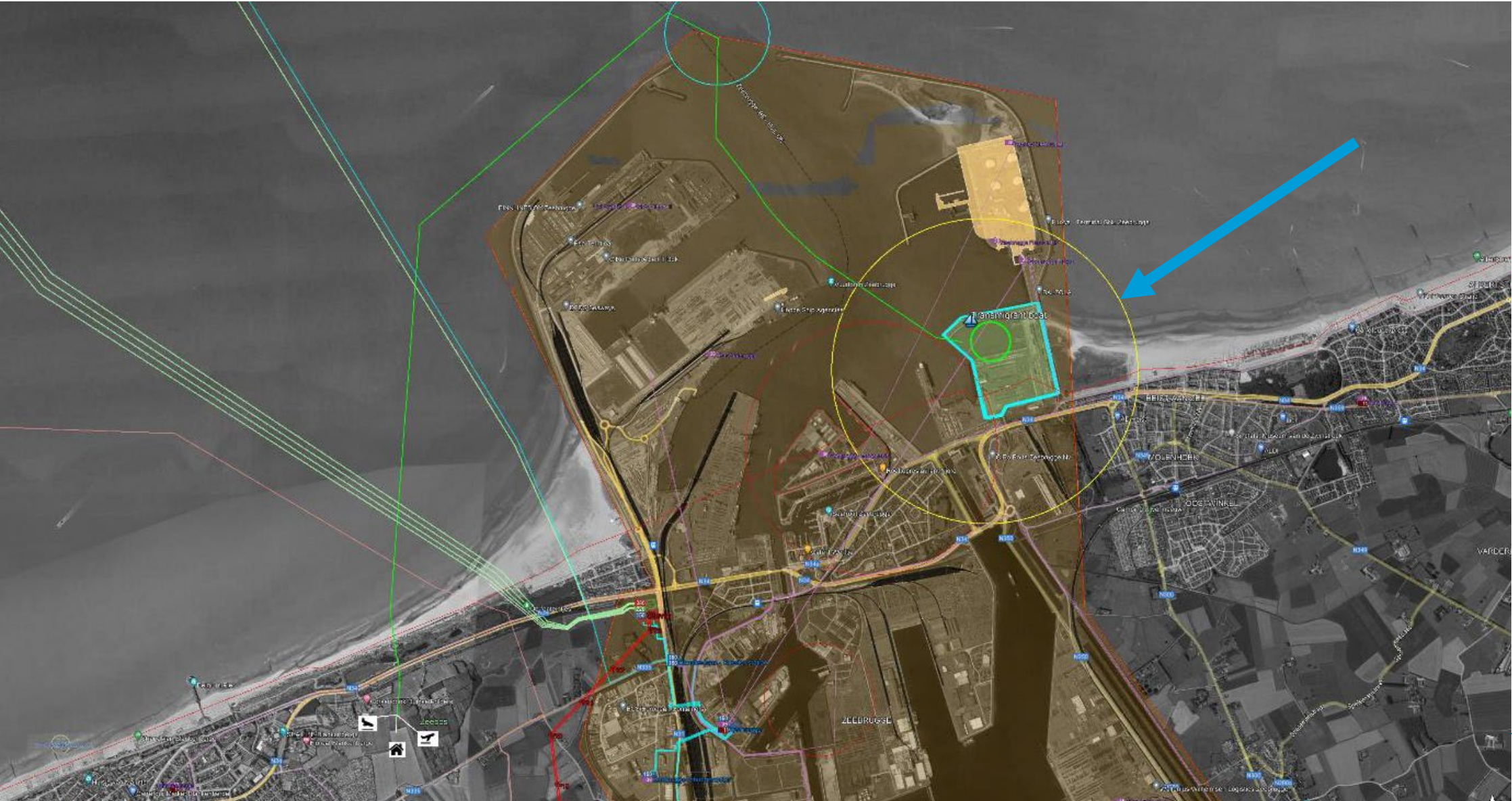
Local media said that the fire department was dispatched immediately to the scene and that dockers were evacuated from the site as a safety precaution.

“All cargo operations were stopped, it is not clear yet what kind of chemicals leaked, nor the volume,” the Hungarian National Association of Radio Distress-Signalling and Infocommunications (RSOE) informed.

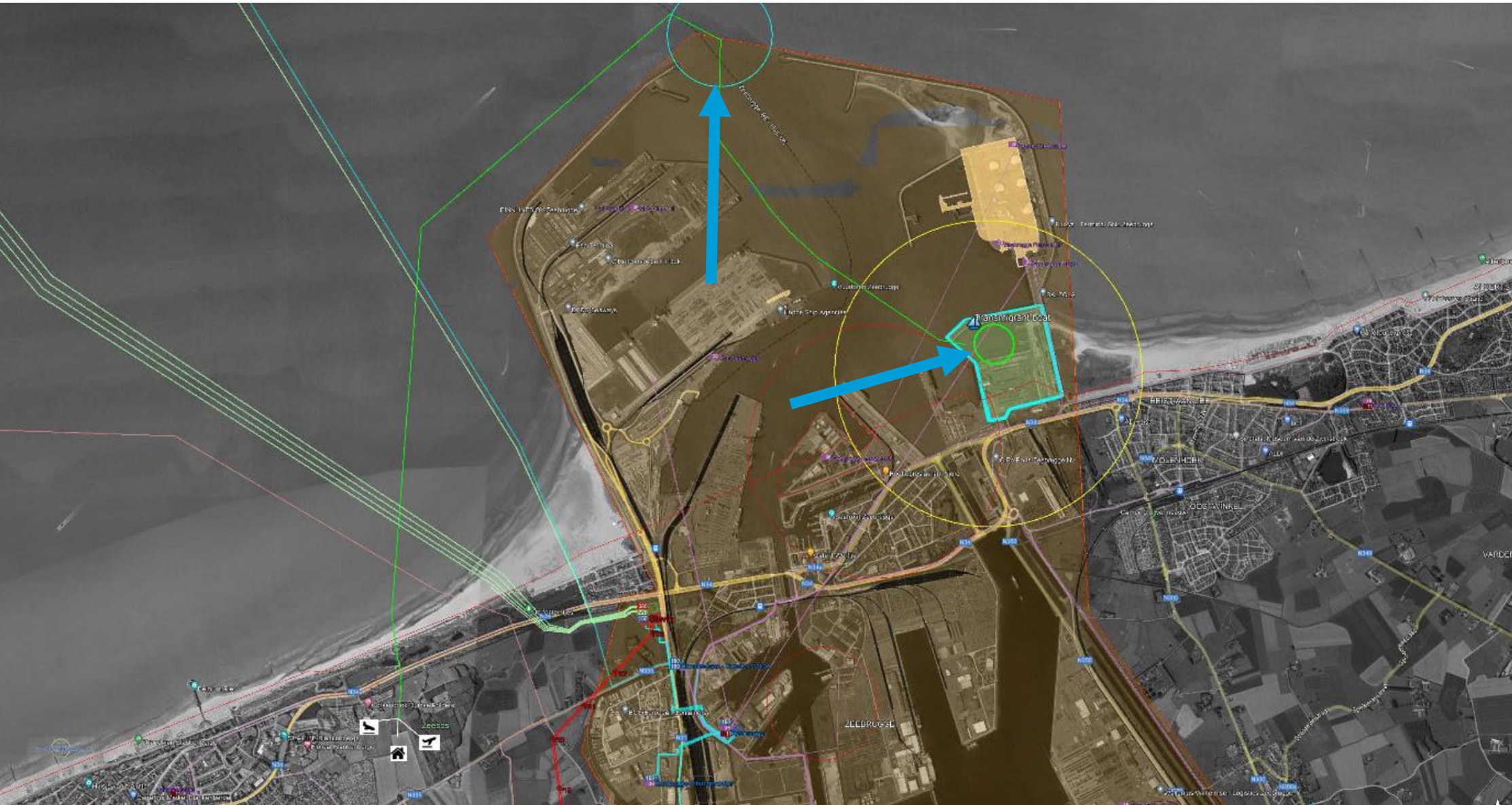
Mistral, built in 1999, is owned by Godby Shipping and chartered to P&O Ferries. The RoRo is deployed on P&O's liner traffic between the United Kingdom and Belgium.

World Maritime News Staff

Dangerous goods incident – Port of Zeebrugge



Transmigrant case – Port of Zeebrugge



Challenges

WP6 challenges & impact

Challenges and Expected mitigations

- Operational and Flight Authorisations required
 - Local Demonstration Board to de-risk
- Demonstrate Real UAM Business Cases
 - Demonstrate the added value of U-space Airspace for UAM taking into account the additional complexity of State Aircraft flights
 - Involve Port Authorities and Cities from the planning phase to jointly build the Use Cases
- U-space Arena:
 - Demonstration with different partners to take up their role as CISP, USSP, Technology Provider and Operator
- Technical challenges:
 - Integrations USSP – U-space Technology – Operator Integration – Client Integration

Impact

- VLD to test and validate the need and concept of U-space in the context of UAM
- VLD findings and evidences to
 - Evaluate and improve the concept
 - EU Standardisation and Regulation activities

WP6 challenges & impact

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Chicken and egg problem

High risk, live environment Emergency
Use Case with BVLOS flights

Chicken and egg problem

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Use Case with BVLOS flights



Typically executed by State Aircraft (SA)
or by contracted subcontractor

Chicken and egg problem

High risk, live environment Emergency
Use Case with BVLOS flights



Typically executed by State Aircraft (SA)
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- Requirements to receive exemption for SA Flight **excludes DEMO flights**
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NON-SA flight demo

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NON-SA flight demo

- SORA based operational auth

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NON-SA flight demo

- SORA based operational auth + **TSA (BCAA Req)**

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NON-SA flight demo

- SORA based operational auth **+ TSA (BCAA Req)**
 - Operational live environment does not allow for recurring TSA creation as it will have severe impact on existing aviation.
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High risk, live environment Emergency
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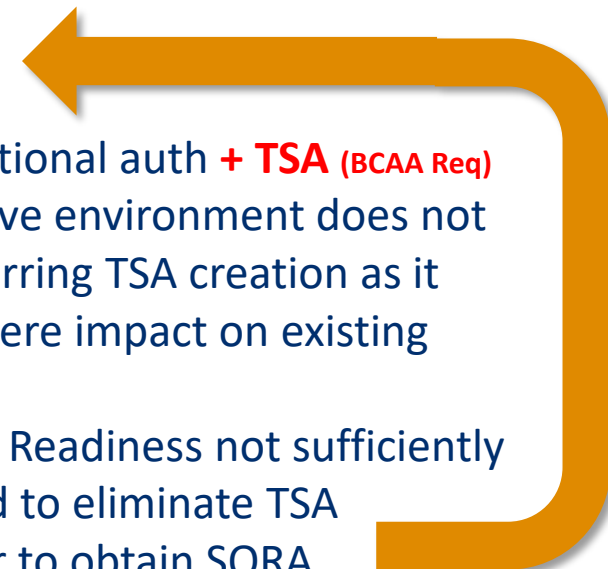
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Bjorn Geuns

Head of Projects at SkeyDrone

 bge@skeydrone.aero

 +32 (0) 472 26 79 34

 <https://www.linkedin.com/in/bjorn-geuns/>

WP6 – Belgian VLD

Thank you very much for your attention!