

# Workshop on LIQUID HYDROGEN SAFETY

## LH<sub>2</sub> safety – production, transport and handling:

Results and plans of two LH<sub>2</sub>-projects will be presented as well as talks from expert speakers, e.g. Kawasaki HI, MAN Cryo, SANDIA, Air Liquide and Gexcon.

### More information:

<https://www.sintef.no/en/events/hydrogen-safety-liquid-hydrogen-workshop/>

A joint initiative by the projects  
Safe Hydrogen Fuel Handling and Use for Efficient Implementation (**SH<sub>2</sub>IFT**) and  
Pre-normative Research for Safe Use of Liquid Hydrogen (**PRESLHY**)

Illustration courtesy of Kawasaki HI



## PROGRAM:

*09:30 – 10:00 Registration and coffee*

10:00 – 10:30 **Welcome, HySafe, PRESLHY & SH<sub>2</sub>IFT** (Project partners)

10:30 – 11:05 **Production, transport and handling of LH<sub>2</sub>: Safety issues and knowledge gaps** (L. Bernard, Air Liquide)

*11:05 – 11:25 Refreshments*

11:25 – 11:45 **SH<sub>2</sub>IFT – Update on planned LH<sub>2</sub> BLEVE and LH<sub>2</sub> RPT experiments** (K. v. Wingerden & M. N. Holme, Gexcon)

11:45 – 12:05 **SH<sub>2</sub>IFT – Invitation to blind-prediction benchmark exercise on jet fires** (R. Stølen, RISE Fire Research)

12:05 – 12:25 **Overview of results from PRESLHY** (general, strategy, connected work) – (T. Jordan KIT)

12:25 – 13:00 **Invited talk – Quantitative risk assessment of LH<sub>2</sub> systems: data and model needs** (E. Hecht, SANDIA)

*13:00 – 14:00 Lunch*

14:00 – 14:15 **PRESLHY – Release and distribution** (A. Venetsanos, NCSR)

14:15 – 14:30 **PRESLHY – Ignition** (S. Hawksworth or S. Coldrick, HSL - TBC)

14:30 – 14:45 **PRESLHY – Combustion** (M. Kuznetsov, KIT)

14:45 – 15:00 **PRESLHY – Expected impact and dissemination routes of outcomes** (D. Cirrone, UU )

*15:00 – 15:20 Refreshments*

15:20 – 15:40 **Industry perspective – Large scale LH<sub>2</sub> supply chain project & H<sub>2</sub> gas turbine demonstration** (K. Morimoto, Kawasaki HI)

15:40 – 16:00 **Industry perspective – MAN Cryo marine liquid hydrogen fuel gas system** (K. Lorentsson, MAN Cryo)

16:00 – 16:20 **Industry perspective – World's first hydrogen electric car ferry – driven by LH<sub>2</sub>** (I. Østvik, Norled)

16:20 – 16:40 **Industry perspective – Liquid hydrogen bunker vessel** (M. Bøhlerengen, Moss Maritime)

16:40 – 17:00 **Q&A and panel discussion** - Safe introduction of LH<sub>2</sub>: Challenges, bottlenecks, regulations and public acceptance

~17:00 End



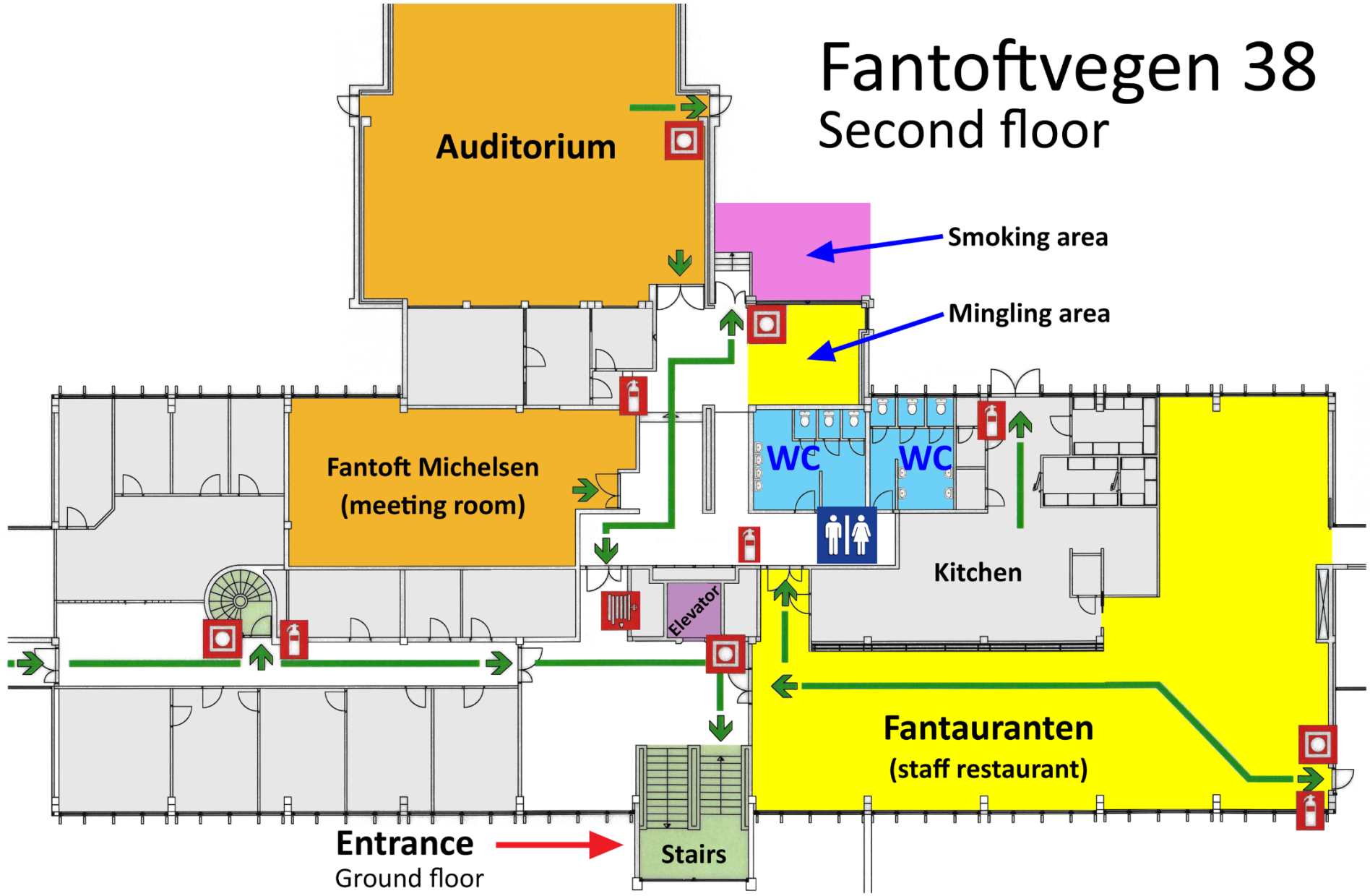
**Organisers and contacts:**  
[anders.odegard@sintef.no](mailto:anders.odegard@sintef.no)  
[trygve.skjold@gexcon.com](mailto:trygve.skjold@gexcon.com)  
[thomas.jordan@kit.edu](mailto:thomas.jordan@kit.edu)

S H<sub>2</sub> IFT

PRESLHY

hySafe  
INTERNATIONAL ASSOCIATION  
FOR HYDROGEN SAFETY

# Fantoftvegen 38 Second floor



# Practical details: venue, travel and accommodation

## Venue:

- NORCE (previously CMR), Fantoftvegen 38, 5072 Bergen  
The venue is close to Fantoft Stave church: [https://en.wikipedia.org/wiki/Fantoft\\_Stave\\_Church](https://en.wikipedia.org/wiki/Fantoft_Stave_Church)

## Travel:

- Bergen Light Rail ('Bybanen') has regular departures (5-10 minutes) between Bergen Airport (Flesland) and the City Centre most of the day: <https://www.skyss.no/en/timetable-and-maps/bergen-light-rail/>
- The venue is within walking distance from the Bergen Light Rail stop called **Fantoft** (see map below, where the track is indicated by a black line).
- Bergen Light Rail is the cheapest option (about NOK 40 per trip), but there are some limitations with respect to very early (before 6 am) or very late (after midnight) departures.
- A taxi between the airport and Fantoft or the City Centre will typically cost NOK 400-500 and NOK 500-600, respectively.
- There are also Shuttle Busses between the Airport and the City Centre (about NOK 120-150), e.g.: <https://www.flybussen.no/billett/#/reise/til/bergen-flyplass/bgo>

## Accommodation:

- There are no hotels within walking distance from the venue, but most hotels in the City Centre will be within walking distance from the end station ('Byparken') for Bergen Light Rail.
- The hotel Scandic Byparken (<https://www.scandichotels.com/hotels/norway/bergen/scandic-byparken>) has good location, and used to have reasonable rooms.
- However, there are numerous alternatives within walking distance of the Light Rail...

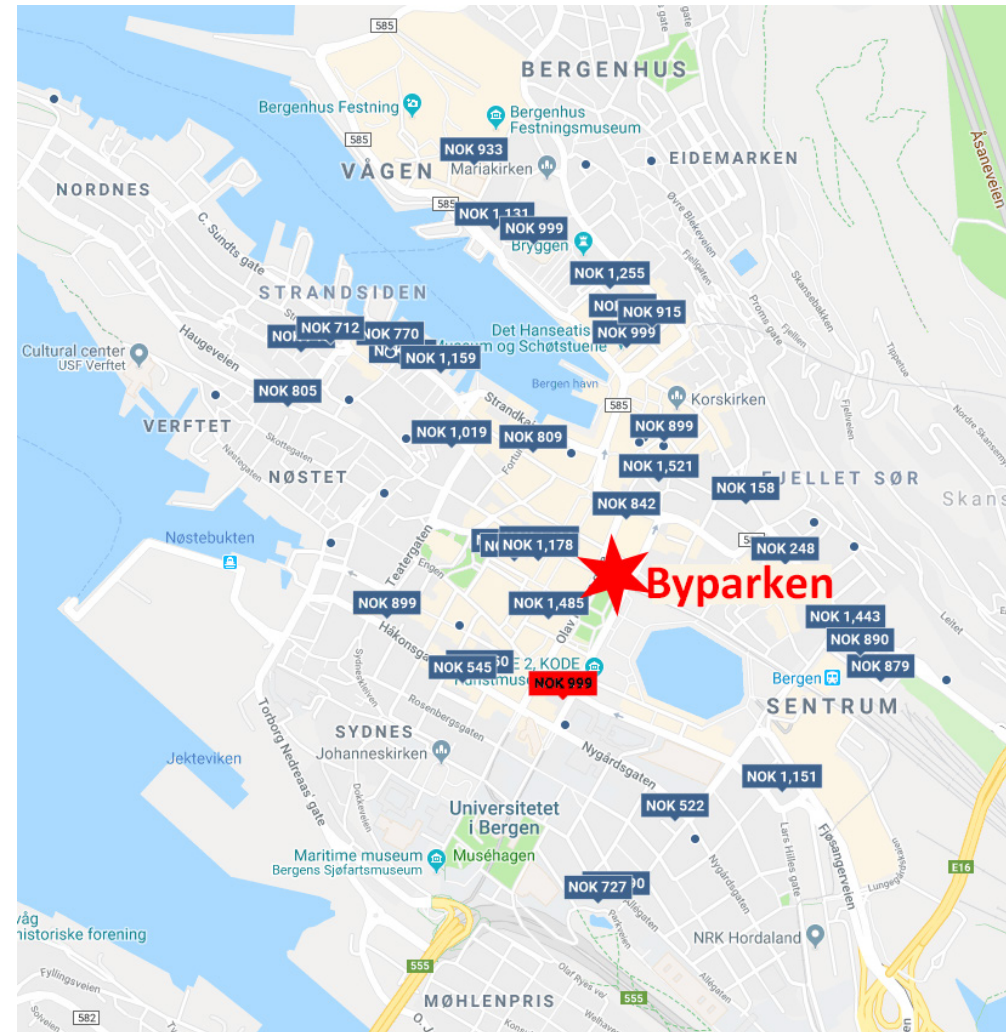


# Practical details: venue, travel & accommodation

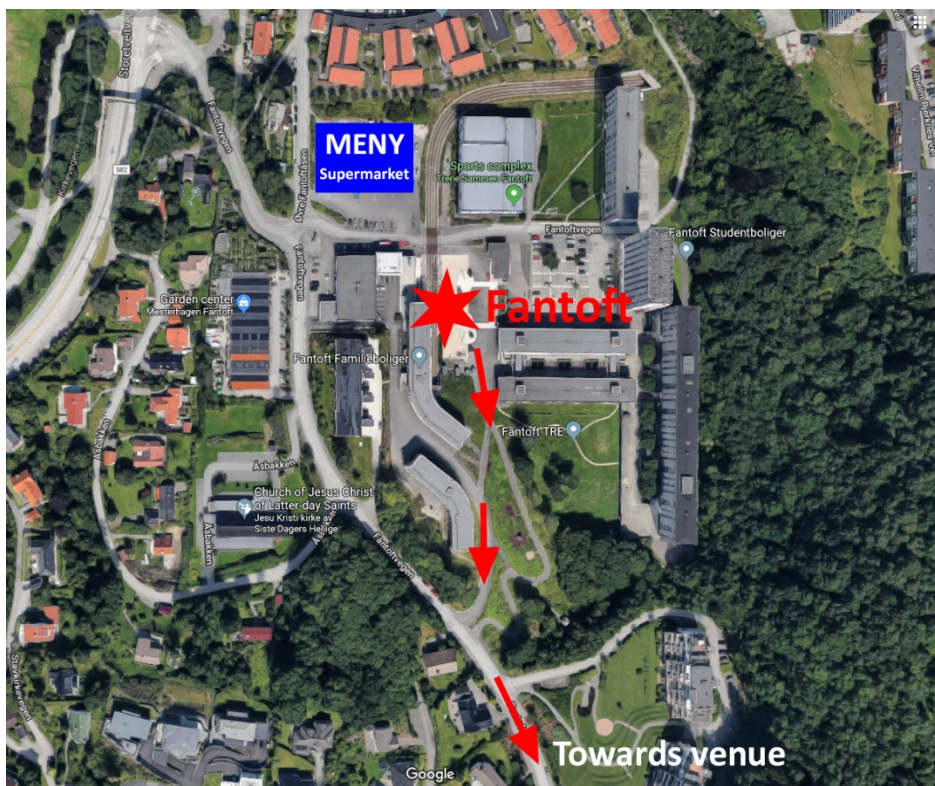
- **Accommodation:** There are no hotels within reasonable walking distance from the venue for the workshop!
- Most of the hotels in the City Centre are within walking distance from the end station, called Byparken, for Bergen Light Rail (red star in the map on the right).
- The blue boxes in the map on the right indicate hotels within walking distance (5-10 minutes) from Byparken (the numbers indicate price level).
- This link should produce an updated map:

<https://www.google.com/travel/hotels/Bergen>

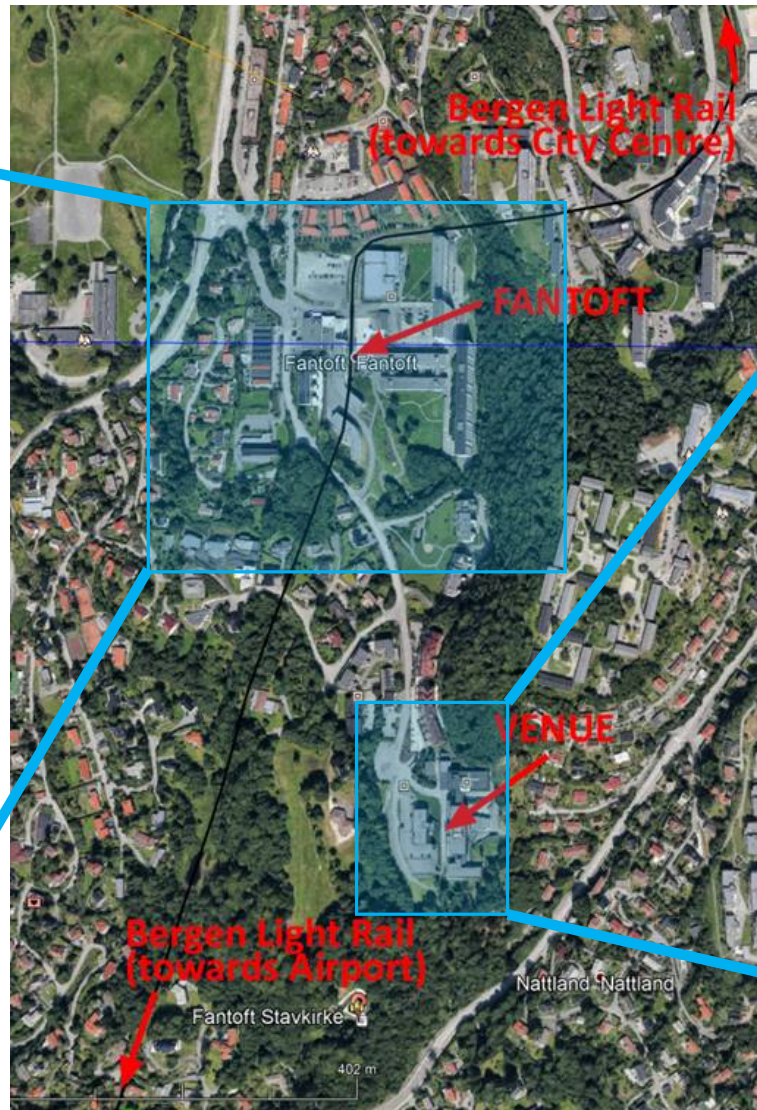
- Example: Hotel Scandic Byparken (red box) has good location, and often reasonable rooms:  
<https://www.scandichotels.com/hotels/norway/bergen/scandic-byparken>



**Map 1** – The stop Fantoft (red star) for Bergen Light Rail ('Bybanen') and directions towards the venue.

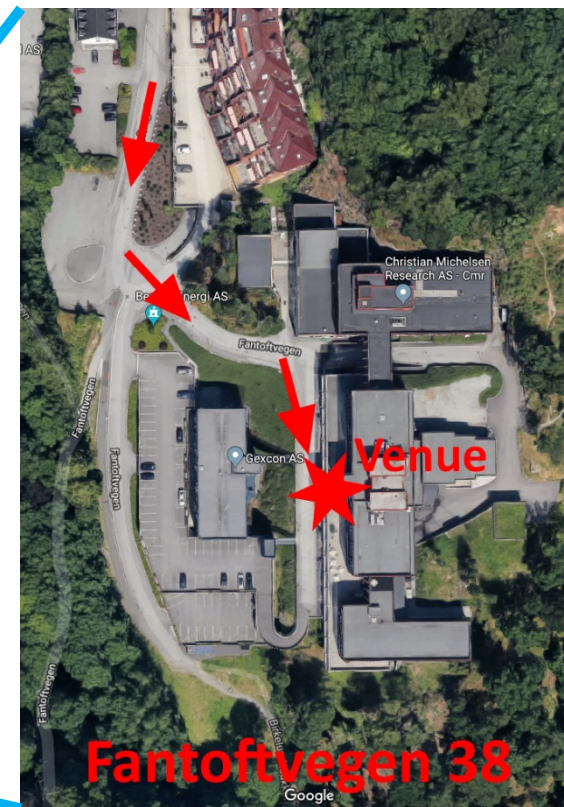


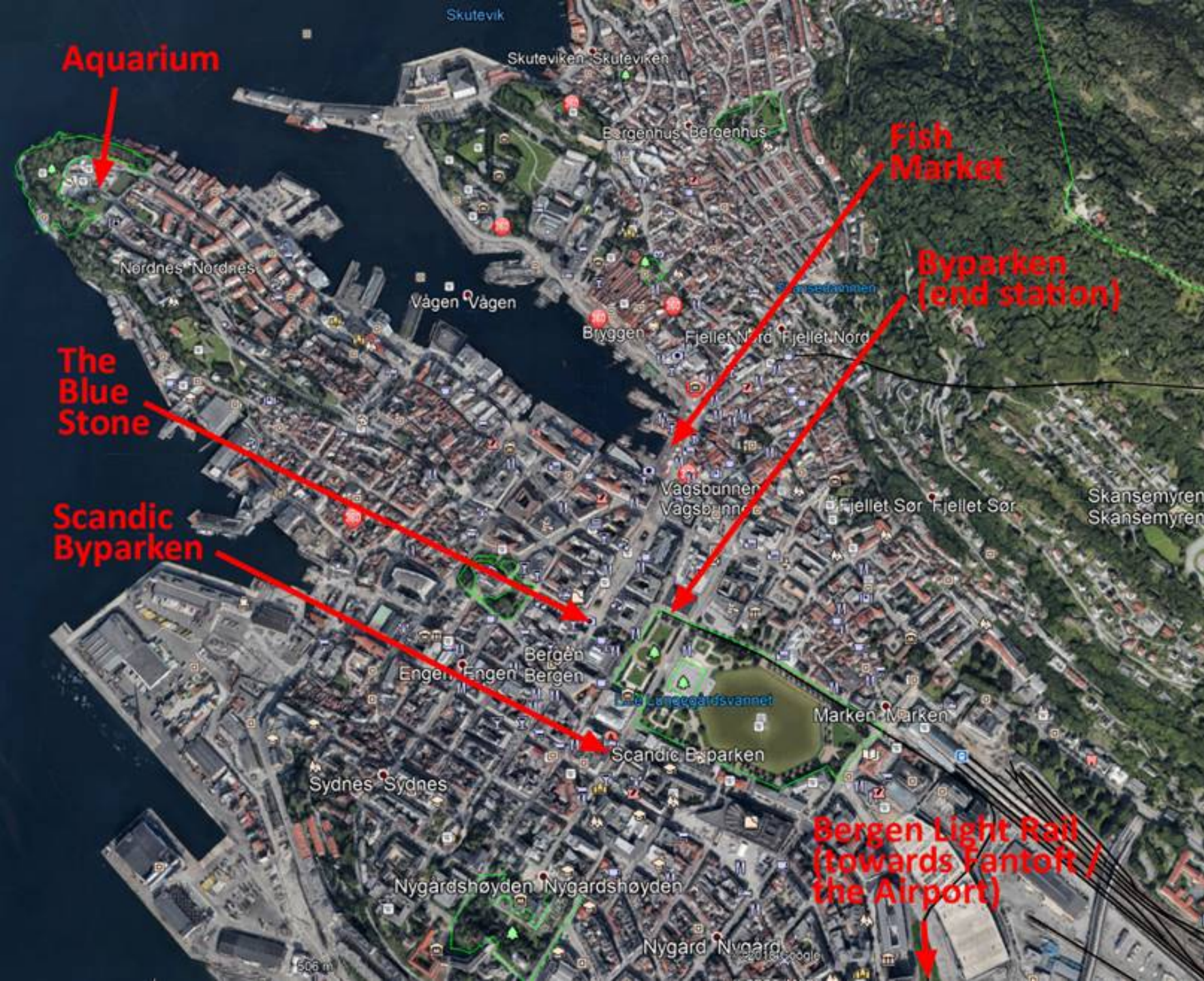
**Map 2** – The stop Fantoft and the venue for the meetings and workshop in March.



**Map 2** – Close-up of the venue (red star):

**Fantoftvegen 38  
5072 Bergen**





**Map 4 – The City Centre of Bergen and the end stop for Bergen Light Rail ('Bybanen'), called Byparken.**



The Blue Stone is often used as a meeting place in the city centre of Bergen:

[https://en.wikipedia.org/wiki/The\\_Blue\\_Stone](https://en.wikipedia.org/wiki/The_Blue_Stone)