Roskilde

TOD2 Perceptual Study of Mobility Hubs in Denmark

Analysing urban morphology and design elements on experiential qualities of TODs and mobility hubs in a Danish context



Roskilde



Randers



Ishøj

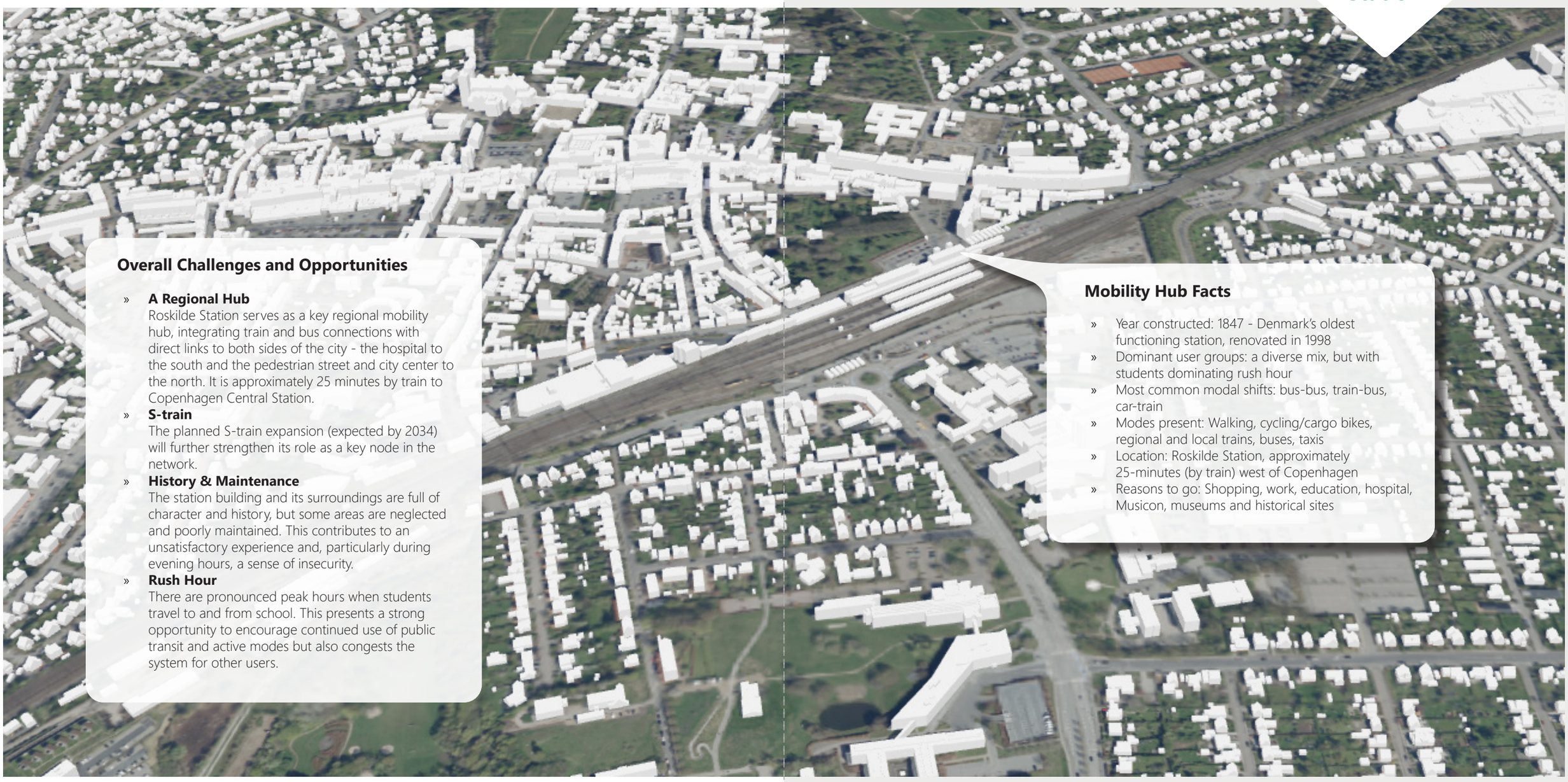


Frederiksberg



Aalborg

Roskilde Station



Overall Challenges and Opportunities

- **A Regional Hub**
  Roskilde Station serves as a key regional mobility hub, integrating train and bus connections with direct links to both sides of the city - the hospital to the south and the pedestrian street and city center to the north. It is approximately 25 minutes by train to Copenhagen Central Station.
- **S-train**
  The planned S-train expansion (expected by 2034) will further strengthen its role as a key node in the network.
- **History & Maintenance**
  The station building and its surroundings are full of character and history, but some areas are neglected and poorly maintained. This contributes to an unsatisfactory experience and, particularly during evening hours, a sense of insecurity.
- **Rush Hour**
  There are pronounced peak hours when students travel to and from school. This presents a strong opportunity to encourage continued use of public transit and active modes but also congests the system for other users.

Mobility Hub Facts

- Year constructed: 1847 - Denmark's oldest functioning station, renovated in 1998
- Dominant user groups: a diverse mix, but with students dominating rush hour
- Most common modal shifts: bus-bus, train-bus, car-train
- Modes present: Walking, cycling/cargo bikes, regional and local trains, buses, taxis
- Location: Roskilde Station, approximately 25-minutes (by train) west of Copenhagen
- Reasons to go: Shopping, work, education, hospital, Musicon, museums and historical sites

KEY OBSERVATIONS

Centrally located to the south of the old city center, the area carries a strong sense of history. Traffic calming on main connectors like Hersegade enhances this connection. Departing the station, services include cafés, restaurants, offices, schools, a hospital, and the cemetery.

There are multiple entrances to the train station. It became clear that the depot building is not the most used entrance. For a snapshot, over the course of 10 minutes an average of 44 people were counted entering/exiting the main entrance; 19 people at the yellow tunnel; and 178 at the long tunnel.

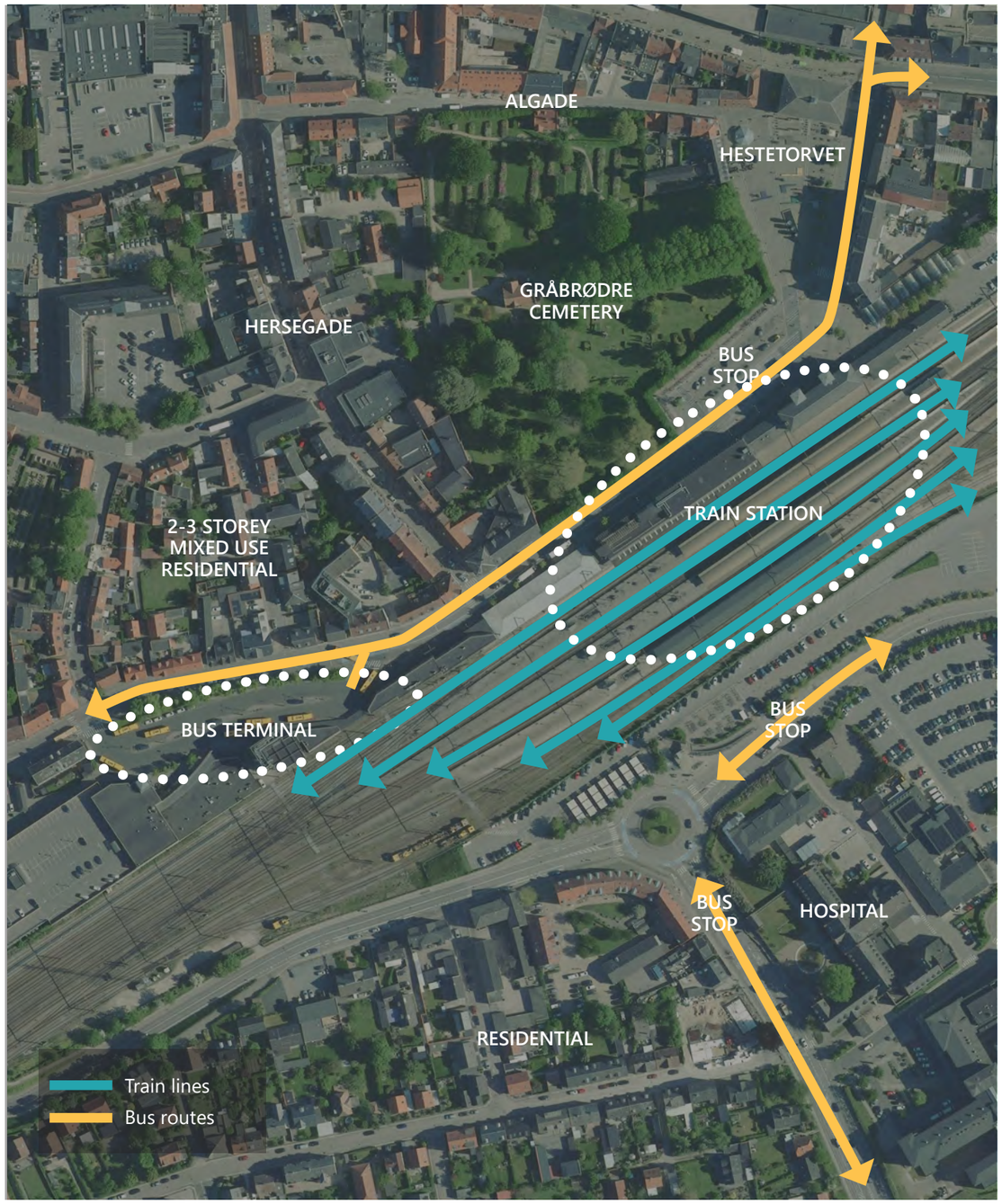
While located approximately a 5-10 minute walk apart, there is a lot of switching between the front and back of the station resulting in the station having effectively 2 'main' sides. This is perhaps due to the car parking, secure bicycle parking, and concentration of bus stops on the back/south side.

This hub primarily functions as a transfer point, either close to one's home or final destination, from where users can walk or cycle the rest of the way, or continue by bus, taxi, or car.

The architectural style influences the environment, with a warm and historical Danish expression to the north, while south of the station there are newer developments with larger footprints and block sizes.

There is a diversity in land-use directly adjacent the station area, including grocery stores, storage facilities, parking lots for cars and bikes, single-family homes and apartment buildings. Some ground floors are occupied by bars, restaurants and other small businesses.

URBAN AND MORPHOLOGICAL CONTEXT



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The map shows the area of Roskilde Station, around the train station's main entrance, with the urban core to the north toward the city center and shopping street. Hestetorvet connects the station area with the shopping street. The urban space and station are located in the center of Roskilde. The immediate context includes a variety of facilities and functions that attract a diverse group of people.


Main entrance to the train station


Entrance to Gråbrødre Cemetery


The hospital just south of the station


A mix of functions and old and new buildings on Algade

Roskilde Station is a multimodal mobility hub, with connections to the regional train and buses. It is a highly visited and well-used hub that facilitates many modal transfers. It is located in close proximity to important services, workplaces, and residential neighborhoods as well as leisure opportunities. With its position connecting two parts of the town, it serves as a vital link for many people on a daily basis.

Spatial context

- Land use is made up of residential, public facilities, storage and commercial buildings.
- The train station is central, with walkable connections to other mobilities, Roskilde city center, residential neighbourhoods and major employers.
- The environment surrounding the hub is characterised by plantings, a through road, cycle paths, the cemetery walls and the hospital.
- Visually, roadways and car parking take up a significant share of the space directly adjacent the station.

Urban typology

- Built in stages, the buildings vary greatly in aesthetics - ranging from 19th-century architecture to postmodern buildings.
- The view in front of the station is shaped by the cemetery and Hestetorvet square.
- Most buildings are between 2-4 storeys.

Navigation

- Pedestrian pathways lead north, as well as south and southwest through the tunnels under the railway tracks. Eastern pathways also exist but run through a parking lot, with only a small pedestrian path connecting to the road network.
- Bicycles follow similar paths though in some areas like the tunnels they must dismount - creating small gaps in the network.
- Departing the station from the main entrance, people generally walk and cycle along the guided routes, though some take shortcuts, especially at the corner toward east and across to the bus stop on the opposite side of the road.
- Navigation between the modes seems to be straightforward, but for those unfamiliar with the station area, the yellow tunnel connecting only to platforms 2 and 3 can be confusing. Locating the correct bus stop can be a challenge as some are more visually prominent and immediately accessible, while others require a longer walk and are less visible departing the train station.

POPULAR ROUTES FROM THE STATION



The map shows three common routes as people depart the station. The routes are based on on-site observations of flow, desktop analysis, and discussions with the municipality. The results of a serial vision exercise for each route is shown on the following pages.

SERIAL VISION ROUTE A

departing the station and heading down Hersegade





1. Departing the tunnel, the space opens up, giving a decent overview of options and surroundings. However, there is a smell of urine and sewage that makes the atmosphere unpleasant and uninviting.



2. Beneath the overhang connecting the train station to the bus terminal, the view includes parked bicycles, worn facades, and various types of architecture. While the presence of people provides some security, the environment lacks a sense of ownership and care, encouraging quick passage.



3. Stepping into the sunlight, the view ahead reveals a small street (one-way for cars) with playful wayfinding elements. The narrow space constrains movement particularly for pedestrians, but the lower rooflines are human scale.



4. Entering a very narrow street, pedestrians, cyclists, bike parking, motorists and parked cars are competing for space. The place gives off a sense of being more lively at night, yet quiet during the day. With some activation, the 30 km/h speed limit and access management would support a shared street well.



5. The space opens up as you approach the pedestrian street. It begins to buzz with life, and cars are limited to local access only, which gives more room to active road users and makes the street feel safer.



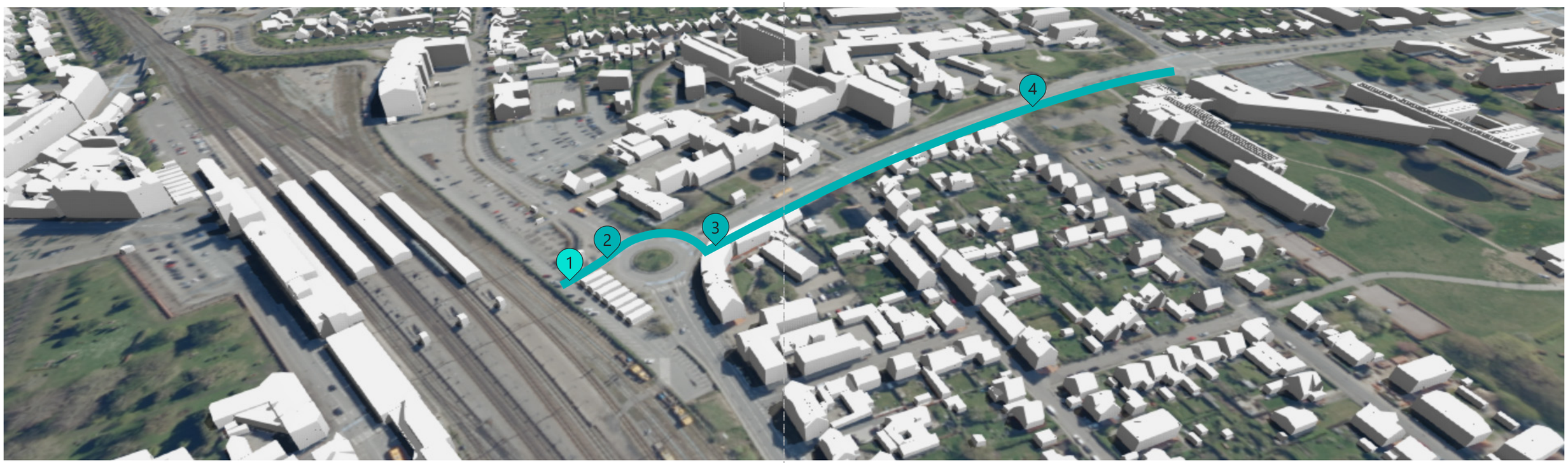
6. Facing the urban center from the pedestrian street, the area feels vibrant, open, and architecturally appealing. The mix of complementary functions and residential apartments creates a strong sense of safety and draws people in.

Overall summary of route A

Hersegade is a common route to town for people arriving by bus or train. However, the station area sets a slightly negative tone with no clear sense of ownership, and the dirtiness at the bus station reinforces this impression. There can be a sense of being on the 'backside' of the city, as if walking through an alley. Entering the central pedestrian street, the atmosphere changes quickly. There is space to move freely, ntegrated greenery, and places to sit and linger. It is a very inviting place that feels safe and acts as a natural gathering spot.

SERIAL VISION ROUTE B

departing the station and heading south to City Hall





1. The tunnel is the main departure for people arriving at the train or bus station and heading south. Simple in its design with white subway tiles and overhead lighting, there are plenty of people in the tunnel and it is well lit. It is quiet and feels safe enough. There is a staircase, elevator, and ramp to exit the tunnel, making it easy for people with their bikes to navigate.



2. At the top of the stairs, the view opens toward a busy roundabout where cars wait for pedestrians to cross. Car and bike parking (including secure) areas flank both sides. Cyclists ride up onto the sidewalk to access them. The open view and visible bus stop suggest movement and connectivity.



3. The area near the restaurant, bus stop, and hospital feels open and active, with people rushing to catch trains. The hospital is a beautiful building that adds visual quality. However, the narrow walkway near the hospital bus stop (far side of the road) limits accessibility, especially for wheelchair users or people with limited mobility.



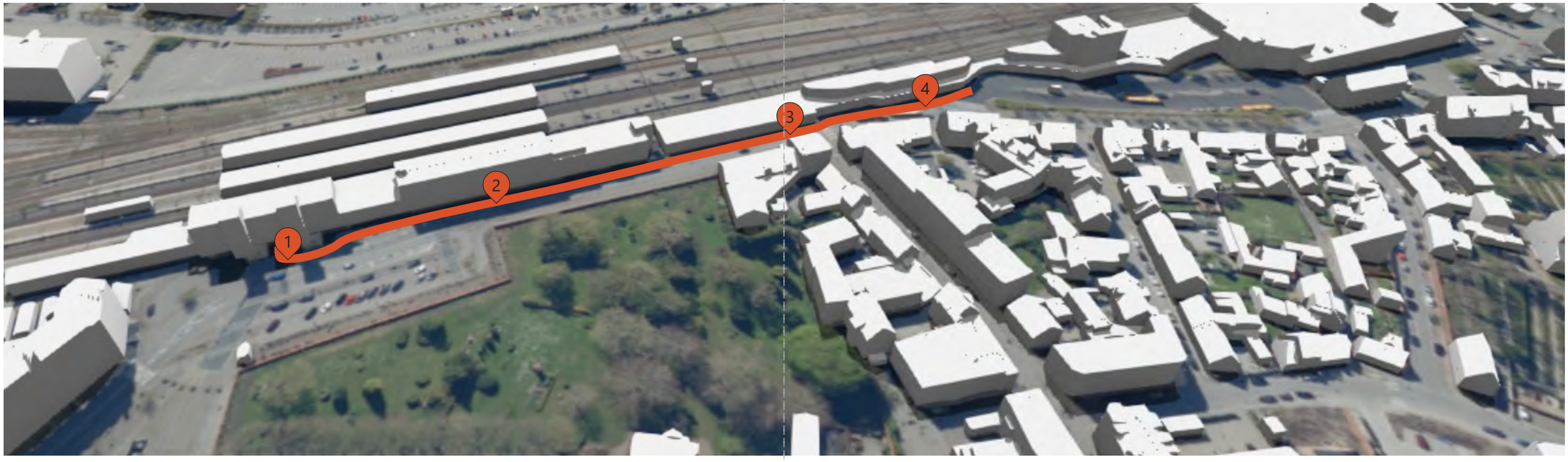
4. There is a nice wide cycle track but limited pedestrian crossings to the bus stop. Parked cars provide a slight buffer for cyclists, but when no cars are parked, the road appears extra wide and encourages faster driving Sculptures and interesting modern architecture add character. The area is wide open and much less densely organized than north of the station. The lack of eyes on the street is likely to make the area feel less secure at night.

Overall summary of route B

The route south from Roskilde Station begins in a well-lit, functional tunnel and emerges into an open area with parking and heavy traffic circulation. Moving toward the hospital and city hall, wide roads and modern architecture dot the landscape. While cycling infrastructure is strong, limited crossings, sparse activity, and few "eyes on the street" reduce pedestrian comfort and perceived safety, especially at night.

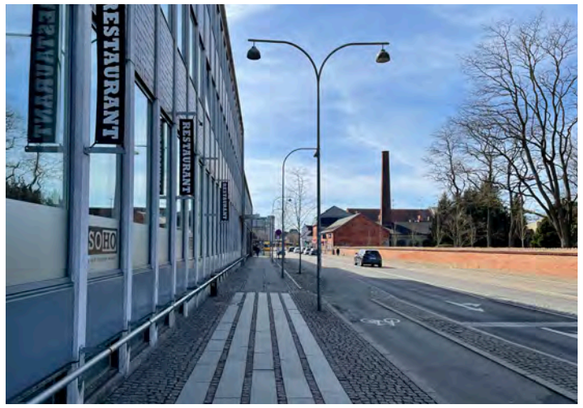
SERIAL VISION ROUTE C

departing the train station and walking to the bus station





1. From the main train station entrance, the path to the bus terminal is simple - almost in a straight line. The approach feels straightforward, though the windowless façade and limited visibility around the near corner create mild discomfort. The frequent presence of people waiting for buses adds some activity and reassurance.



2. A narrow, semi-enclosed corridor runs opposite red brick walls, blocking views to the historic cemetery. A mural in the distance adds a spark of visual interest. The space feels plain during the day and underused at night - somewhat uncomfortable in its enclosure and low sense of ownership over the space. The building feels high and tall streetlights contribute to lack of human scale.



3. Bike parking areas open up the space slightly and provide some sense of activity. From here, sightlines to the platforms improve comfort. Benches, lower buildings heights, and more human-scale elements make it feel more approachable, though cluttered signage, graffiti, and crowding still reduce attractiveness.

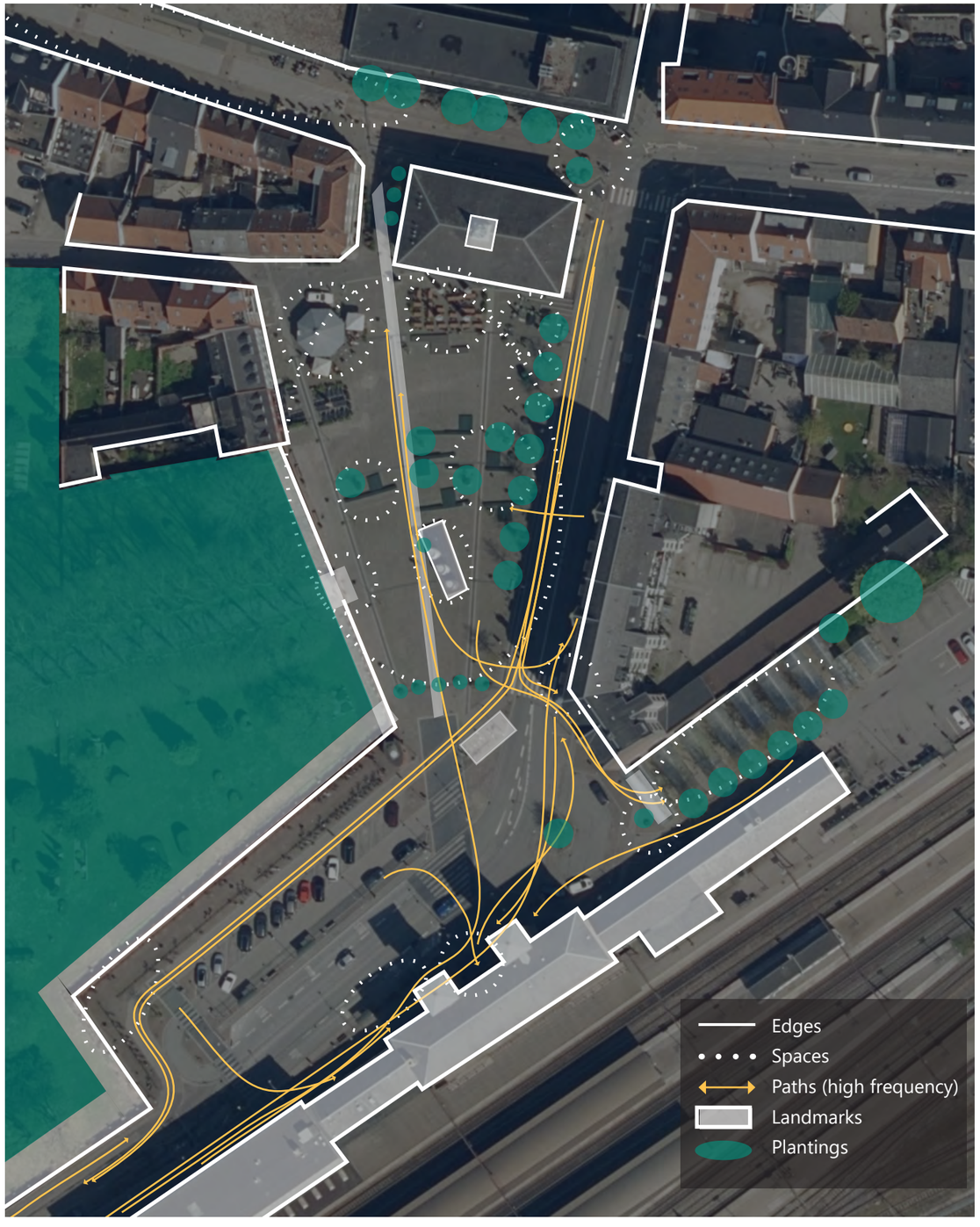


4. Convenient stores and take-away restaurants line this section, increasing activity. The space is shaded and enclosed, and captures the smell of exhaust. The sidewalk feels narrow and crowded, even outside peak hours. The bus station is visible and supported by wayfinding.

Overall summary of route C
While the route is a straight shot from the train station, it does not appear to be the preferred route by frequent hub users. The route between the train and bus stations offers clear navigation and steady activity but suffers from visual clutter, enclosure, and poor environmental quality. While frequent activity during the day and bike parking provide some sense of safety, windowless facades and narrow corridors make several areas feel uncomfortable, especially after dark.

FUNCTIONAL ANALYSIS

The station as a place



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The map shows the organisation and overall design features of the area around Roskilde Station. White solid lines mark spatial edges; white dotted lines mark smaller spaces; yellow arrows mark paths; green areas mark plant beds; and white areas mark landmarks.



Mural adjacent Gråbrødre Kirkegård



Glimpses of the train let people know they're close to the station



The main entrance as seen from the cargo bike parking and taxi waiting area



People stuck closely to the guidelines when walking through the square

The square in front of the main entrance connects the urban space with the transit hub. Pavers and cobblestones form a wide crosswalk and create a more shared traffic environment in front of the station. Extensive and well-used bicycle parking indicates a strong cycling culture.

Edges & Open Spaces

The hub spans a large area defined by a variety of edges - plantings, buildings, and low hindrances like benches and curbs. It lies in close proximity to the city center and connects to a central pedestrian street with various shopping, dining, and other functions. Hestetorvet square brings people together for events like flea markets, but on a daily basis is observed more as a space for moving through than as a place for staying.

Human Scale & Personal Safety

- Moving through the mobility hub, the sense of scale shifts.
- There is considerable variation in how narrow or spacious the pathsways are for vulnerable road users. The closeness and height of the surrounding buildings also affect whether the space feels human-scaled or overwhelming.
- There are also noticeable differences in maintenance levels, and the presence of hidden alleys and corners at the bus, contribute to decrease in perception of safety.
- Most routes leading away from the station have a heightened fear of crime at night, with narrow passages that feel isolated and blind corners where one could be caught off guard.

Paths & Nodes

- The most frequently used route for pedestrians is the one that passes through the square.
- The southwest to northeast path is heavily used by cyclists and cars.
- Many people also choose alternative routes, crossing the intersection in front of the station's main entrance.

Landmarks

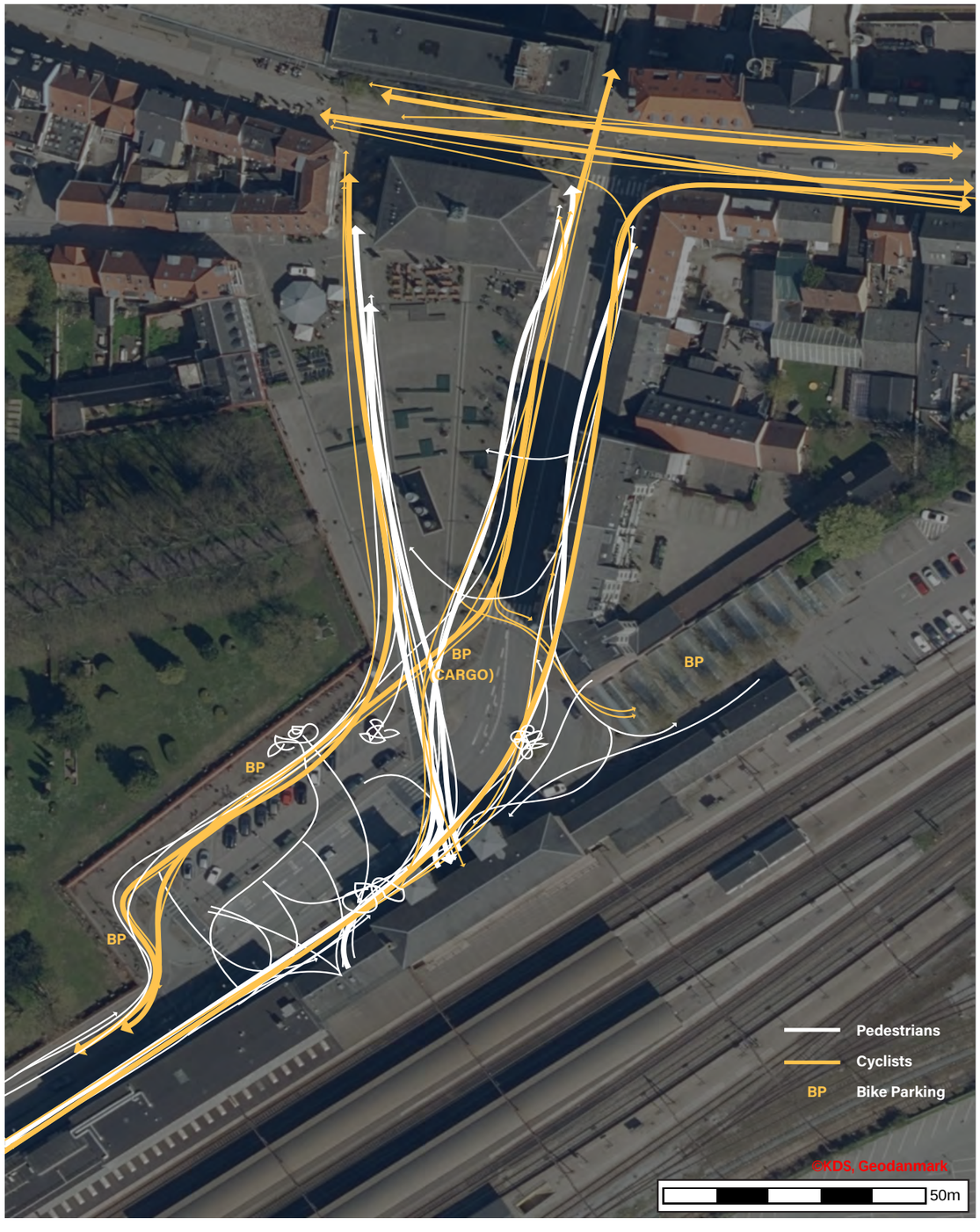
- The columns in front of the train station
- Hestetorvet square
- The bus terminal
- The yellow tunnel to the platforms
- The red brick wall surrounding Gråbrødre cemetery
- Large vase sculptures

Materials

- Variations in paving materials - from cobblestones to smooth large pavers
- Green wood installations on Hestetorvet
- Benches and seating options in different designs and materials
- The iconic vases are ceramic
- Concrete planters and plant beds

MOBILITY ANALYSIS

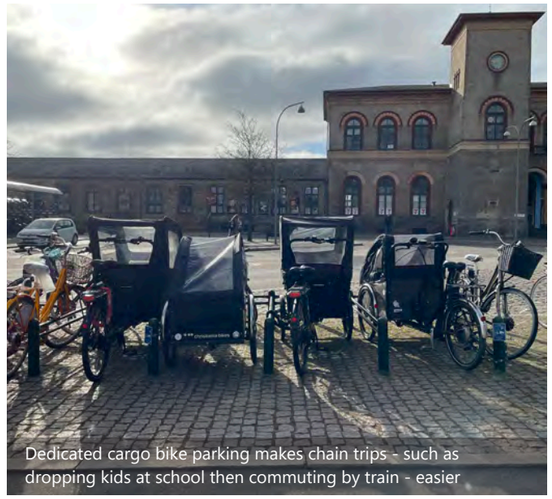
The station as a hub



The map shows the most common mobility patterns and routes based on observations of different modes. The tangled lines indicate where people are often stopped - waiting, parking their bike, or meeting others.



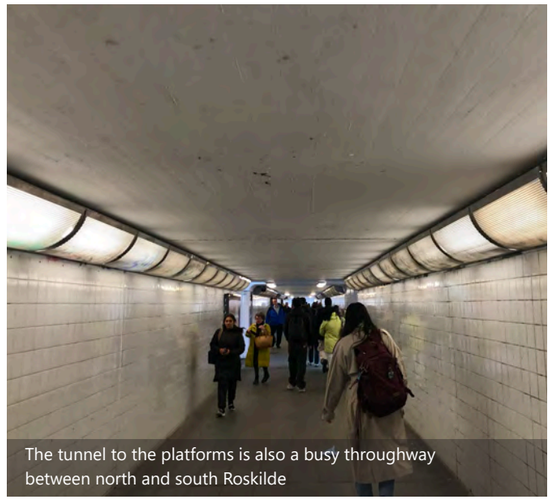
Morning rush hour



Dedicated cargo bike parking makes chain trips - such as dropping kids at school then commuting by train - easier



Taxis, kiss and ride, and bus stop across from the main entrance



The tunnel to the platforms is also a busy throughway between north and south Roskilde

A variety of user groups and transport modes are present in the area. There is constant movement in and around the station and the mobility hub throughout the day. In the evening, it becomes quieter, but movement continues, most noticeably the shift from public transport to private cars.

Primary Modes & Modal Links

- Modal links include the regional train, local train, bus and taxi.
- It also provides extensive commuter parking for both cars and bicycles.
- There is a notable amount of cargo bikes parked in the area.
- While it is not consistent that soft road users are prioritised over cars, the space directly in front of the station is somewhat calmed in favor of people biking and walking.

Mobility Patterns & Behaviour

- Many people mistakenly walk into the first (yellow) tunnel, which only leads to platforms 2 and 3.
- Over the course of timed 10 minute intervals, an average of 44 people were observed entering and exiting the main entrance (18%), 19 at the yellow tunnel (8%), and 178 at the long tunnel near the bus terminal (74%).
- People walking and cycling cross the road and the associated parking area in front of the station in an unstructured and informal way, following desire lines.
- A significant share of movement through Hestetorvet square follows the lines embedded in the pavement, though there is plenty of space for people to move freely.
- Many cyclists ride through the tunnels despite clear signage indicating that cycling is not allowed.

Traffic Safety

- At Jernbanegade, in front of the train station's main entrance, the road hierarchy does not fully match the design of the street or the surrounding land use. The road seems to have a medium-sized role in the network, leading motorists to use it as a through road. The surrounding land use, and the design of the road at the station however is more indicative of a local street where through traffic should be limited. This can lead to differences in the way different modes use the road - with drivers anticipating the right to move through, and pedestrians and cyclists moving in the most direct route to their destinations, leading to unexpected and last minute decisions.
- There are gaps in the network - both missing links and quality gaps for people walking and cycling, like the underpass southwest of the station that is missing a cycle track.

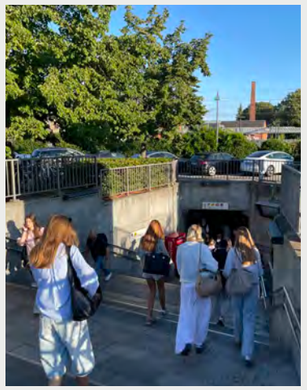
TEMPORALITY AND SECURITY


Morning rush hour

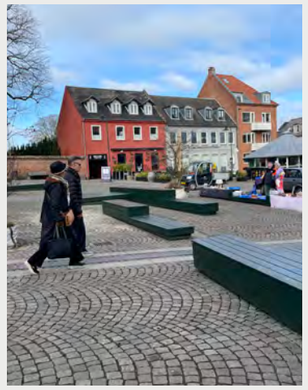

Daytime

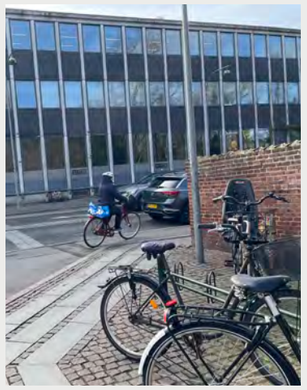

Evening



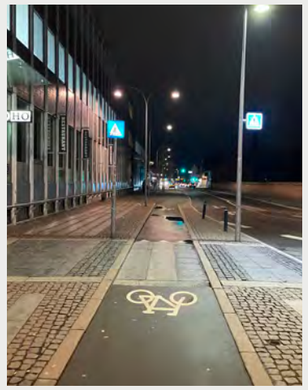


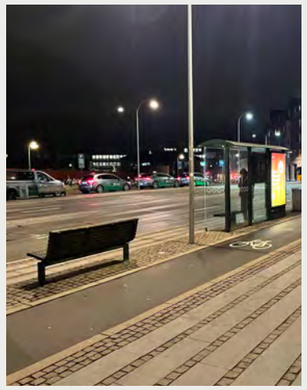

Friends chat on their commute, students fill the walkways between the bus stops and station, and the tunnel and platform are busy with people. There are distinct morning and afternoon rush hours, which correlate most strongly with school, rather than professional working hours.






People flow through the square, again following the guidelines. The hub is active throughout the day with passengers and people passing by, or visiting the shops at the bus station.





The station is quiet in the evening. It is well lit but the limited neutral surveillance, particularly near the main entrance creates unease.

USER ANALYSIS

Users say...

The interviews suggest that the mobility hub functions well in terms of connectivity and daytime safety. Several users, particularly commuters and young adults, highlight the ease of access and smooth connections between metro, train, and bus. Safety is generally perceived as good, though some mention feeling less secure at night.

At the same time, a number of challenges are raised, particularly regarding overcrowded buses, especially noted by young women and school children, and limited frequency or route options. A few mention issues with cleanliness and maintenance, and a bus driver points out insufficient space for buses due to heavy use.

- Commuters mention that the tunnel system is confusing, particularly because one tunnel does not connect all the way through to the other side. This causes uncertainty, especially for those unfamiliar with the station.
- Some users are unclear about the location of the bus terminal, especially those who do not use it regularly or are new to the area.
- The area feels unsafe in the evening. Words like “grimy,” “shady,” and “disgusting” were used to describe the atmosphere at the station.
- The historic station building is appreciated for its charm and character.
- Car commuters arrive early due to limited parking, indicating pressure on parking availability.
- The DSB parking app is used and appreciated.
- The bus terminal is generally seen as logically placed, although some feel it was more convenient when buses stopped directly in front of the main entrance.
- Many passengers use the station only for a transfer without engaging much with the station environment.
- Most locals can figure out the train and bus connections without trouble.
- A strong car orientation is evident as people noted that they drive or get picked up, rather than use the full range of public transport options.

Overall, the interviews show that the area supports daily use across age groups, but there is a clear need for increased capacity, improved frequency, and better infrastructure, especially for bus services.











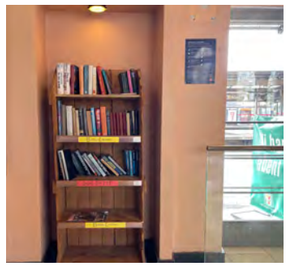






AFFORDANCES

Facilitates















Affordances for creating sense of place and stronger access via active modes to and from the station include:

- 30 km zones
- Abundant bicycle parking
- Glimpses of transit modes from the street
- Street art
- Landmark art
- A remarkable station entrance
- Wayfinding
- A combination of station entrances - stairs, elevators, and ramps - make it easy and efficient to move around the station

Hinders












Hindrances to active mobility and access to the station include:

- Many curbs, benches, and low barriers interfere with the space, shaping how people behave, where and how they park their bikes, and how they move through the area.
- These elements impose a certain structure on users, in an environment where unstructured movement may be a better fit for people walking and cycling.
- The space between the train and bus stations includes windowless facades, walls that are too high to see over, and a general lack of natural surveillance, creating a barrier to personal safety.
- While some innovations are being tested, like the blue lit bike lane, it ultimately highlights a need for a more connected network of dedicated bicycle infrastructure.
- The bus stop south of the station lacks accessibility features and people are often led to walk in the cycle track.

QUALITY CRITERIA

Developed from Jan Gehl's 12 quality criteria to include transit and mobility hub navigation, *the table assesses the affordances of the place on the basis of the on-site observations and desk analysis. It details how the spatial arrangement and design facilitate or hinder practices or experiences, collected in 15 parameters across five categories. Each category is summarised in the coloured column to the right.*

MOBILITY HUBS

opportunities for switching

- Opportunities for switching between bus, train, taxi, car parking, bike parking.
- High level of service for buses and trains
- Bike and walk paths from multiple directions and entrances help with switching and navigability.

modefinding

- Signage is present, but could be more visible to help users navigate the spread out mobility hub more easily.
- For example, a prominent and recognizable sign for the bus terminal, along with clearer wayfinding at eye level near the first (yellow) tunnel, would improve orientation.
- Additional guidance is also needed for cyclists when crossing under the tracks to ensure safer and more intuitive navigation.

cohesiveness/intuitive design

- The design of the station area can be perceived as both intuitive and overwhelming, depending on the user. Regular users tend to navigate it with ease, while newcomers tend more to find it confusing - mostly when it comes to understanding the tunnel system.
- While the bus terminal is approximately 300 meters from the main train station entrance, most people switching between modes access it from the tunnel, shortening the distance.

MOBILITY HUBS summary

Roskilde Station offers good multimodal connectivity with frequent bus and train services, as well as access to bike and car parking. Switching between modes is generally easy due to multiple paths and entrances, but longer distances between some modes. The wayfinding could be more visible between train and bus and for cyclists crossing through the station.

PROTECTION

against traffic and accidents - feeling safe

- The main road runs very close to the station area on all sides, and it can feel somewhat unsafe due to the high number of vulnerable road users and the limited separation between different transport modes.
- Insufficient capacity for high school students crossing the roundabout on the south side can make traffic conditions more risky.

against harm by others - feeling secure

- During the daytime, the area is busy, which gives users a general sense of safety.
- At night, however, unpleasant smells, numerous blind corners, closed tunnels with bike parking in the underground floor, and a lack of maintenance can contribute to an increased fear of crime.
- The mix/overlap of functions, like the Føtex by the bus terminal supports a continuous presence of people, which can help reduce feelings of insecurity at night.

against unpleasant sensory experiences

- At the train station, there are good facilities to protect passengers from unpleasant weather, with a roof across most of the platforms.
- Most bus stops also have sheltered waiting areas
- The smell of urine at the bus terminal and bike parking negatively affects the overall sensory experience.

PROTECTION summary

Roskilde Station offers some protection from traffic, but there are competing priorities between motor vehicles, transit passengers, and active road users. It feels safe during the day due to high activity, but at night, blind corners, unpleaseant smells and areas in need of maintenance increase the fear of crime. Overlapping functions in the surrounding area help maintain a human presence, supporting a sense of security.

LIVABILITY

opportunities for active modes

- On foot, you can approach the station from nearly all directions, thanks to the many paths leading to and from the area.
- By bike, access is less direct due to restrictions on cycling through the tunnels. However, the extensive bike parking makes it easy to park and continue on foot.
- Additionally, active modes of transport benefit from shorter and more direct paths than cars.

opportunities to stand and linger

- The art installation at the square contributes somewhat to creating a place to pause, but not significantly, and it does not particularly engage children.
- There are no real sports or play facilities to encourage active use.
- Overall, the space is primarily designed for moving through rather than for staying or lingering.

opportunities for sitting

- There are many benches and other installations that offer opportunities for sitting.
- There is also the possibility to sit inside sheltered areas, not to the same extent as the outdoor seating available at the square, but seating is appropriately distributed across the station area.

LIVABILITY summary

Good pedestrian access from multiple directions. While bike access is limited by tunnels, ample bike parking allows users to continue on foot easily. There are many benches and seating options, and art installations that engage visitors but overall the space prioritizes movement over staying. A stronger connection to the vibrant urban atmosphere north of the station could increase the relationship between station and community.

EXPERIENCE

human scale

- In the station area, the sense of scale varies greatly throughout. Building heights range from historic 2-storey buildings to newer 5 storey-offices.
- Greenery is prominent in some spaces and completely absent in others, and the spatial experience shifts between feeling cramped or open.

opportunities for enjoying the weather

- Seating options on Hestetorvet square make it possible to enjoy the weather, and the nearby cemetery offers an opportunity for a short walk in a green setting.
- However, the station area itself feels quite enclosed.
- Directly within the station area, there are no outdoor facilities such as cafés with seating.

aesthetic and positive sensory experiences

- The front facade of the train station, the red cemetery wall, and the ceramic vases in the center of the square catch the eye and draw interest.
- Planters add to the aesthetic quality of the space.

EXPERIENCE summary

The hub offers a mixed sense of scale, with building heights, greenery, and spatial openness varying significantly across the area. While there are seating options that allow people to enjoy the weather, the station area feels largely enclosed, with no recreational or outdoor amenities like cafés or playgrounds. Aesthetically, it is the station's front facade and the ceramic vases that stand out, while the overall visual and sensory experience remains lower throughout the rest of the area.

TOD

priority

- There are good facilities for connecting bicycles with public transport, with ramps and elevators provided throughout the hub.
- An S-train line is planned to be implemented in 2034.
- While there is accessibility for people walking and cycling, the area is oriented to the car.

density

- Medium density of jobs (services) and housing around the hub.
- Commercial activity is not concentrated around the station.
- There is higher density north of the station, and lower density south of the station (with several larger employers like Roskilde Kommune and the hospital).
- There is no signage directing towards the station and the surrounding area is car oriented.

mix

- The functions and facilities near the mobility hub consist of diverse shops, cultural services, offices, educational institutions, cafés/restaurants, and grocery stores.
- The smallest footprints and therefore highest mix of functions are to the north of the station.
- Public facilities are available around the mobility hub.
- Access to multiple modes of transportation.

TOD summary

Transit is the priority in this area, with strong access for cars and active transportation. Cyclists benefit from ramps and elevators, making it easier to bring bikes on public transport, though cycling is restricted or unsafe in some areas. The hub is surrounded by a medium density of housing and jobs, and a mix of functions contribute to a pleasant urban environment near the station.

2026