

= Ring Line (Oslo) =

The Ring Line (Norwegian : T @-@ baneringen or Ringbanen) is the newest rapid transit line of the Oslo Metro of Oslo , Norway . It connects to the Sognsvann Line in the west and the Grorud Line in the east ; along with these two lines and the Common Tunnel , the Ring Line creates a loop serving both the city centre and Nordre Aker borough . The 5 @.@ 0 kilometres (3 @.@ 1 mi) -long line has three stations : Nydalen , Storo and Sinsen . Four @-@ fifths of the line runs within two tunnels , with the 1 @.@ 0 @-@ kilometer (0 @.@ 62 mi) section between Storo and Sinsen , including both stations , being the only at @-@ grade part . The line connects to the Grorud Line north of Carl Berners plass and with the Sognsvann Line north of Ullevål stadion .

Planning for the line began in the late 1980s , and the city council approved the line 1997 . Construction started in 2000 ; Nydalen and Storo opened on 20 August 2003 , and Sinsen opened on 20 August 2006 . The line cost NOK 1 @,@ 348 million to build and was financed through Oslo Package 2 . The Ring Line is served by lines 4 , 5 and 6 of the metro , operated by Sporveien T @-@ banen on contract with the Ruter transport authority . All lines operate each fifteen minutes . Nydalen and Storo are such located that trains in either direction use the same time along the loop , effectively giving a five @-@ minute headway to the city centre . After the opening of the line , the areas around the stations have had increased urban redevelopment . The infrastructure is owned and maintained by the municipal company Sporveien .

= = History = =

By the 1960s , Oslo had a rapid transit network that branched out north @-@ east and north @-@ west from the city centre . In 1987 , the western and eastern network were connected , and through @-@ trains started operating between the two networks from 1993 . Plans to make a second connection through the borough of Nordre Aker were launched by politicians in the 1980s . It was argued that this was cheaper than building roads , with the per @-@ kilometre price being about a quarter of that for motorways . Some politicians also saw the Ring Line as an opportunity to close all parts of the Oslo Tramway , except the Ekeberg- and Lilleaker Line . Oslo Sporveier , the contemporary operator of the metro , started planning the line during the late 1980s . The plans would take advantage of the Gjøvik Line 's right @-@ of @-@ way between Storo and Sinsen , while the section from Storo to Tåsen would have to be built in a tunnel .

A projection for the line was presented in 1991 by Oslo Sporveier , where daily ridership was estimated to be 54 @,@ 000 passengers . The plans included a possibility for the high @-@ speed Gardermoen Line , that would be built to Oslo Airport , Gardermoen , to have a stop at Storo . This was later discarded when it was instead chosen to be built via Lillestrøm . There were also ideas to run trains from the Hoved Line from Lillestrøm to Grefsen Station via the Alnabru ? Grefsen Line , located adjacent to Storo , that would allow the central parts of Groruddalen to connect with the Ring Line and Nordre Aker . When the operating company ordered new T2000 trains for the Holmenkoll Line , the design allowed future versions to have dual current systems , to handle both the 750 volts on the metro network (from a third rail and overhead wire) , and the 15 kV 16 2 ? 3 Hz AC system of the main railways . This would allow the Ring Line to share the physical track with the Gjøvik Line on the section from Storo to Sinsen . The new T2ds were seen as a preparation for the Ring Line , and were optimised for higher speeds than the old stock , being capable of operating at 100 kilometres per hour (62 mph) . At the same time , the Sognsvann Line was being upgraded to full metro standard , like the eastern part of the metro had , and would lose the overhead wires and get longer platforms .

In 1992 , the tram division of Oslo Sporveier launched an alternative Ring Line that would have been built as a light rail , using in part the existing tramway . In the west , it would follow the Sinsen Line via Sinsen to Storo . A new line would have to be built from Storo to Tåsen . The line would then use the existing Sognsvann Line to Majorstuen , where it would connect to the tramway and follow the Frogner Line into the city , via a new Vika Line through Aker Brygge . This alternative would cost NOK 61 million to build , compared to NOK 470 million estimated for the rapid transit

solution . Named the Light Rail Ring (Norwegian : Bybaneringen) , it would have 38 stops instead of 16 stops , and a travel time of 34 minutes instead of 22 minutes . Annual operating costs for the light rail solution would be NOK 57 @. @ 5 million , compared to 43 @. @ 9 million for the rapid transit solution .

Between 1994 and 1998 , there was local political debate about how Rikshospitalet , that was moving to Gaustad , should be served by public transport . The state wanted to extend the Ullevål Hageby Line of the tramway to the new hospital , while many local politicians wanted to use the rapid transit . Since the Ring Line would increase traffic on the Songsvann Line , moving the line was considered to better serve the hospital . In 1998 , an agreement was reached whereby the light rail line would be built , and a new station for transfer from the metro would open at Forskningsparken .

A detailed proposal was presented by Oslo Sporveier in August 1996 . It became clear that Berg would not be served by the Ring Line . Many neighbours to the route of the Sognsvann Line complained about this proposal , stating that they had hoped that the section from Majorstuen to Berg would have been rebuilt as a tunnel . They also argued that it was irrational that the line was running at @-@ grade in densely populated areas , while it would run in a tunnel through the then mostly unpopulated Nydalen . To compensate , Oslo Sporveier stated that they would build noise screens along the line . Also , the Norwegian Public Roads Administration protested to the plans , and stated that funding should be allocated to upgrading Ring 3 to six lanes before public transport investments were made in the area .

The city council voted in favour of building the Ring Line on 25 June 1997 , against the votes of the Progress Party . However , the decision did not include how the line would be financed , and the politicians stated that they were hoping that the state would use national road funds to finance the project . This was partially ensured in December , when a political agreement was reached for Oslo Package 2 , a financing plan for investments in public transport in Oslo and Akershus between 2002 and 2011 .

In December 1999 , a disagreement arose between the Ministry of Transport and Communications and the city ; the city would not except the government 's promise to finance part of the line . Both Minister of Transport and Communications , Dag Jostein Fjærvoll from the Christian Democratic Party and Oslo City Commissioner of Transport and the Environment , Merete Agerbak @-@ Jensen from the Conservative Party , agreed upon the distribution of funding from the city and state , and both wanted construction to start as soon as possible . The city council did not accept the guarantees from the state until March 2000 . Construction started in June , with the Agency for Road and Transport of the municipality responsible for construction . The city would pay NOK 224 million , while the state would pay NOK 673 million .

The first section opened from Ullevål stadion via Nydalen to Storo on 20 August 2003 , costing NOK 590 million . With the opening , line 4 was extended from Ullevål stadion to Storo . Nydalen had grown up as an urban redevelopment area after the local industry had been abandoned in the 1980s , where 14 @, @ 800 jobs had been located by 2004 . On 20 August 2006 , the final section opened , from Storo via Sinsen to Carl Berners plass , with the whole project costing NOK 1 @, @ 348 million .

A report published by the city in 2007 declared the line a success and stated that all goals for the line had been exceeded . A survey conducted by the city in 2003 and 2007 showed that the Ring Line had a significant impact on the use of public transport in the area . Total public transport usage increased from 28 to 45 % ; use for commuting increased from 35 to 61 % . At the Norwegian School of Management (BI) , 85 % of the students used public transport . The Ring Line reduced the estimated number of daily car trips by 10 @, @ 000 , and generated 11 @, @ 000 more daily public transport trips . In 2007 , daily passenger numbers at the stations were 8420 for Nydalen , 3630 for Storo and 2300 at Sinsen . The line allowed travel time from the Nydalen and Storo to the city centre to be halved , and travel time from Nydalen to the city center is faster by metro than by taxi .

= = Route = =

The 5 @. @ 0 @-@ kilometer (3 @. @ 1 mi) Ring Line branches off from the Sognsvann Line after Ullevål stadion , just before Berg . It immediately enters a tunnel that runs via Nydalen to Storo . The station at Storo is just outside the entrance to the tunnel . From Storo to Sinsen , the tracks are laid parallel to the Gjøvik Line of the mainland railway . Also the Sinsen Line of the Oslo Tramway and the Ring 3 motorway follow the same corridor between the two stations . The section between Ullevål stadion and Storo is 3 @. @ 3 kilometres (2 @. @ 1 mi) , while the section from Storo to Carl Berners plass is 1 @. @ 7 kilometres (1 @. @ 1 mi) . Of these , 4 @. @ 0 kilometres (2 @. @ 5 mi) are in tunnels .

The Nydalen district , formerly an industrial area , has since undergone urban redevelopment . The immediate vicinity of the station includes several large workplaces . In 2005 , BI , with 8000 students and faculty , moved into a new campus across the street from Nydalen Station . Nydalen is the only underground station on the Ring Line . The escalators leading down to the platform features The Tunnel of Light , an artistic presentation of sound and colour around the passengers as they ascend from or to descend to the station . The artwork contains 1800 lights and 44 speakers . Nydalen also serves as a bus hub .

Storo opened as a tram station as part of the Grünerløkka ? Torshov Line on 28 November 1902 . It is located about 200 meters from Grefsen Station of the Gjøvik Line . The Norwegian National Rail Administration is planning to move the station platform so there can be direct transfer between NSB Gjøvikbanen 's commuter rail services , and the metro . Storo functions as a bus and tram hub ; it serves line 11 and 12 on the Grünerløkka ? Torshov- and Kjelsås Line , and line 13 on the Sinsen Line .

Sinsen opened on 20 August 2006 , three years after the two other stations . The station is located close to , but not adjacent , to the tram stop Sinsenkrysset on the Sinsen Line (tram no . 17) . Located at the interchange between Ring 3 and Trondheimsveien , it also serves as a bus hub .

The Løren Line is a proposed connection which would connect the Ring and Grorud Line . It would split from the Ring Line south of Sinsen , and run part in tunnel and part at @-@ grade until it connects to the Grorud Line west of Økern . In the tunnel section the new station , Løren , would be built . The day section would run parallel to part of the mainline Alnabru ? Grefsen Line . The line will allow metro trains to run directly from the Grorud Line to the Ring Line , and thus pass from east to west without passing through the packed Common Tunnel . It is part of the political compromise Oslo Package 3 , and estimated to be completed by 2017 .

= = Service = =

When operating a full circle route , trains start through the Common Tunnel . If running clockwise , they pass through all the common stations (Tøyen , Grønland , Jernbanetorget , Stortinget , Nationaltheatret and Majorstuen) . They head north on the Sognsvann Line , stopping at Blindern , Forskningsparken and Ullevål stadion . The Ring Line proper then splits off , and the trains serve Nydalen , Storo and Sinsen , before Carl Berners plass on the Grorud Line . After that , the trains again enter the Common Tunnel at Tøyen .

Lines 3 , 4 and 6 operate on the Ring Line , each with a 15 @-@ minute headway . Line 3 and 6 operates on the west side of the line , with line 3 terminating at Storo and line 4 operating on the east side . Between Nydalen and Storo , lines 4 and 6 swap numbers . From the city centre , line 4 comes from the Lambertseter Line , line 3 from the Østensjø Line and line 6 from the Sognsvann Line . After line 4 and 6 have run through the loop , they continue through the city again before heading to the terminal destination . Travel time from Nydalen and Storo stations is about the same , independent of which direction on the Ring Line travellers choose . Passengers heading for the city centre can therefore take the first train that comes , independent of which direction it is heading , thus giving Nydalen and Storo a five @-@ minute headway service to the city centre . The trains are operated by Sporveien T @-@ banen , a subsidiary of Sporveien , on contract with the public transport authority Ruter .

Transfer to the Kolsås- , Røa- and Holmenkoll Line is available at Majorstuen ; transfer to the

Lambertseter , Østernsjø- and Furuset Line is available at Tøyen and transfer to the Grorud Line is available at Carl Berners plass . Transfer to Oslo Central Station , which serves all trains in Eastern Norway , is available at Jernbanetorget . Most west @-@ bound trains can also be reached at Nationaltheatret , and trains along the Gjøvik line can be reached at Grefsen Station , that is close , but not adjacent , to Storo . The Oslo Tramway can be reached from several stations . In the city centre , transfer to all lines is possible at Jernbanetorget ; all lines but no . 12 can also be reached at either Stortinget or Nationaltheatret . Lines 11 , 12 and 19 all terminate at Majorstuen ; lines 17 and 18 run via Forskningsparken ; lines 11 , 12 and 13 can be reached at Storo ; and line 17 runs past Carl Berners plass .