

# Opportunities for circular concrete



SURE  
Eurodelta

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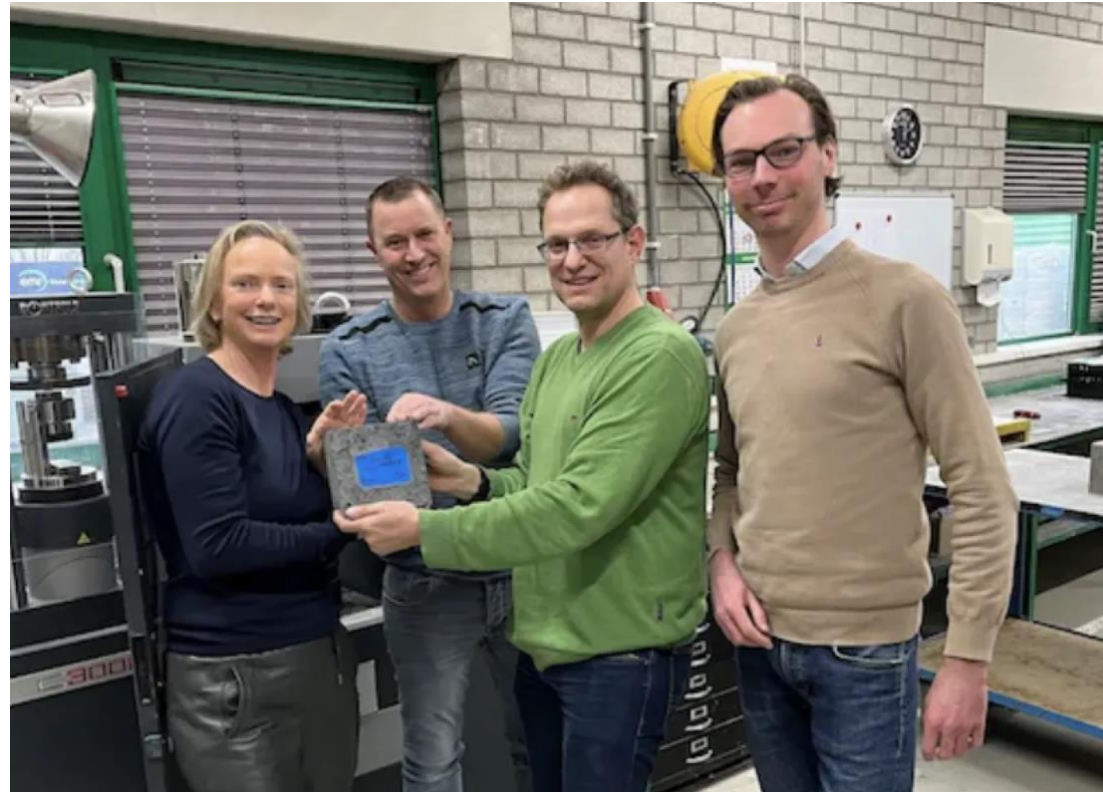
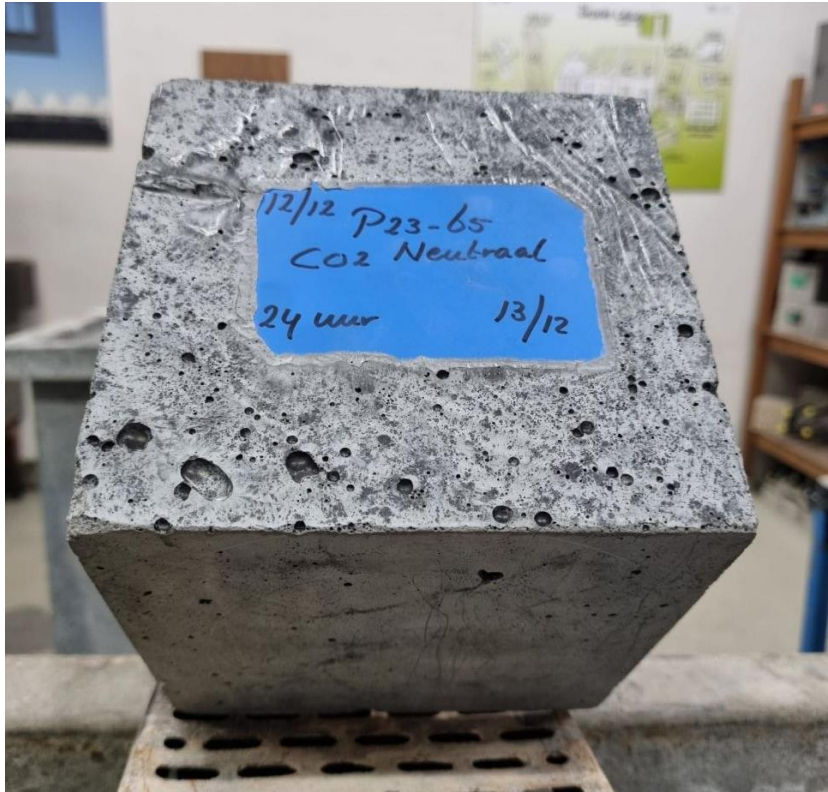
**Cross-border collaboration in the Eurodelta**

# Niki Loonen

- 4 months at TBI after 25 years at ABT
- Lecturer CO<sub>2</sub> reduction (Betonvereniging)
- Arbitrator (Raad van Arbitrage voor de bouw)
  
- Consulting engineer for, concrete mechanics, concrete technology and geotechnics
  
- Sustainable concrete consultancies
  - Roadmap CO<sub>2</sub> BETON|AKKOORD
  - AACM concrete @Voorbij
  - Geopolymer RDM Rotterdam @JP van Eesteren
  - Postponed strength for CEM III C55/67 concrete @JPvE
  - Member of CROW committies (for sustainable concrete)



# 'Zero impact' concrete



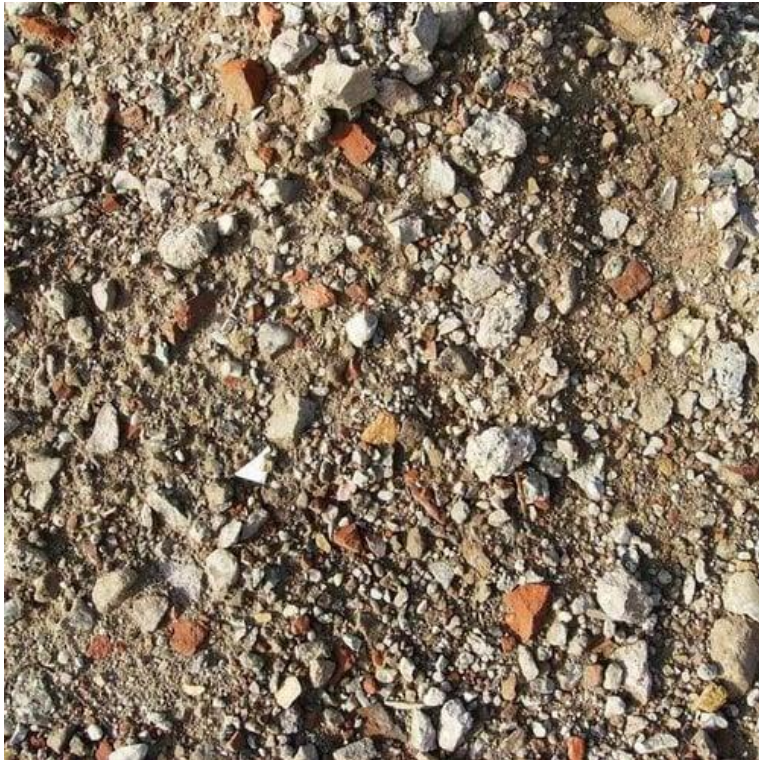
voorbij prefab





# How circular is Dutch concrete?

- **Most crushed concrete currently ends under roads**



# How circular is Dutch concrete?

- **Recycling percentage of glass = 75%**
- **Recycling percentage of paper = 80%**



# How circular is Dutch concrete?

- **Concrete volume  $\sim 12,5 \text{ Mm}^3/\text{year}$**
- **Mass sand and aggregate  $\sim 24 \text{ Mton}/\text{year}$**
- **Current demolished concrete  $\sim 12 \text{ Mton}/\text{year}$**
- **Current use of crushed aggregate  $\sim 1,2 \text{ Mton}/\text{year} \rightarrow 10\%$**
- **Potential of recycled content  $\sim 50\%$**



# What happens in Amsterdam ...



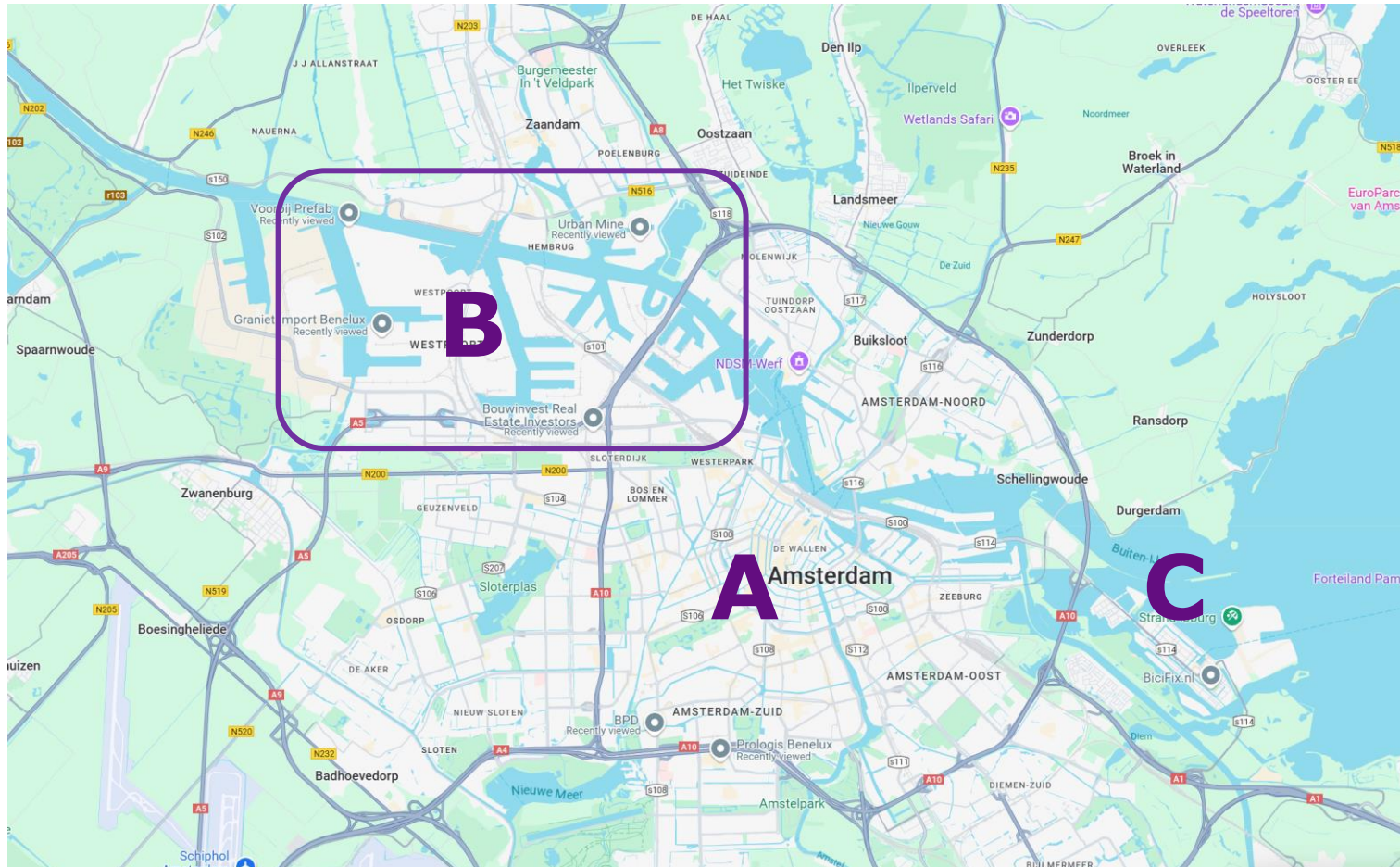


# What happens in Amsterdam ...



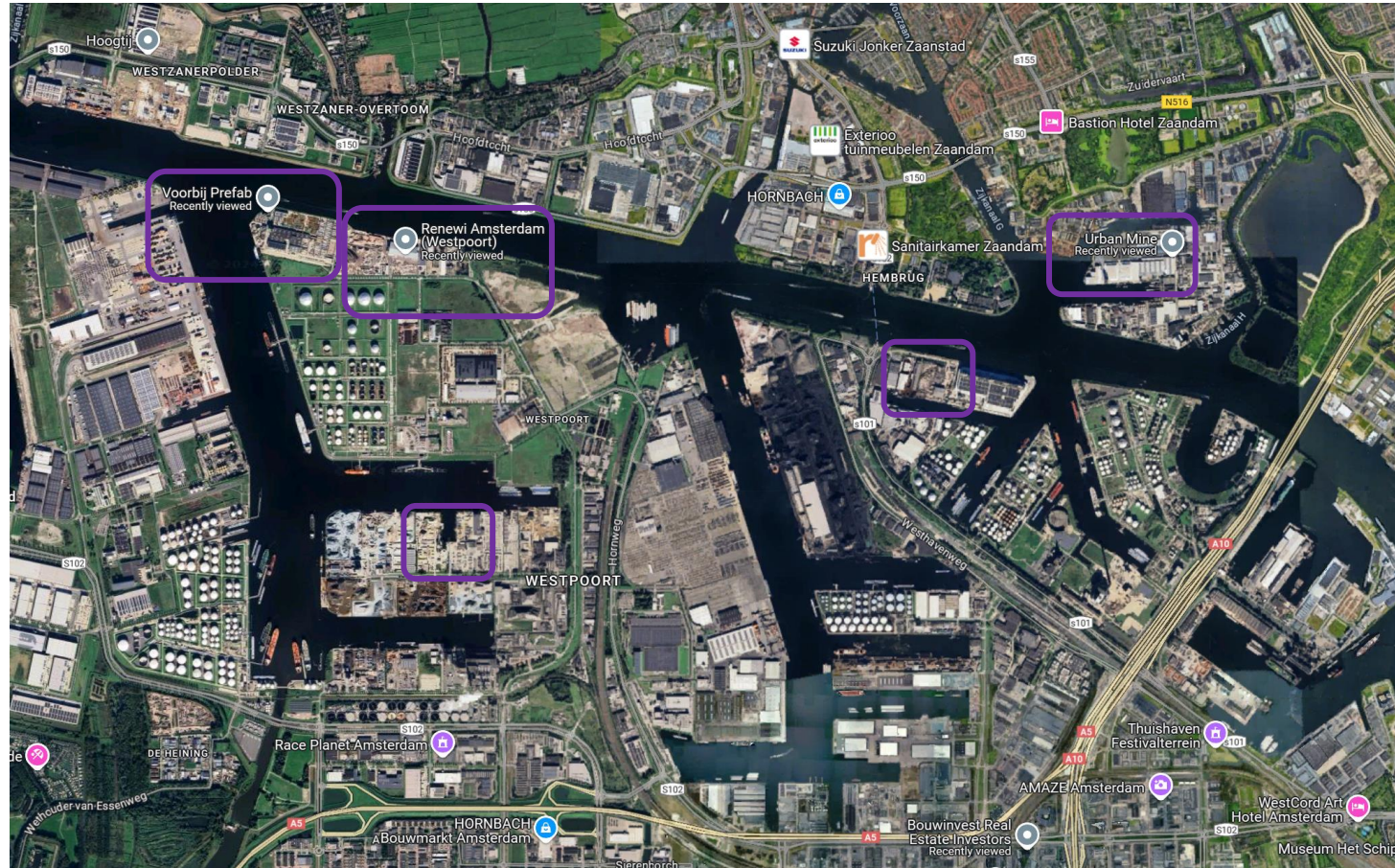


# Is processed in Amsterdam ...





# Is processed in Amsterdam ...





# Is processed in Amsterdam ...

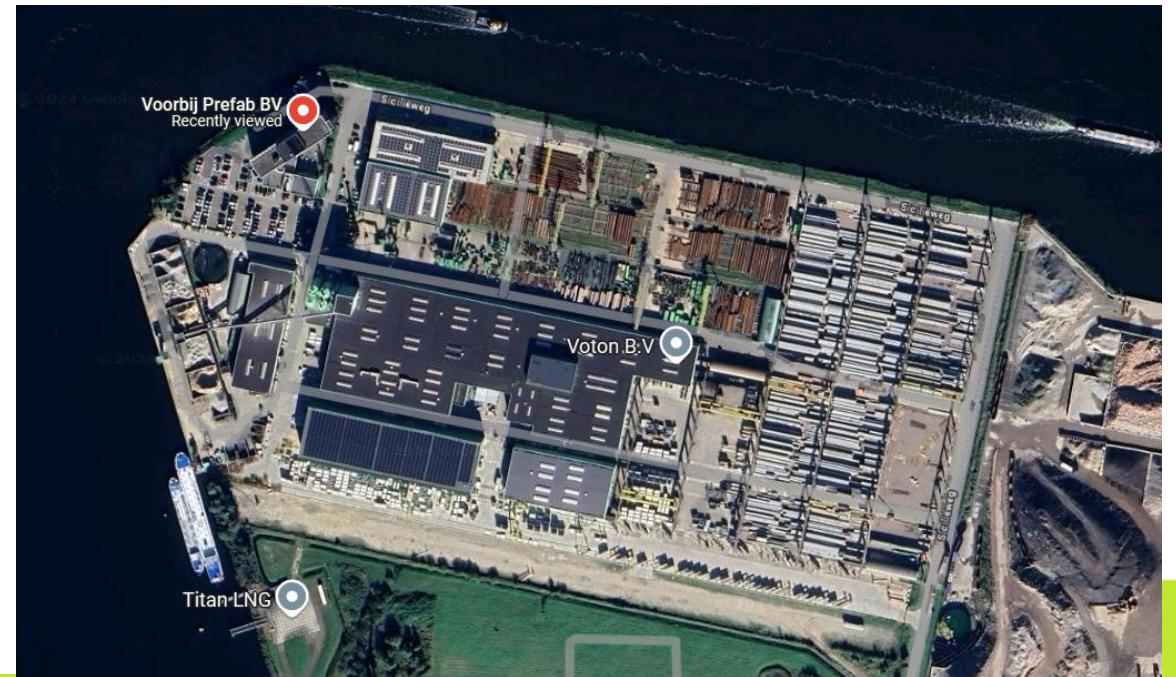
## Conventional recycling





# Is processed in Amsterdam ...

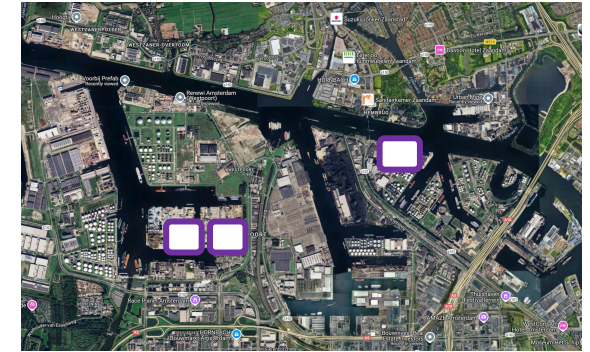
## Precast piles and walls



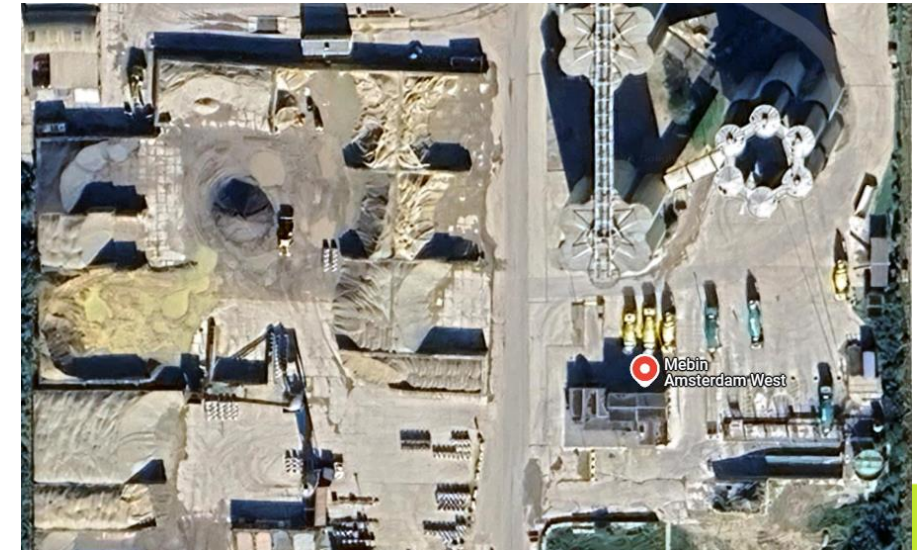


# Is processed in Amsterdam ...

## Ready mix plants



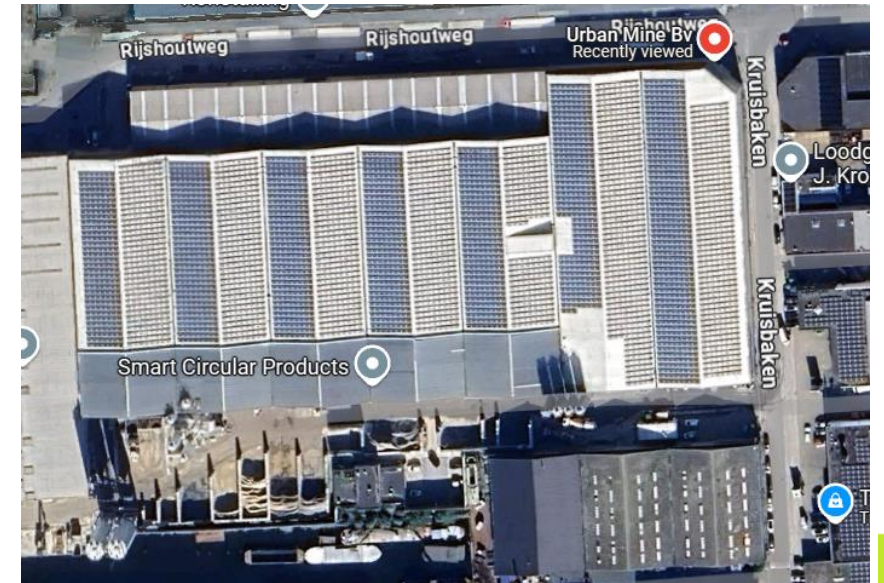
Holland in Pixels





# Is processed in Amsterdam ...

## Smart crushing in Urban Mine





# Is processed in Amsterdam...

## CCU in concrete fines

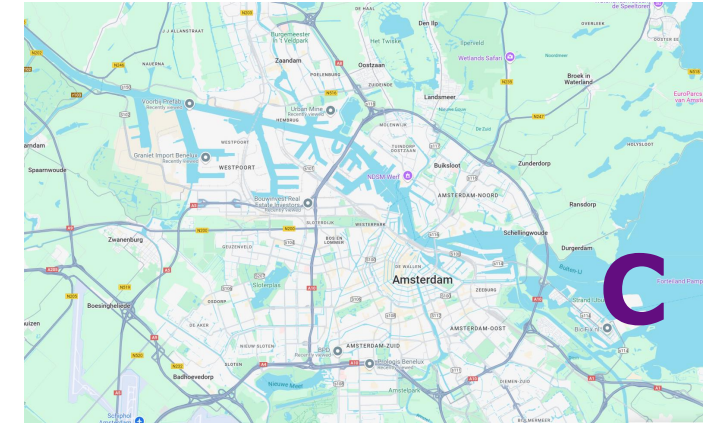


# ...and stays in Amsterdam

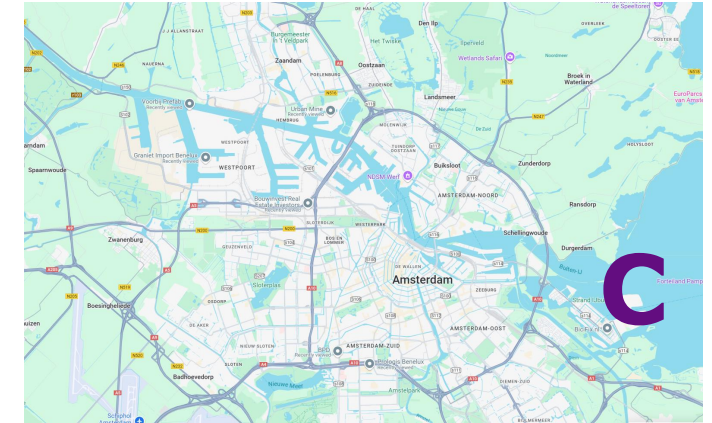




# ...and stays in Amsterdam



# ...and stays in Amsterdam





# How to stimulate reuse of concrete?

- **Separate demolition prescribed in permits**
- **More space for storage and processing of demolished concrete**
- **Ban on crushed concrete under roads and warehouses**
- **Mandatory use of crushed concrete aggregate**