



Vervanging Sluizen Trollhättan Kanaal Zweden Replacement Locks Trollhättan canal Sweden

Lars Johansson, Project manager, Trafikverket Sweden
Markus Eek de Geer, Design Manager, Trafikverket Sweden
Fokke Westebring, Nautical and lock expert, WSP-Netherlands

Replacement Locks Trollhättan canal Sweden



- Project Introduction
- Innovative Triangular Lock
- Procurement and Construction



Project Introduction

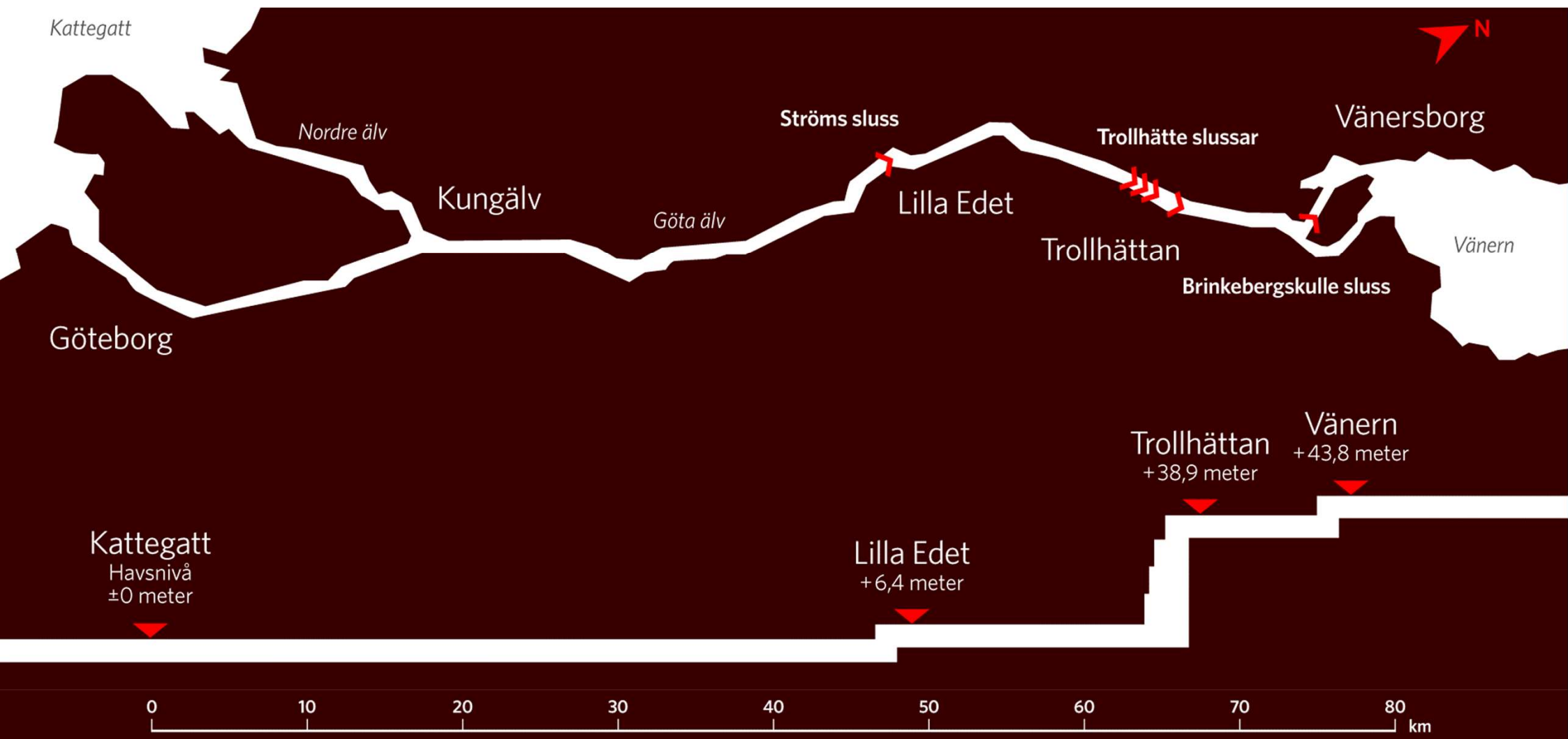


Different projects, located in:

- Vänersborg
- Trollhättan
- Lilla Edet



Project Introduction



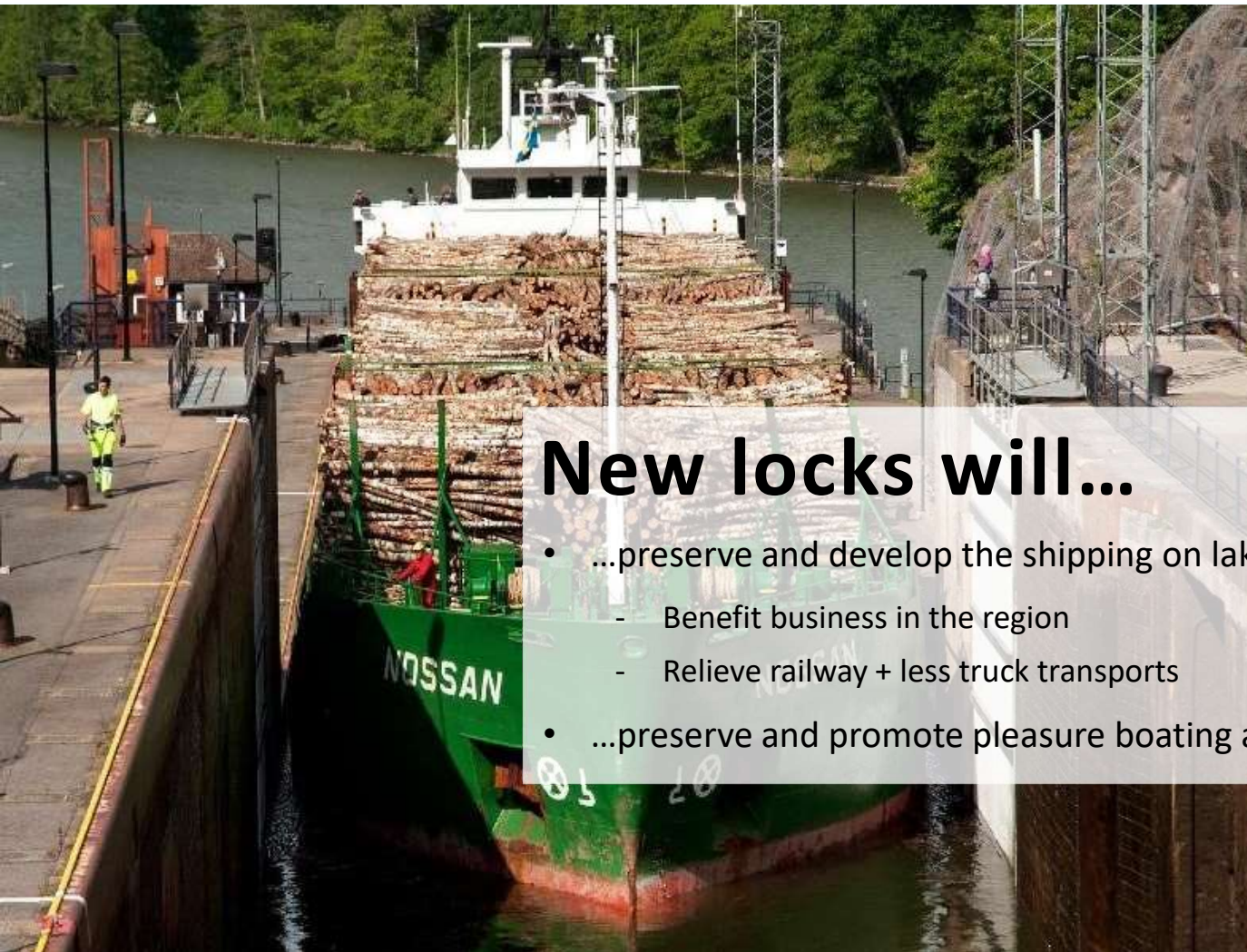
Project Introduction



Why new locks?

- The existing locks are over 100 years old
- The constructions cannot be renovated
- Considered worn out in 2030

Project Introduction



New locks will...

- ...preserve and develop the shipping on lake Vänern
 - Benefit business in the region
 - Relieve railway + less truck transports
- ...preserve and promote pleasure boating and tourism



Project Introduction

Vänersborg

- One lock
- Rural area
- Sensitive Nature and Cultural Heritage sites



Project introduction



Here is a vision picture of alternative North. The view is from Göta älv.

Keep in mind
that a vision picture gives a sense of how it could look and does not show exactly how it will be in reality.

Trollhättan

- Three locks
- 32m water level difference
- Difficult terrain

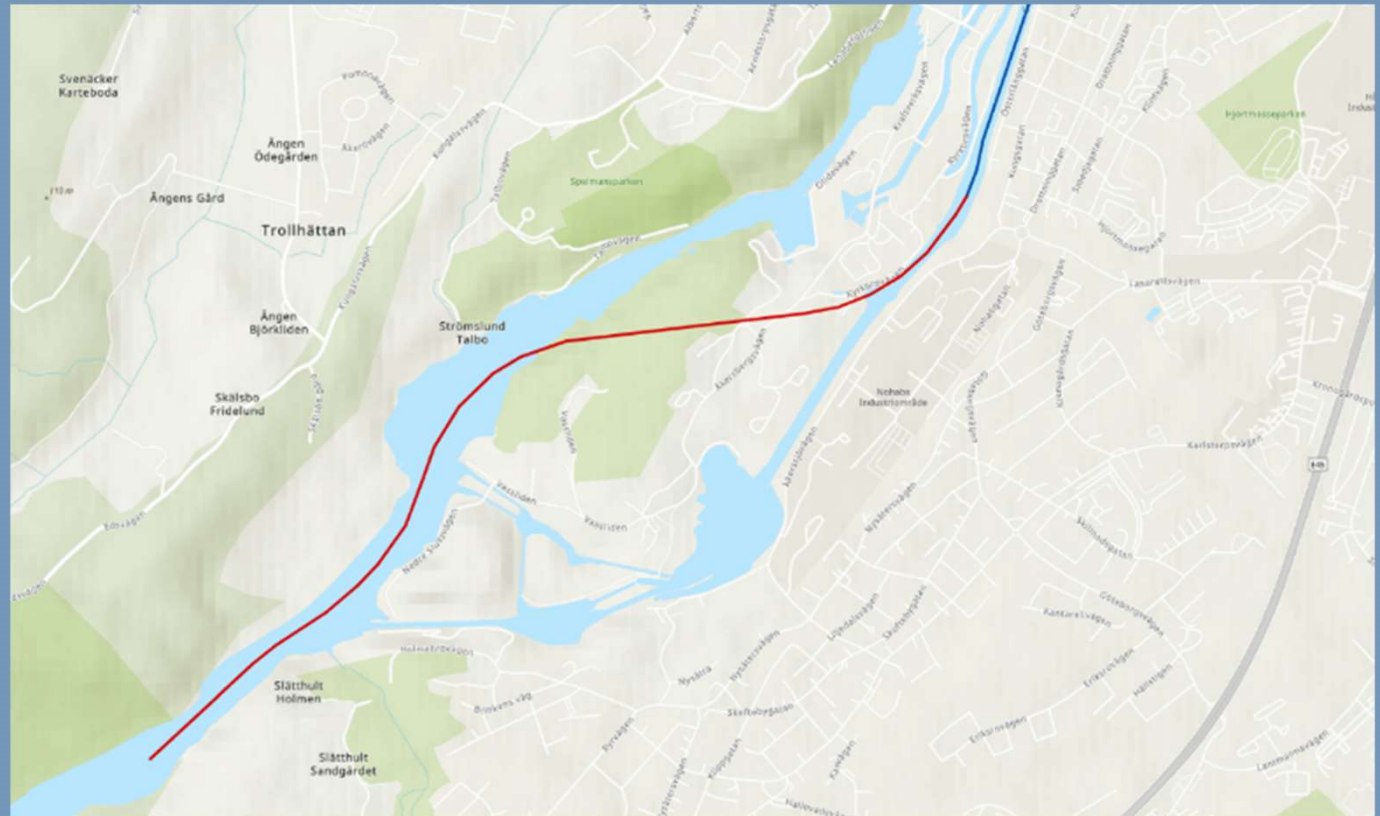


Project introduction



Trollhättan's new lock trail is planned here

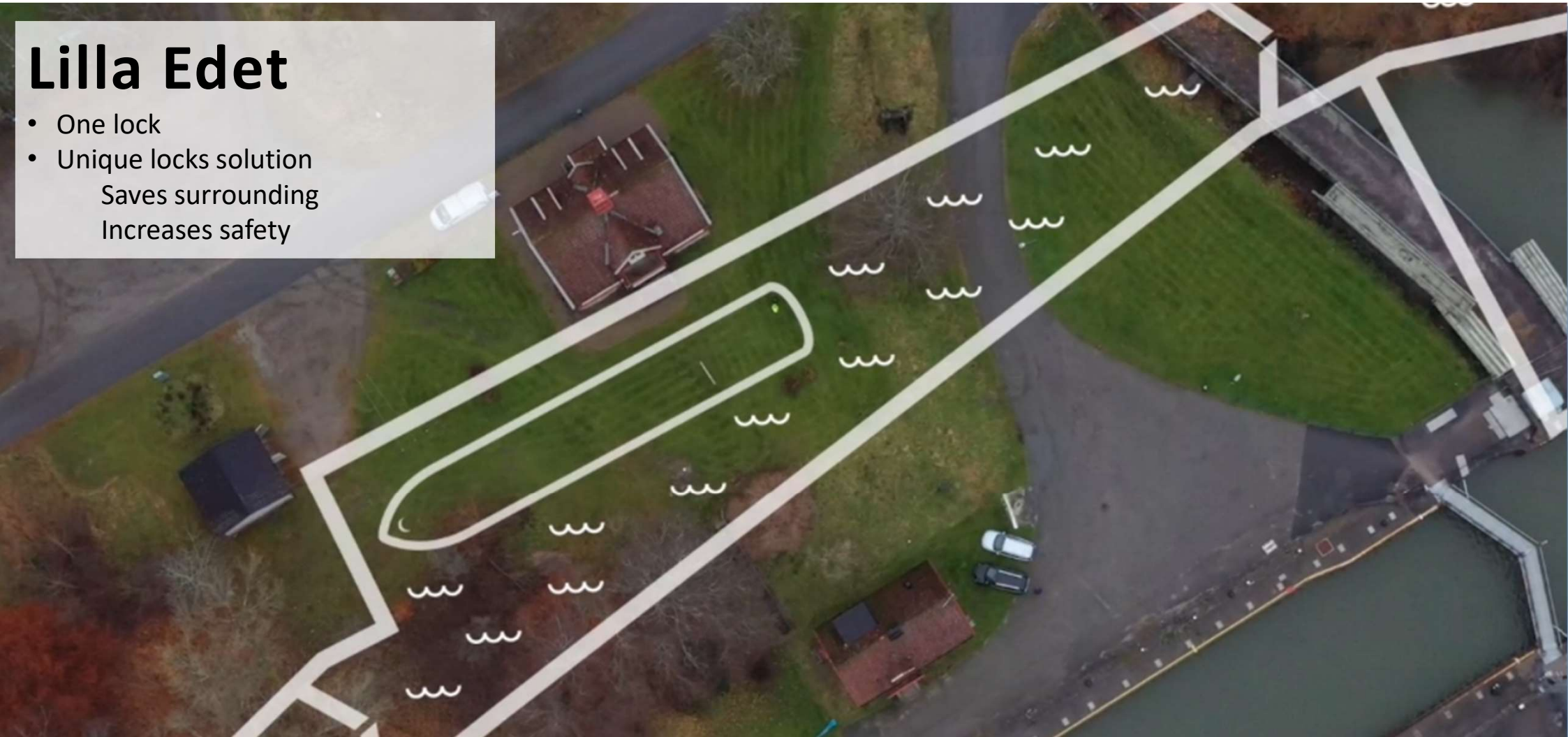
The map shows the approximate location of the new lock trail. The trail runs between Göta älv and Bergkanalen north of Västergärdet and is called alternative North.



Project introduction

Lilla Edet

- One lock
- Unique locks solution
 - Saves surrounding
 - Increases safety



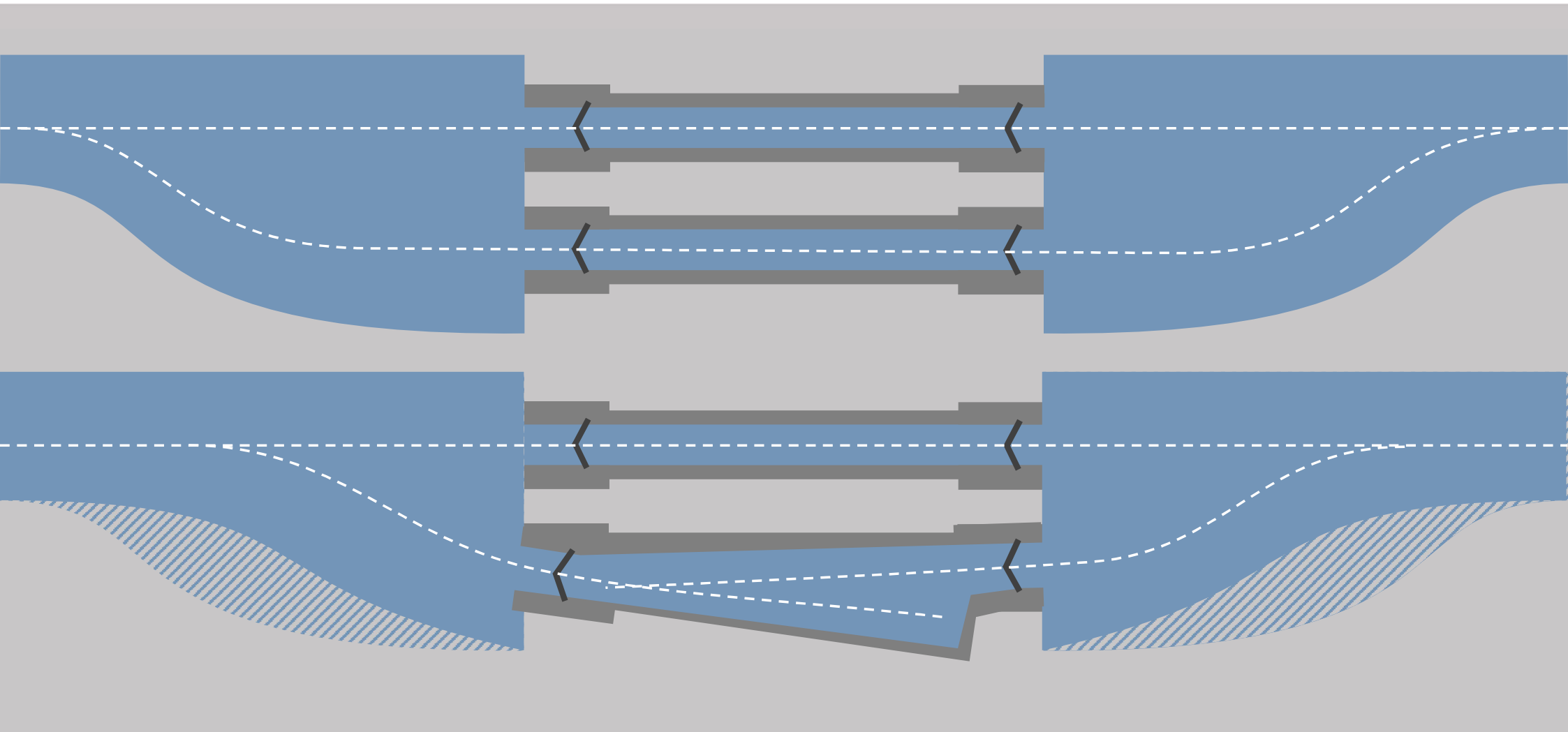
Innovative Triangular Lock



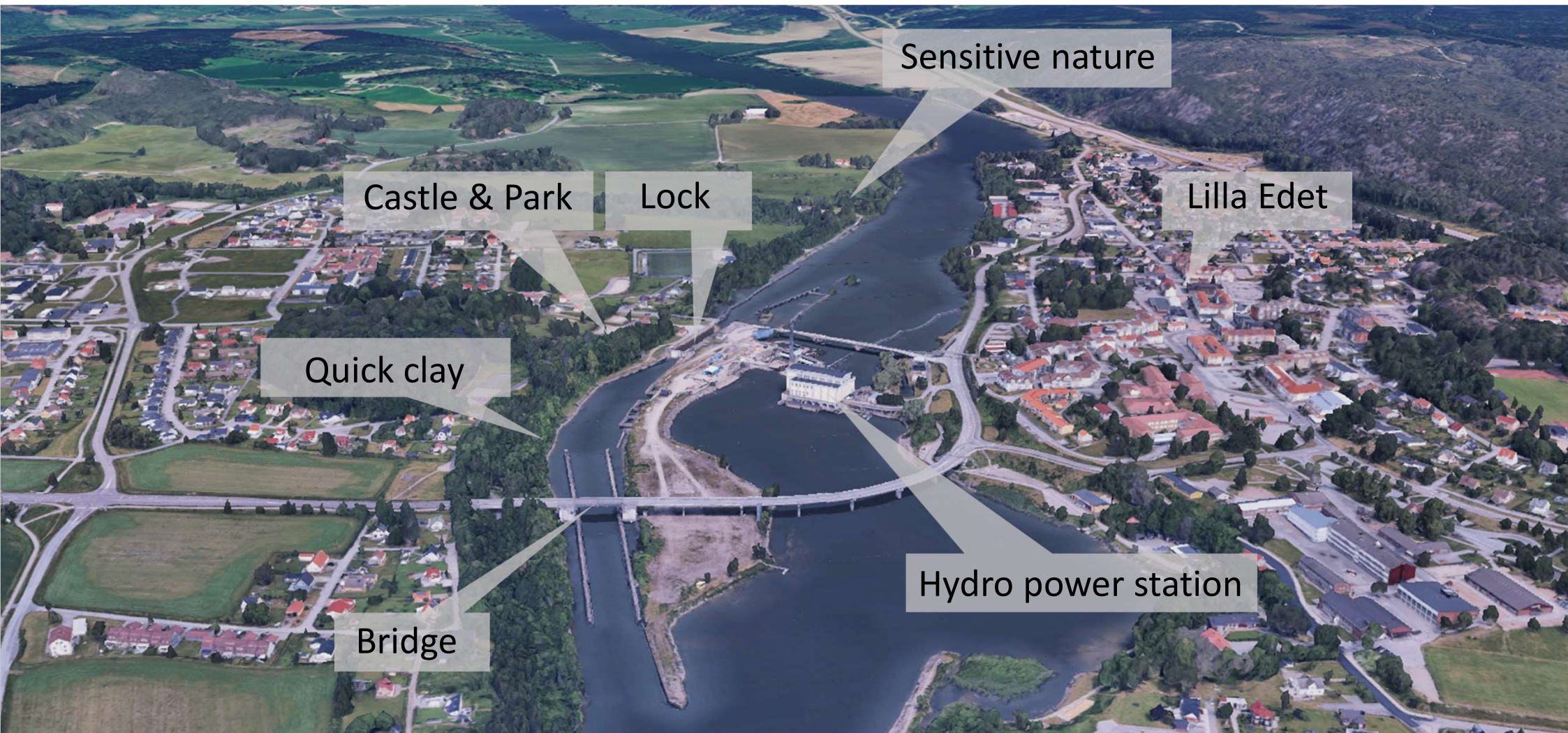
In a triangular lock, ships enter in one direction, adjust course during the transit, and sail out in the new direction. The vision picture shows how the triangular lock in Lilla Edet could be designed. What the surroundings around the lock will look like is not yet clear. The picture is taken from the south.

Keep in mind
that a vision picture
gives a sense of
how it could look
and does not show
exactly how it will
be in reality.

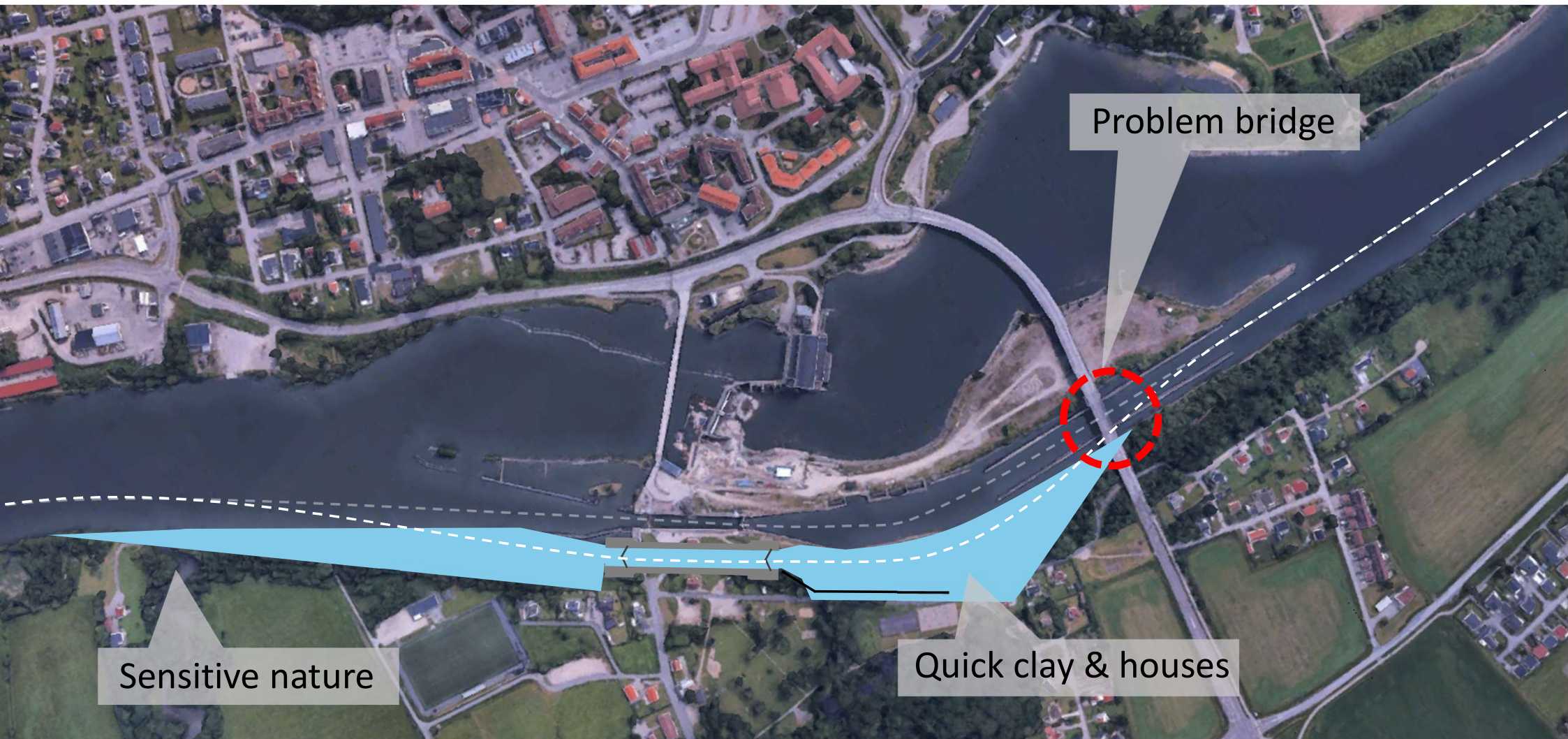
Innovative Triangular Lock – Principle



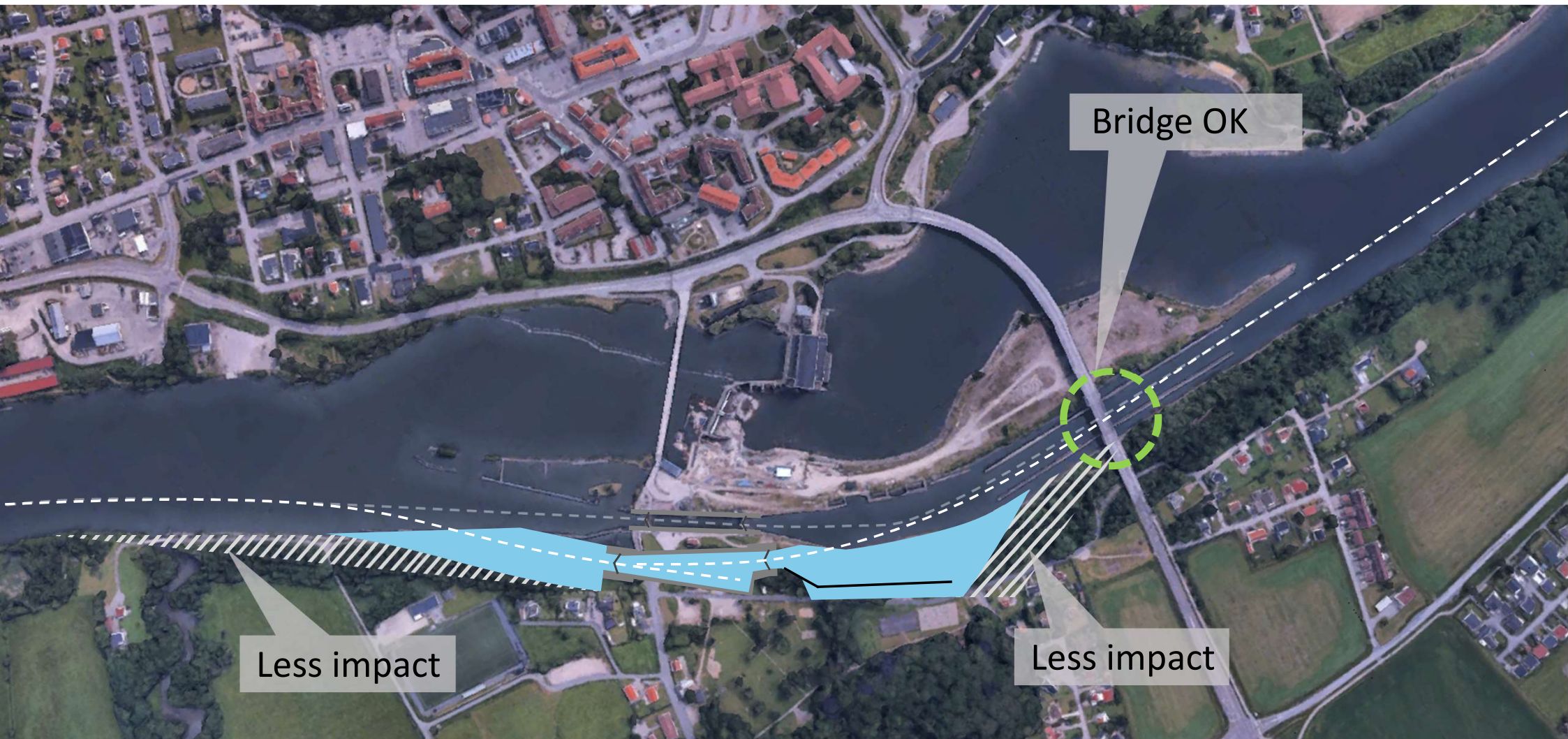
Innovative Triangular Lock – Situation in Lilla Edet



Innovative Triangular Lock



Innovative Triangular Lock



Innovative Triangular Lock



We:

- Save Nature
- Reduce problem with Quick clay slopes
- Improve nautical safety for passing the bridge

But:

- This comes with a price

Keep in mind
that a vision picture
gives a sense of
how it could look
and does not show
exactly how it will
be in reality.

Innovative Triangular Lock – CFD calculations

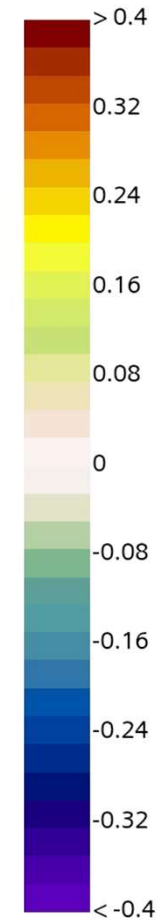
Bow Position: -92.5442 (m)

Solution Time 4.5 (s)

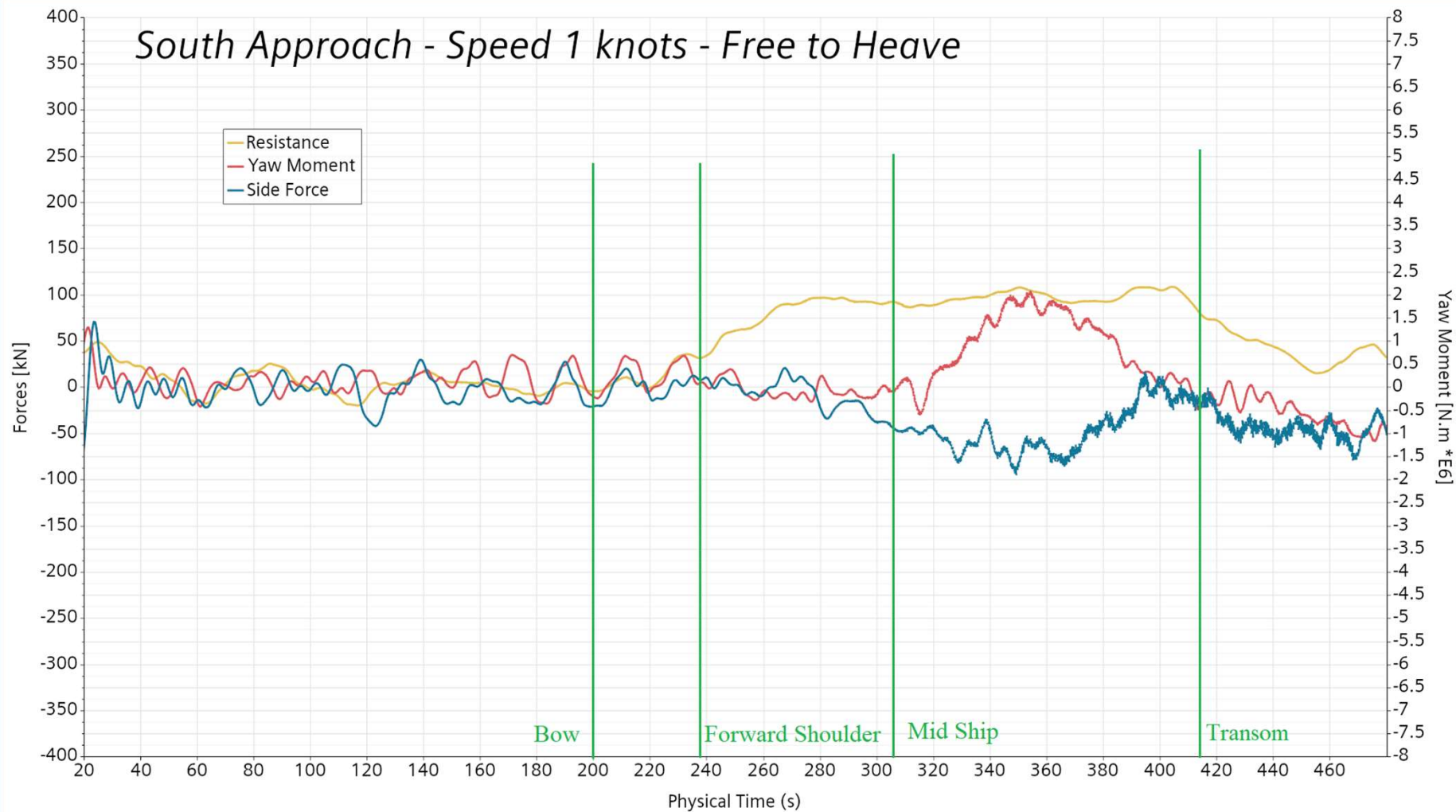
Vessel Speed: 0.146474 (m/s)



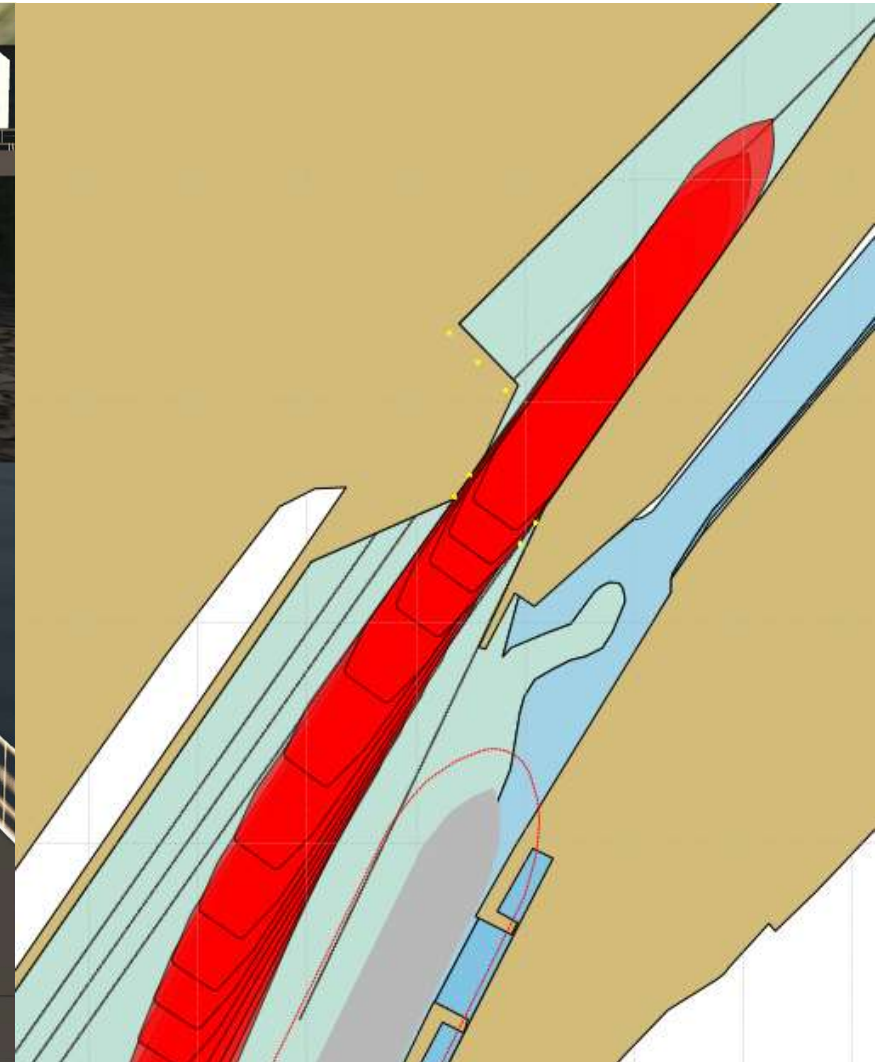
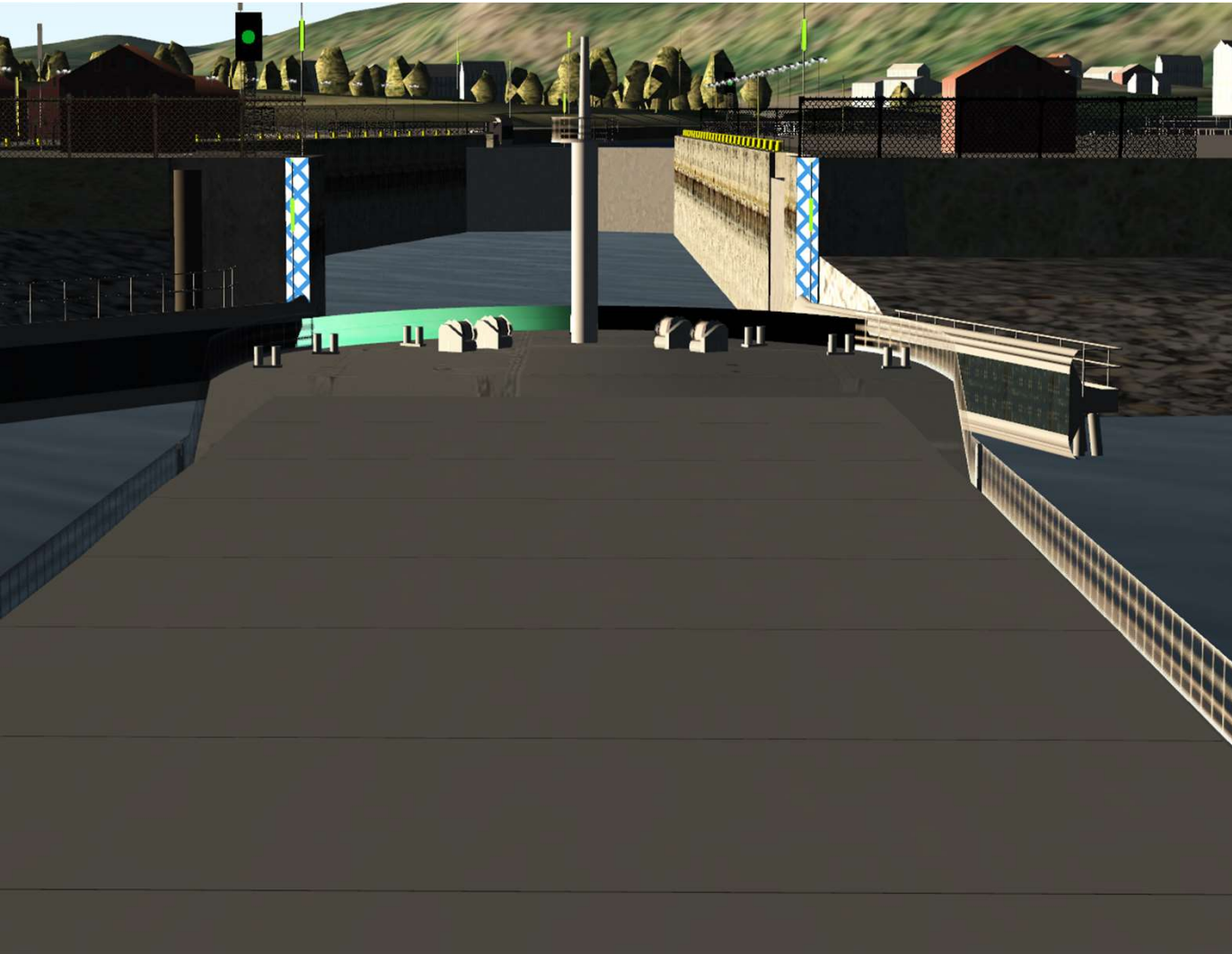
Surface Elevation (m)



Innovative Triangular Lock – CFD calculations

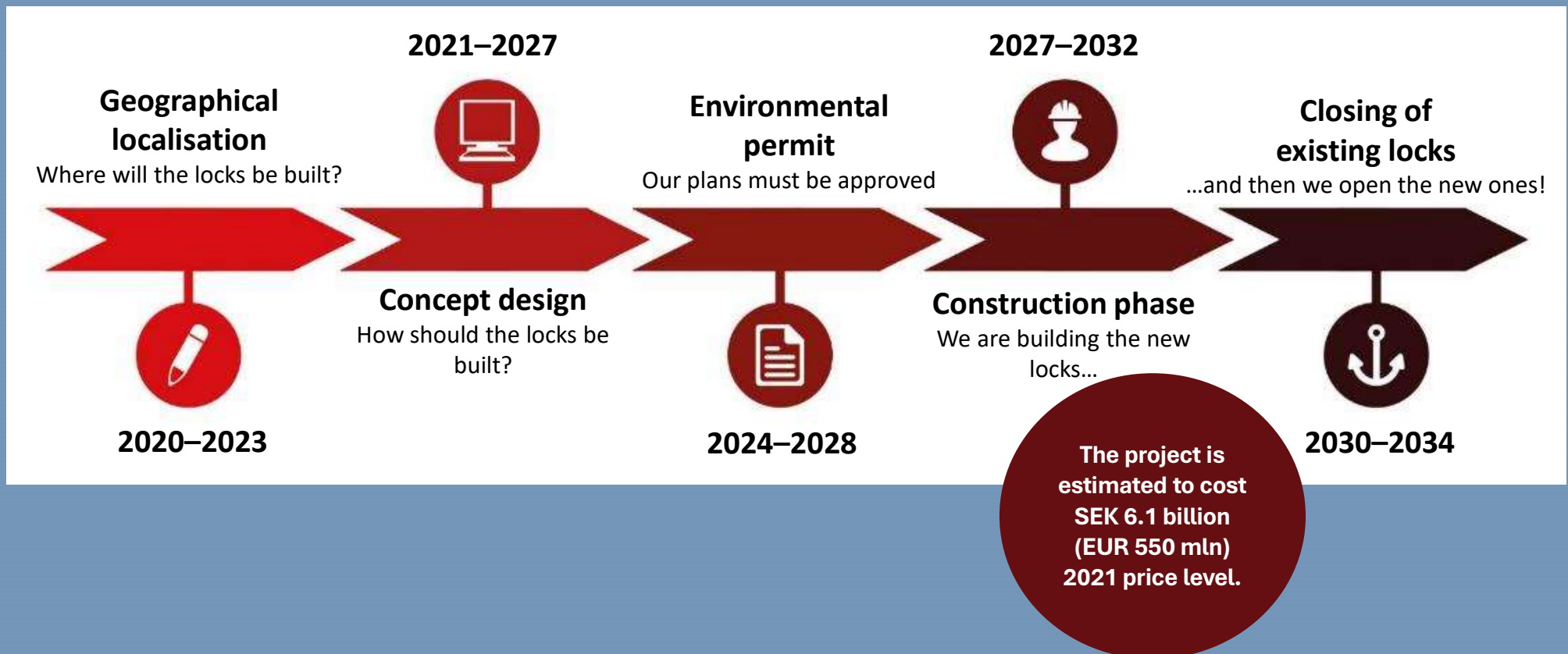


Innovative Triangular Lock – Nautical Simulations

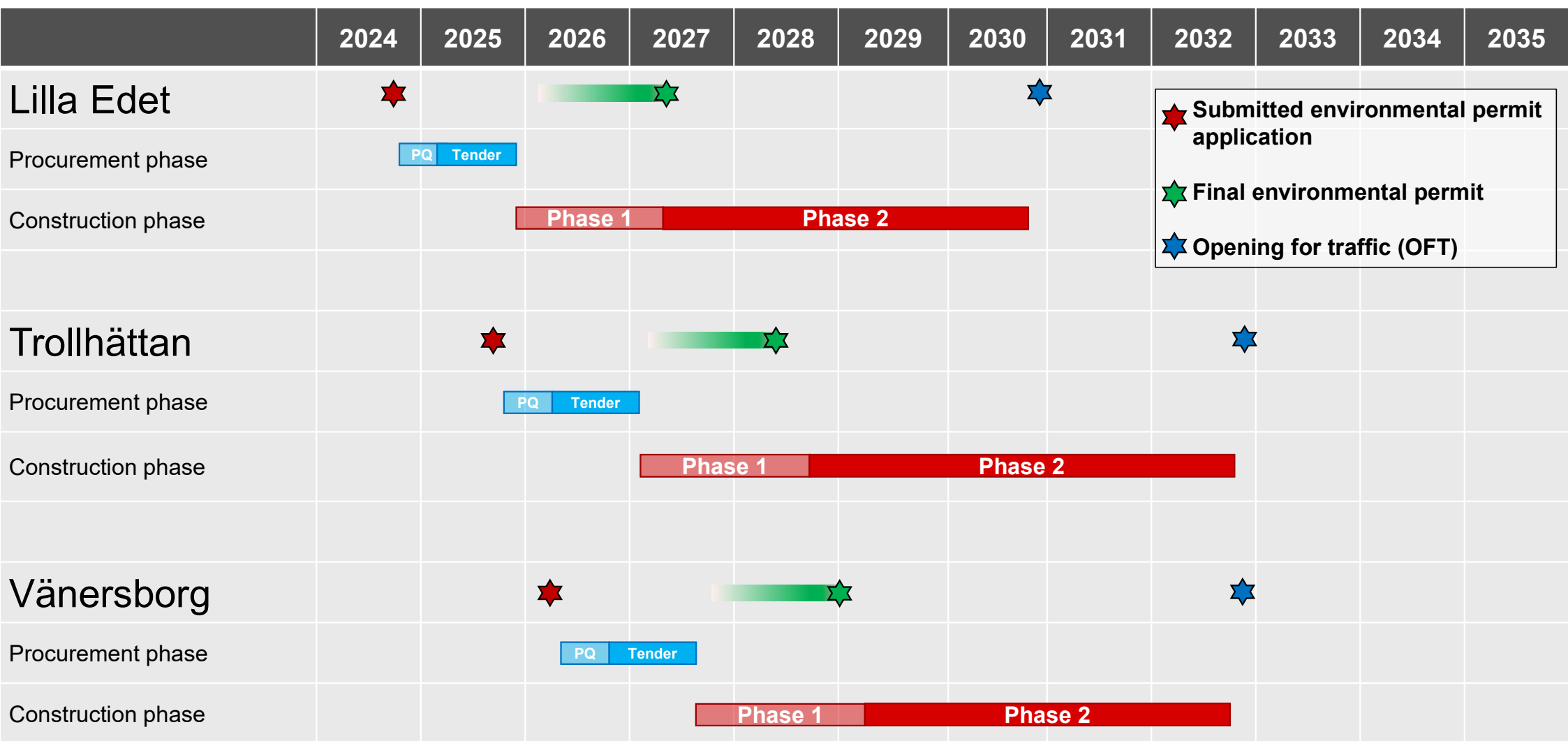


What happens when?

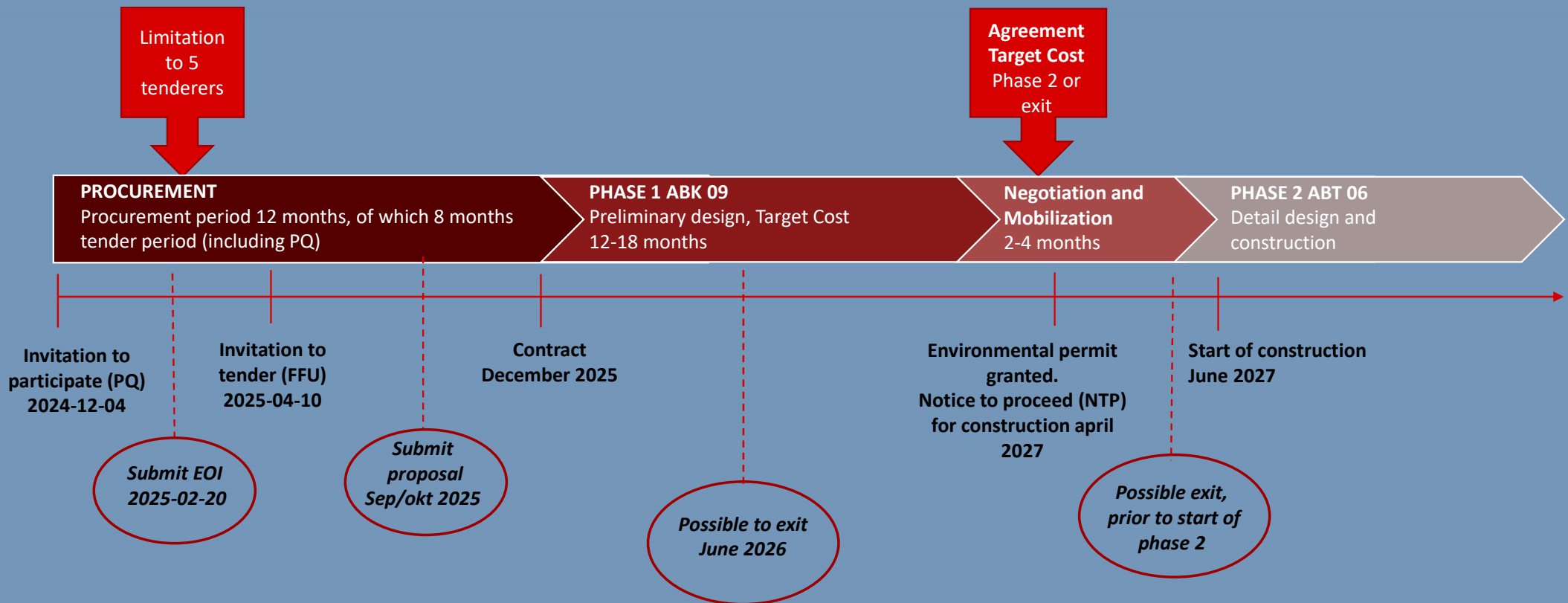
And what's the cost?



Procurement & Construction



Procurement & Construction



Questions?

WSP

 TRAFIKVERKET



Learn more about the new locks