



The Metro is your neighbour

What can I expect?

Where can I find more information?

How do I contact Cityringen?

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M





Marmorkirken

Marmorkirken

You are always welcome to contact us

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Published by
Metroelskabet I/S, Metrovej 5, 2300 København S, Denmark
August 2011

Reservations
We reserve the right to make changes.

Layout
e-types and India

We are building the new Metro line, Cityringen:
Metroelskabet I/S is generally responsible for the Cityringen construction project. We are owned by the Danish State together with the Municipalities of Copenhagen and Frederiksberg.

We have engaged Copenhagen Metro Team (CMT), a consortium of three Italian companies, to build stations, tunnels and shafts.

We have engaged Ansaldo STS to supply trains, track and operating systems and to build the Control and Maintenance Centre in Vasbygade.

Why the need for Cityringen?

In 2005, the Danish government together with the Municipalities of Frederiksberg and Copenhagen approved the "Agreement to build a Cityring", the motivation for which was described as follows:

"Along with the existing Metro, Cityringen will significantly boost public transport in Copenhagen, providing fast, safe and reliable transportation with frequent services in the most densely populated areas of the city. In changing from the bus to the Metro, passengers in Copenhagen and Frederiksberg will enjoy considerably shorter travelling times compared to today. Cityringen will therefore be an attractive alternative to travel by bus or car."

CITYRINGEN
It will open in 2018

It is the largest building project in Copenhagen since King Christian IV founded Christianshavn in 1618.

It is expected to create 25,000 man-years of work during its construction. This corresponds to 1,200-1,500 jobs a year directly connected to construction work, and 2.500-3,000 jobs a year deriving from the project at subsuppliers and in service industries. We will endeavour to ensure that 5-7 percent of hourly-paid construction worker jobs are filled by apprentices.

We are your new neighbour

We're sure you recognise us. With the utility companies and our contractor, we have been rerouting cables and traffic to make way for the building of the future Metro stations.

We are now ready to start building stations, tunnels and shafts for the new Metro line. And there will be times where you will be inconvenienced by work on the Metro. You will learn what it means to have an active construction site as your neighbour over a period of four to five years. The work will vary greatly from year to year.

One of our most important tasks is to keep you informed of the work going on at the construction site in your neighbourhood. Our goal is to ensure that, as far as possible, that you can get on with daily life during the construction period and that you are informed in good time of major changes on the construction site.

This brochure describes what you can generally expect while construction work is in progress, where you can get more information, and how you can contact us.

You will find an insert inside the brochure, which informs you specifically about the construction site in your neighbourhood. The insert includes a timetable, explaining what will happen when, and how it will affect you as our neighbour.

The story so far

The planning of the new Metro line started in 2002.

Since 2009, we have rerouted about 24 km of supply cables to make way for the new underground stations, including 2 km of telecables and 4.5 km of district heating pipes. We have also created about 130 traffic diversions.

The Cityringen construction project has prompted the largest ever archaeological dig in Denmark. Archaeologists have sifted through about 23,000 m³ of earth. Among other interesting discoveries, they have located the original Østerport city walls under Kongens Nytorv. They date back to about 1000 AD.

We cannot avoid the inconvenience - but we will let you know in good time

We will notify you of the work mainly via our website www.m.dk/cityringen. If you subscribe to our news service, you will receive a weekly report, informing you what is happening on the construction site. In the event of an acute situation, e.g. if we suddenly discover that we need to work at night or if the power lines will be cut, whenever this is possible, you will be informed by letter.

When the construction site is established, we will invite you to attend an information meeting. We will also invite you to come to an Open Cabin event just before we start the work we expect to inconvenience you most, i.e. during the building of station box walls. At these events, you can learn more about our work and we will be pleased to answer any questions you may have.

If you are a neighbour, you will receive an invitation to the information meeting. You can also find the date and time on our website. We will also advertise in your local newspaper in the weeks prior to the information meeting.

You are also welcome to call or write to us at any time.

HOW TO CONTACT US

24-hour Helpdesk: +45 7230 2020

E-mail: nabo@m.dk

www.m.dk/cityringen

m.dk/cityringen/klager

21 construction sites

A total of 21 construction sites will be established in Frederiksberg and in Copenhagen, in connection with the new Metro line. Seventeen new Metro stations will open in 2018. There are four particularly important construction sites: at Nørrebro parken, on Øster Søgade and Otto Busses Vej (where new tunnels will be bored) and on Sønder Boulevard, where we will build a junction chamber that trains will use to switch to the Control and Maintenance Centre in Vasbygade.

Keep me updated

You can get informations about activities directly in your mailbox through our e-mail service.



You can register at
www.m.dk/cityringen

We set up **the construction site**

(Period: about 3 months)

The building process starts when we set up the construction site with hoardings, portable cabins, machinery and building materials.

The construction site will gradually grow and become more obvious in the cityscape than it was during preparatory work as it will now be boarded off. As we hope that the hoardings will play a part in city life and create attractive spaces, in partnership with the municipalities of Frederiksberg and Copenhagen, we are running the 'Byens Hegn' (City Hoardings) project. The aim is to use the hoardings for cultural purposes and in connection with street art and other creative initiatives. The project is financed by advertising, which will therefore also be a feature of the hoardings.

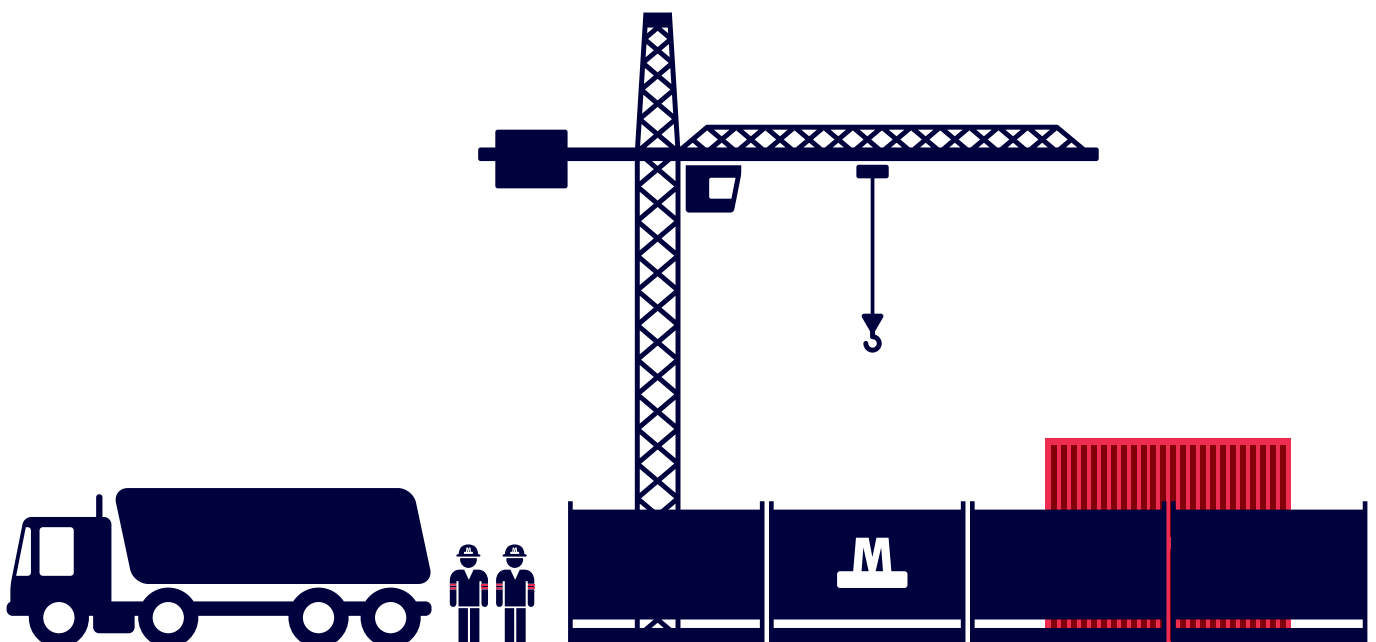
City hoardings

We will build a total of 6 kilometers of hoardings around Cityringen's 21 construction sites.

The 2.5-4 m-high hoardings will also act as sound barriers.

If you have a good idea how we can decorate the hoardings, we will be pleased to hear from you.

Read more www.byenshegn.dk



We construct station box walls

(Period: about 6 - 14 months)

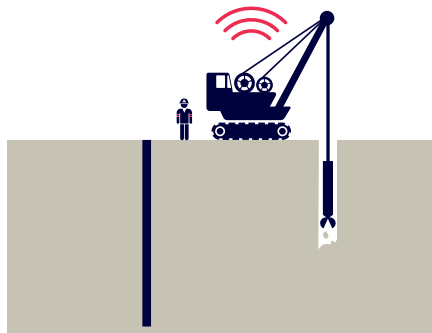
To prevent the ground from caving in when we excavate the big hole needed for the underground station, we cast underground, reinforced concrete walls before we start digging the hole itself. The construction is a watertight cofferdam. Its walls help maintain the groundwater level. The method also helps prevent subsidence damage and protects buildings built on timber pile foundations.

This phase of construction work causes most inconvenience as it causes noise and vibration.

We often work close to house fronts and there will be times when we will have to apply for exemption from applicable noise restrictions in the area. Machinery will be moved around on the site so the inconvenience will vary in intensity during the period.

The work may cause noticeable but harmless vibrations in surrounding buildings. Even entirely harmless vibrations may cause inconvenience and physical discomfort for our neighbours. You may find that the vibrations make cups rattle, create rings in coffee and shake the glass in picture frames.

Station box walls are constructed in stages. First a machine excavates a deep hole in the ground. Then the walls of this part of the hole are moulded in concrete. The machine is then shifted to excavate further and more of the wall is cast. When we have finished, there are fortified walls all around the area in which a deep hole will be excavated for the station box.



Building registration and surveillance

Metroselskabet lists all the buildings within 50 metres of the excavations and specific buildings (including churches) within 200 metres. We are collecting drawings of these buildings and information about their foundations.

During construction work, there are three factors which can potentially cause settlement: Movement in surrounding area of the ground during station/shaft or tunnel excavation, changes in the groundwater level, and vibrations that can cause damage to buildings.

Metroselskabet consistently monitors construction processes so that we are sure that

there are no unintended movements in the ground adjacent to the construction site.

Before starting construction work, Metroselskabet has conducted trial drillings and we have measured the groundwater level under normal conditions. During construction work, the contractor will consistently test the groundwater level around the excavations to ensure that this is not affected by the work. If the groundwater level falls, we pump water in so that the level is maintained.

There are several kinds of vibrations and we do not anticipate exceeding the maximum level for vibrations that can cause damage

to buildings. During construction work that causes vibrations, we set up instruments to measure vibrations in the foundations of selected buildings. These buildings are monitored, so that we can take precautionary steps if vibrations should approach a level which would cause damage to buildings.

If you believe that Metro construction is causing damage to your building, please contact Metroselskabet directly.

We partially seal off the station

(Period: a couple of days)

Once we have built the walls for the future station box, if possible, we then put a roof on it. Making the roof itself is noisy but the

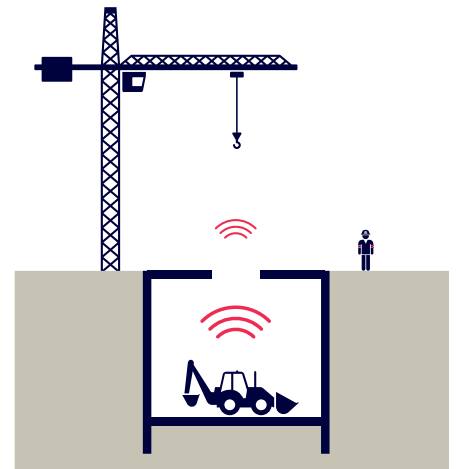
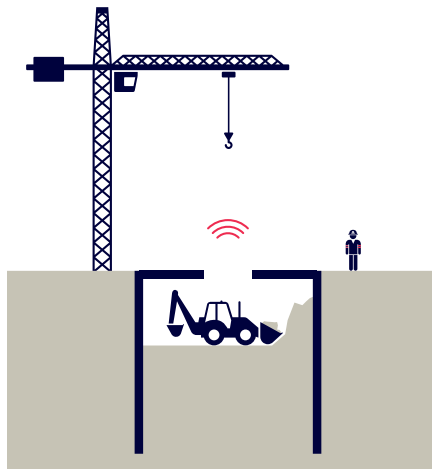
roof will then function as a sound barrier for the work that will be done inside the station box.



We excavate the station

(Period: about 1-2 years)

When the station box has been partially closed off, we start to excavate inside the station box. During this phase, you will notice increased lorry traffic to and from the construction site, as we have to remove the excavated material. At the same time, however, you will notice that there is generally less noise on the construction site itself. Lorry transport will be intense over several periods depending on where you live. On average 50 lorries will drive in and out of the construction site. The lorries operate from 07.00 - 18.00.



Building the stations

The stations will be built to a depth of 10-30 metres.

The machines that make the station box walls are 25-40 metres high and weigh up to 60 tonnes. (By comparison, a bus weighs 16 tonnes).

We use an average of 24,000 tonnes of concrete to build a station.

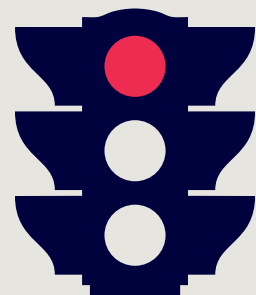
Traffic

In connection with preparatory work on Cityringen, we have rerouted many kilometres of power, telephone, water and gas lines so that we can excavate the stations. In many places, we have moved the construction sites around, which has disrupted traffic. Once we start constructing the Cityringen itself, most construction sites will be permanent. This means that in future there will be fewer disruptions to traffic.

Before we set up the construction sites, Metro-selskabet plans traffic in cooperation with the municipalities and Copenhagen Police.

When we make changes to traffic conditions in the vicinity of the construction sites, we have to

make sure that there is space for different kinds of road users: cars, buses, bicycles and pedestrians. We also make sure that our drivers have best possible visibility conditions for driving into and out of the construction site.



We bore tunnels

(Period: about 3 years)

Cityringen will have two parallel tunnels, each 15.5 km long. Tunnel boring takes place deep underground and creates almost no disturbance at ground level – even though the boring machines work 24 hours a day. [If you live in a building under which the boring machines pass, you may feel vibrations over a period of 2-5 days. Otherwise, tunnel boring work causes very little disruption.](#)

Tunnel boring starts at the three tunnel sites: Nørrebroparken, Vasbygade/Otte Busses Vej and Øster Søgade. The tunnel boring machines are lowered in parts and assembled underground. Excavated material from the tunnels is transported from these sites. If you live close to one of the future stations, tunnel boring work will cause only minimal inconvenience.

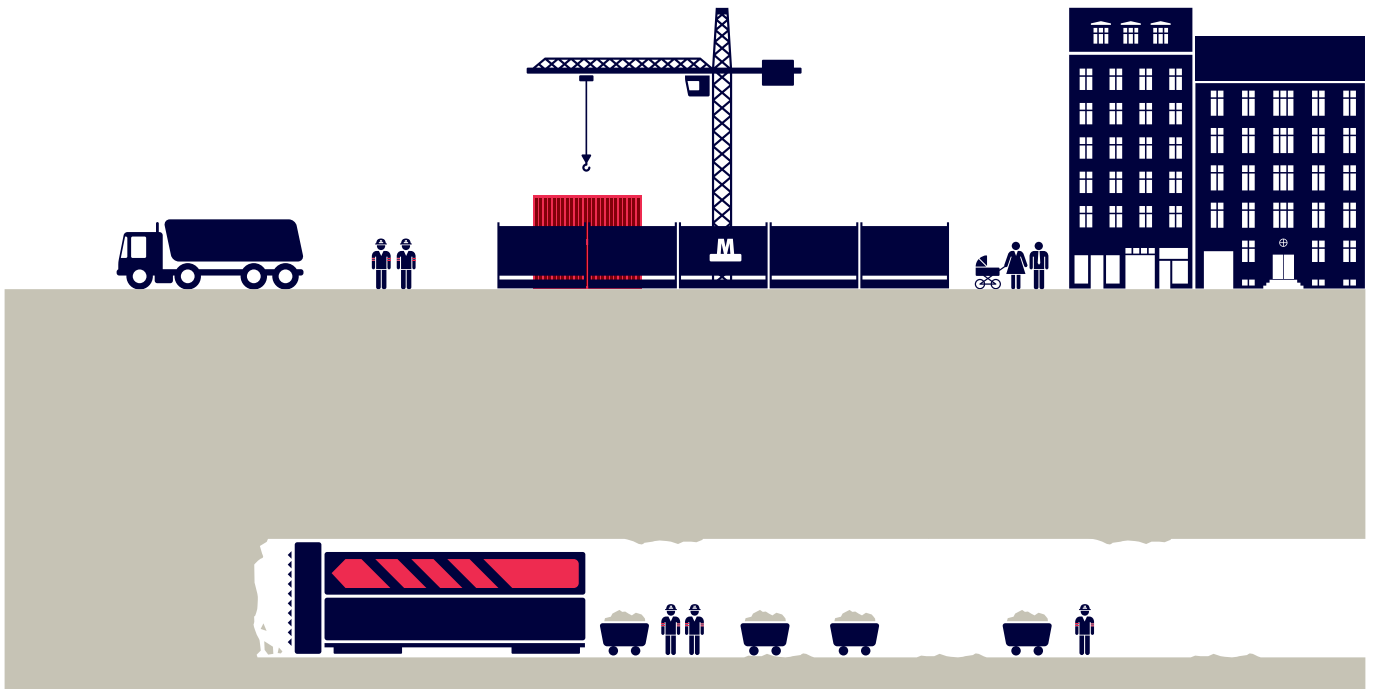
The tunnel boring machines are about 100 m long. As the tunnels are bored, they are successively lined with concrete elements. The concrete tunnel lining holds back water and earth.

There will be construction work going on 24 hours a day at the tunnel sites (Nørrebroparken, Otto Busses Vej/Vasbygade and Øster Søgade). The noisiest activities will take place during the daytime (07.00-18.00). Outside normal working hours, we will only perform work that is necessary to keep the tunnel boring machines running. Excavated material will be removed from the tunnel and materials lowered, which means that the cranes will operate day and night.

The tunnel boring machines

The tunnel boring machines each weigh about 700 tons and bore up to 30 metres of tunnel per day.

They operate 24 hours a day and are manned by teams of 10-15 workers, called the "tunnel gang".





Excavated material to Nordhavn

Material excavated from the underground stations and tunnels will be transported to Copenhagen's new sustainable area, Nordhavn.

Excavated material will be transported on weekdays from 07.00 - 18.00. All lorries will be fitted with diesel particulate filters.

Most excavate material comes from the tunnel borings. Lorries will be loaded with excavated material from the borings and transported to Nordhavn. On average there will be about 115 lorries to and from each of the three tunnel sites at Nørrebroparken, Øster Søgade and Vasbygade/Otte Busses

Vej. Excavated material will be transported on weekdays from 07.00 - 18.00.

Periods:

- Nørrebroparken: about 3½ years
- Vasbygade/Otto Busses Vej: about 1½ years
- Øster Søgade: about 1½ years

In addition, material will be excavated from shafts and stations. Lorries will also transport materials to the construction sites. This kind of traffic will vary depending on the construction site.

We cannot determine specific routes which hauliers must use. The municipalities

have recommended a number of routes to ensure that lorries join major roads as soon as possible, as these are most suitable for heavy traffic. It will often be in the haulier's interest to choose the recommended routes as transportation times will be reduced to a minimum and thus more costeffective for the haulier. From time to time, roadworks and other conditions may mean that other routes are more beneficial.

Apart from transporting excavated material from the construction sites there will mostly be incoming traffic to the tunnel sites bringing in construction materials.

We build the **underground** station

(Period: about 2 years)

We will build underground stations, including ticket halls, stairs, platforms and technical installations. During this phase, there will be less noise disruption than in earlier phases.



The stations

All 17 stations on the new Metro line will be built underground.

The new stations will be built on the same basic principle as the current Metro stations, except for Marmorkirken station, which will be built with side platforms rather than an island platform. We are working with different designs, colours and materials in the new stations.

Each station will have two elevators.

The Metro station at Marmorkirken will be the deepest station on the line. It is expected that the station will be built to a depth of 25-30 metres. This is because the platforms here will be built with one platform above the other.

The Metro stations at Kongens Nytorv and Gammel Strand will be the shallowest stations on the new line. They will be built to a depth of 10-15 metres.

We build station plazas and **create 17 new cityscapes** (Period: about 6 months – 1 year)

When we have finished construction of the underground station, we will start to build the station plaza above ground. Disruption during this phase will be limited to the kind of noise and traffic normally associated with roadworks and pavement work.

In 2009, the Municipality of Frederiksberg passed district plans for each of the station plazas at the new stations. Prior to this, there were public meetings and a consultation process with hearings. In partnership with Metroselskabet, the Municipality of Copenhagen held Open Architectural Office events during 2010, where citizens of the city could make their wishes known and give input to the new cityscapes. From 2011 to 2012, the Municipality of Copenhagen will issue district plans for the station plazas for

the purposes of public consultation. The district plans are expected to receive political approval before the end of 2012.

The two municipalities' district plans establish the general framework for the new cityscapes. The district plans are based on planning proposals drawn up by Metroselskabet, which form the basis for ongoing processes and project planning. Amendments resulting from the district plan hearing and approval will of course be integrated into the construction project. During this phase too, input from and wishes expressed by neighbours for the future stations will be included in efforts to create new cityscapes that are unique and reflect the characteristics of the local area.

Test runs

While we are working to create the new cityscapes, we will also be putting the finishing touches to the tunnels. We will also lay tracks and install the very complex network of systems that will ensure safe and reliable Metro operation. We will then test-run Cityringen for about one year.

Respect for our neighbours

The contractor is obliged to substantiate that environmental regulations are met, and, where this is impossible, to seek dispensation.

The Municipalities of Copenhagen and Frederiksberg are the environmental authorities responsible for the construction of Cityringen. The municipalities grant permission to set up and operate construction sites. When they give environmental approval, the municipal authorities establish conditions the purpose of which is to safeguard the environment and our neighbours as best as possible.

Environmental conditions include the following:

- Noise and vibration
- Dust
- Groundwater

The municipal authorities require the contractor to substantiate that environmental regulations are complied with. The municipal authorities will continually monitor environmental conditions throughout construction.


Dispensations

The two municipalities involved have produced a joint assessment of the environmental impact of the Cityringen project. The assessment was politically approved in 2009. The report concludes that the environmental impact of the construction works will be acceptable but foresees that it will be necessary in some areas to grant dispensation from the applicable environmental legislation. The contractor is obliged to substantiate that it is not possible to meet the environmental constraints even using an alternative method of construction, and that the contractor will use the most ecofriendly construction method possible. The municipal authorities can require of the contractor that neighbours are forewarned of disturbances, and that the contractor takes steps to minimise the nuisance, for example, by erecting sound barriers.

Inspection and expropriation

The term "expropriation" is used to describe a situation, in which land and rights have to be acquired from owners/users in order to carry out a project passed by Folketinget, the Danish Parliament. For example, "Lov om en Cityring" (the Cityringen Act) grants Metroselskabet the right to acquire any area or rights necessary to construct Cityringen.

Most of the Cityringen compulsory purchase orders are related to alterations to buildings, rights and future protection of the system. However, there are isolated instances where it has been necessary to expropriate homes and businesses. A total of about ten residences (apartments) have been expropriated in connection with Cityringen. Most of these were made at the owners' request.

Noise pollution - indicative limit values			
			Noise limit measured in dB one meter from front of the building 
average	Noisy work	7 AM - 6 PM	70
	All work	6 PM - 10 PM	40
	Saturdays, Sundays and holidays	7 AM - 10 PM	40
	All day	10 PM - 7 AM	40
Max	All day	10 PM - 7 AM	55 (Kbh) / 60 (Frb) (corresponds to the conversation)



Neighbours in 2018

Seventeen new Metro stations will open at the end of 2018. They will be the key to fast and efficient transport around Denmark's capital. If you live on Nørrebro, it will take you ten minutes to get to work in the City Centre. You will also be able to go shopping in Nordre Frihavnsgade, swim off Islands Brygge, eat dinner in Kødbyen and catch your flight from the airport in no time at all. We hope that you will enjoy the new Metro when it opens and we look forward to inviting you to the official opening in 2018.

Until then, we thank you for your patience.

Contact details, Cityringen

www.m.dk/cityringen
 Telephone: +45 7230 2020
 E-mail: nabo@m.dk
 m.dk/cityringen/klager

The Metro

The Metro runs round the clock seven days a week – and every two minutes during rush hour.

The trains on the new Metro line will never meet the trains on the existing Metro line, as they operate as separate systems. You will be able to change between Metro lines at Frederiksberg and Kongens Nytorv – and from the Metro to the S-train at Østerport, Nørrebro and København H.

The trip from Trianglen – Enghave Plads will take ten minutes

The trip from Frederiksberg – Rådhuspladsen will take six minutes

In 2010, 50 million passengers travelled on the Metro. In 2025 the number of passengers using the Metro is expected to increase to 130 million.