

A large black gas pipeline is being laid in a grassy field. In the background, there is an industrial facility with blue storage tanks and tall chimneys. A white crane is visible on the left, and a small white container is next to the pipeline. The sky is blue with some clouds.

Draft proposal to amend the roll-out plan

Consultation of 10 December 2024

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1. Introduction

Combating climate change is one of the greatest challenges of our time. Within a time span of barely twenty-five years, we are going to have to turn a heritage of nearly a century's worth of drawing energy from coal, oil and gas into a clean energy supply. Overcoming this challenge will, first and foremost, be a matter of close collaboration and building on the knowledge and infrastructure we already have.

Gasunie subsidiary Hynetwork is building the Netherlands' national transmission network for hydrogen. Hydrogen is indispensable in the transition towards a zero-carbon energy system. With our infrastructure, we want to help industries in the Netherlands go sustainable, give market parties access to hydrogen markets in our neighbouring countries, and future-proof the Netherlands' revenue model as an energy hub.

In the summer of 2022, the then minister of Climate Policy and Energy published the roll-out plan in a letter to Dutch parliament. This letter described the goal set out in the roll-out plan as follows: '[...] to realise a transmission network that extends into the Netherlands' major industrial clusters, interlinks these clusters, and provides access to storage facilities, while also connecting the Netherlands to its neighbouring countries.'¹ The minister has decided to task Hynetwork with developing the Netherlands' national hydrogen transmission network and operate it as per this roll-out plan, which saw Hynetwork designated as a Service of General Economic Interest (SGEI).

Halfway into last year, Hynetwork proposed a change to the roll-out plan and sought feedback on the proposal. The change was to link up with the Delta Rhine Corridor (DRC), prompted by the fact that the IJsselmeer pipeline would become available much later than initially planned. This meant that the west-to-east section in the province of Brabant was no longer necessary. Additionally, we used the consultation on the roll-out plan to inform the market that we had revised the original roll-out timeline for the national hydrogen network and pushed back the completion date by roughly one to two years. What prompted us to delay the roll-out were experiences gained with lead times of the initial stages of ongoing project procedures and the fact that the joint capacity of parties such as contractors, engineering firms and relevant government agencies is simply not unlimited.

Responses to the proposal put out to consultation showed great commitment to getting the national hydrogen network built in a timely manner and the importance of collaboration and coordination in making this happen, which is a view that Hynetwork endorses wholeheartedly. Owing to the delay in the progress of the DRC project and the government's associated decision-making process on the (degree of) integrality in the project procedure, adoption of an updated roll-out plan unfortunately turned out not to be feasible. After all, the hydrogen pipeline in the DRC is an essential link in connecting the industrial clusters in the west of the Netherlands, such as Rotterdam, to other industrial clusters in the Netherlands, to hydrogen storage facilities, and to the Ruhrgebiet industrial area across the border in Germany.

¹ <https://www.rijksoverheid.nl/documenten/kamerstukken/2022/06/29/ontwikkeling-transportnet-voor-waterstof>.

The Dutch government recently completed the decision-making process on the DRC, creating clarity on the modalities in the DRC, on the approach, and on the targeted completion date for the hydrogen pipeline in the DRC. In addition, Hynetwork has also updated and clarified the plans and timelines for other network sections. We already shared initial insights into these plans previously, so as to be in time for the start date of the Dutch subsidy scheme for the upscaling of fully renewable hydrogen production through electrolysis (Opschaling volledig hernieuwbare waterstofproductie via elektrolyse, OWE)². We would now like to put a new proposal to amend the roll-out plan out to consultation among stakeholders. This consultation will run through to 31 January 2025. After the consultation period, Hynetwork will incorporate the feedback into a final proposal to amend the roll-out plan, which will subsequently be submitted to the minister of Climate Policy and Green Growth for adoption.

2. Where are we now?

Over the past year, we have made progress on various fronts of the hydrogen network project.

- Construction of the network in Rotterdam has started and is proceeding expeditiously. We expect the infrastructure in Rotterdam to be ready for use by 2026 at the latest.
- Work in the northern part of the Netherlands started in 2024 and will be completed in 2025.
- The industrial clusters in the northern Netherlands, along the North Sea Canal near Amsterdam, and in the south-west of the Netherlands have meanwhile moved on to detailed engineering and have a draft preferred alternative, an adopted Preparation Decision, and an adopted memorandum on the scope and level of detail respectively.
- Projects to build the infrastructure that will interconnect the various industrial clusters are meanwhile also underway. The Ommen-Ravenstein-Boxtel section and the Spaarndam-Mijnsheerenland section are being prepared for the project procedure.
- Publication of an amended contract set, version 1.0, with agreements on access to, and use of, the hydrogen network and the connections.³ This contract set is the result of constructive talks with representative organisations VEMW and Energie-Nederland. This version 1.0 of the contract set, however, does not mean the end of the development process for this contract set and neither does it mean that agreement has been reached on all points.
- The policy for connections to the hydrogen network has been published⁴, laying down the rules that Hynetwork will be going by for parties that want to be connected to the national hydrogen network.
- Customers from various regions have meanwhile signed a Connection Study Agreement (CSA). CSAs are used to agree to work together with the customer towards a binding connection or transmission contract and to realise the connection. In a CSA, Hynetwork commits to performing the studies for the connection.
- Joint Development Agreements (JDA) with Neighbouring Network Operators (NNOs) in Germany (Thyssengas, Gasunie Deutschland) and Belgium (Fluxys) are being wrapped up for the first cross-border connections. In 2023, we signed a letter of intent with OGE in Germany. The German government completed the decision-making process around the German hydrogen network, called Kernnetz, in October 2024. Having been awarded hydrogen network operator (HNO) status by the Belgian government, Belgian network operator Fluxys is working to get commitments from market parties. It is paramount that we also strike solid deals with our cross-border peers on the pressure

² <https://www.hynetwork.nl/kennisbank/artikel/update-actualisatieronde-waterstofnetwerk>.

³ <https://www.hynetwork.nl/kennisbank/artikel/aangepaste-waterstoftransport-en-aansluitcontracten-beschikbaar>.

⁴ <https://www.hynetwork.nl/kennisbank/artikel/aansluitbeleid>

levels in the interconnected networks and, of course, on aligning the quality of the hydrogen in our respective networks.

Unfortunately, we have also seen setbacks that have led to a delay in the realisation of the hydrogen network. The two main reasons behind the delay are in line with the reasons we also mentioned halfway into last year in the draft proposal to amend the roll-out plan we presented at that time. Firstly, lead times for project procedures, i.e. permitting procedures, are turning out to be longer than estimated in the original roll-out plan. One reason why these lead times have turned out to be longer is the fact that the different steps in the network design process and permitting procedure depend greatly on each other. Steps are often conditional on the previous step having been completed and cannot, as initially estimated, be taken in parallel. Secondly, we are seeing that there is limited capacity (in terms of quantity and quality) at the parties that are crucial for the required study and for the network roll-out. These parties include contractors, engineering firms, relevant government agencies, and Hynetwork itself. Furthermore, despite the decision of 5 December 2024 allowing the hydrogen connections in the DRC to enter the fastest possible permitting procedure, we have unfortunately seen a considerable delay due to the required careful preparation for the decision-making process itself as well.

We will harness the experiences and insights we have now gained during the early stages of the various sub-projects to improve our plans and/or risk markups.

Finally, we are sad to say that the hydrogen market is not developing as rapidly as initially thought and that market parties are not yet ready to make investment decisions and enter into hydrogen transmission contracts with us.



3. Delta Rhine Corridor (DRC)

The west-to-east connection in the national hydrogen network will be developed in the DRC pipeline corridor. In June 2024, the then minister of Climate Policy and Energy announced that construction of the DRC would be postponed from 2028 to not before 2032, partly on the back of the government's decision to adopt an integrated planning procedure for all of the planned modalities in the DRC.⁵ In this same letter, the minister announced that Gasunie would be running a study into the alternative sections.

Gasunie subsequently looked into alternative pipeline routes for both the hydrogen pipeline and the CO₂ pipeline in the DRC. After a broadly scoped study of the various options, four alternatives to the DRC were worked out in greater detail.

- The IJsselmeer pipeline route: the pipeline section crossing lake IJsselmeer that also featured in the original roll-out plan.
- The Markermeer pipeline route: a pipeline through the provinces of North Holland and Flevoland past various power plants.
- The Central Netherlands pipeline route: a pipeline through the province of Gelderland, just to the north of the DRC.
- The Brabant South pipeline route: a pipeline through the province of Brabant, south of the DRC, which was also included in the original roll-out plan.

Two of these alternatives, i.e. the IJsselmeer pipeline route and the Markermeer pipeline route, were dropped because building these pipelines would take too much longer than the time frame earmarked for construction of a west-to-east connection. In the current gas market, the IJsselmeer pipeline will continue to be needed into the next decade for natural gas transport. If the pipeline were to be repurposed now, GTS would have to regularly intervene in the market because it would mean that gas cannot always be supplied to exit and entry points. Only if the natural gas market were to shrink further in the province of North Holland in particular would it be possible to free up this pipeline without having to worry about natural gas supply issues. In spatial planning terms, the Markermeer pipeline is a challenging pipeline section as it runs through a densely populated urban area, Natura 2000 areas, and a body of water. Given that part of the section runs outside the SVB corridor and the section is longer than the DRC, its completion date would be well beyond 2035.

In terms of planning, the two remaining alternatives, i.e. the Central Netherlands pipeline route and the Brabant South pipeline route, have been worked out to a level of detail that is similar to that of plans for other sections of the national hydrogen network. These plans show that these alternatives cannot be completed sooner than the hydrogen pipeline in the DRC.

Gasunie shared these findings from the study of the alternatives with the government and the relevant DRC parties as part of the decision-making process concerning the DRC. Based on this and other information, the minister has opted to adopt a joint project procedure for hydrogen and CO₂ in the pipeline section of the DRC. The approach of using an integrated permitting procedure for all modalities has been abandoned, as that would mean a substantial delay in the timeline. The approach that has now been chosen puts the completion date for the hydrogen pipeline in the DRC in 2031 or 2032. Gasunie and the Ministry of Climate Policy and Green Growth have discussed the enabling

⁵ 27 June 2024, 'Letter to Dutch parliament on progress and procedure of the Delta Rhine Corridor' (in Dutch), <https://www.rijksoverheid.nl/documenten/kamerstukken/2024/06/27/voortgang-en-procedure-delta-rhine-corridor>.

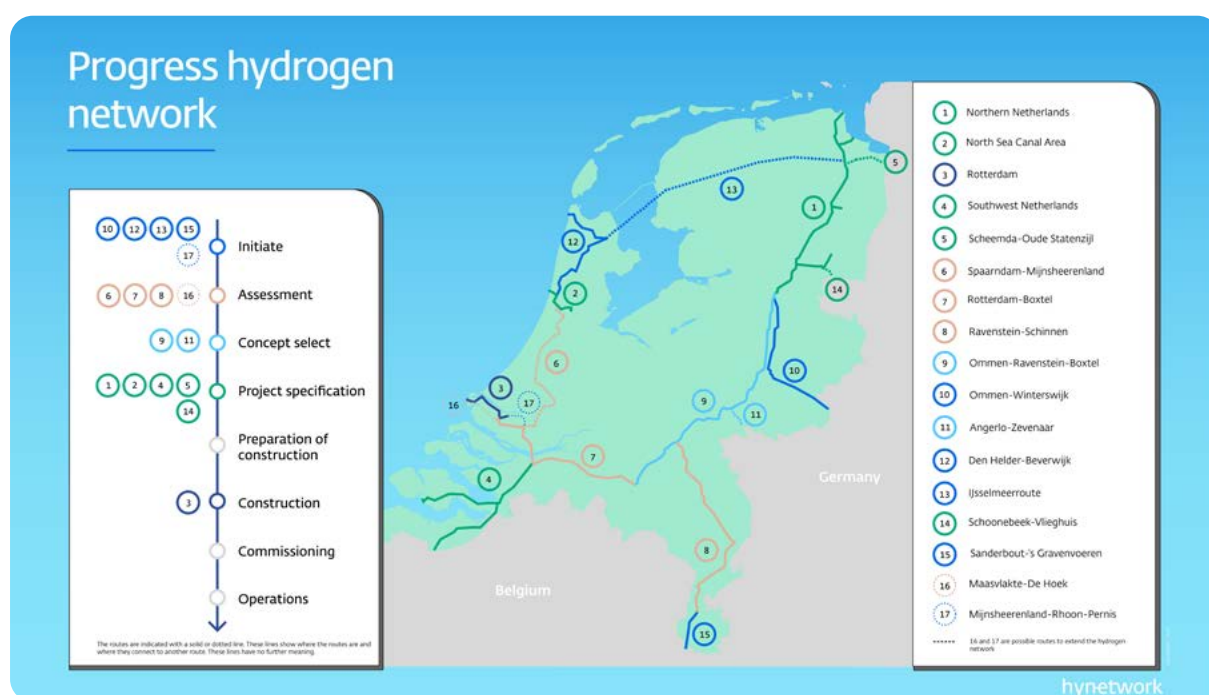
conditions that would have to be in place to be able to complete the pipeline within the shortest possible time frame. We are confident that we, together with the Ministry of Climate Policy and Green Growth and the competent authorities, will be able to make the project a success for the hydrogen market and the local area.

4. Proposed changes to the roll-out plan

The energy transition in the Netherlands needs to go full steam ahead to keep up with industrial parties' decarbonisation agendas. We are, therefore, fully committed to building our infrastructure as soon as possible and we are still confident that we will be able to facilitate our users' transition to sustainable hydrogen in a timely manner.

We realise that clarity and certainty about plans for the hydrogen network and when it will be available are crucial for industry as a basis for their own decisions. With this in mind, we have chosen to base the proposed changes to the roll-out plan on timelines that factor in risks and delays as much as possible. From now on, we will communicate two completion dates for each section of the hydrogen network⁶: one date based on a 'P50 timeline' and one date based on a P90 timeline. P50 means that we are 50% certain that the section in question can be completed on schedule, while P90 means that we are 90% sure of that. Appendix I lists the completion dates for each section.

Most of the sections are not yet under construction (except for the section in Rotterdam) but are still in one of the pre-construction project stages. The figure below shows what project stage each of the sections has reached. During the early project stages, section planning generally involves greater uncertainty than during the latter project stages, such as the construction stage. As a result, we expect section plans to become more certain as their development moves forward over the coming years.



⁶ We have divided the Dutch hydrogen network into different sections. These sections are covered by various project procedures (for permitting purposes). The various project procedures and sections are listed in Appendix II.

Hynetwork will create the hydrogen network in the Netherlands in four phases. The first section to be completed is the one in Rotterdam, followed by sections in the other clusters along the coast. Next, we will develop the interconnections between the clusters and connections to the industrial cluster in the province of Limburg, and we will ultimately upgrade the entire network. The phases are based on the aforementioned P90 timeline.



1. Rotterdam (2026)

The first section of the Netherlands' hydrogen network will be built in the port of Rotterdam. A 32km hydrogen pipeline will run between the Tweede Maasvlakte industrial area and the village of Pernis. Work on this section started in late 2023 and the pipeline will be ready to be taken into operation in 2026.

Phase 2: Coastal industry clusters (in or before 2030)

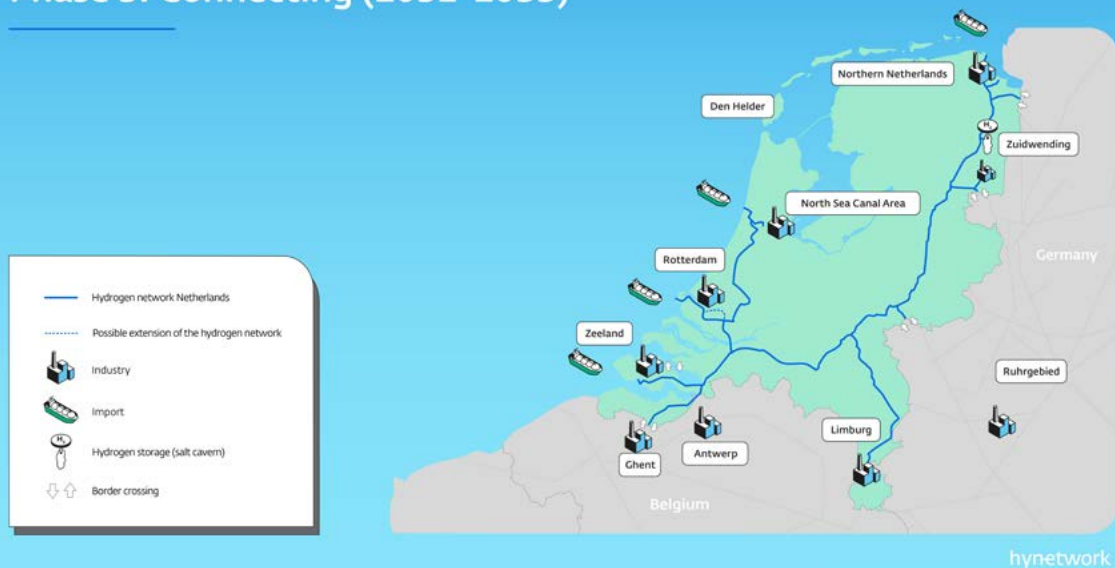


2. Infrastructure in the industrial clusters along the coast (in or before 2030)

As per the original roll-out plan, Hynetwork has started work not only on the Rotterdam section but also on the infrastructure in the industrial clusters on the coast. This will ensure that the network will be available in four of the clusters before or in 2030. The clusters in question are the following:

- Rotterdam
- Northern Netherlands, including the connection to the HyStock hydrogen storage facility and cross-border connections to Germany (Scheemda-Oude Statenzijl and Schoonebeek-Vlieghuis)
- North Sea Canal area
- South-west of the Netherlands, including the first cross-border connection to Belgium: Zelzate

Phase 3: Connecting (2031-2033)



3. Connections between the clusters (2031-2033)

This phase will see us build the connections between the clusters from the previous phase and to the Limburg cluster. This also includes the DRC connection, meaning that all the clusters will be connected to storage facilities and to Belgium and Germany by the end of this phase. This concerns the following connections:

- Spaarndam – Mijnsheerenland: the connection between the North Sea Canal area and Rotterdam
- Mijnsheerenland – Moerdijk: the connection between Rotterdam and the province of Zeeland
- Limburg: the connection from Ravenstein to the Chemelot industrial cluster in the province of Limburg
- Rotterdam – Boxtel: the west-to-east connection through the DRC
- Ommen – Ravenstein – Boxtel: the connection between the north of the Netherlands and the DRC
- Angerlo – Zevenaar: the connection to the German border

In addition to these connections, Hynetwork also intends to look into the possibility of building the Mijnsheerenland – Rhoon – Pernis section. This section (roughly 10-18km long) would make it possible to connect Rotterdam directly to the North Sea Canal area. Building this section could be seen as a way to mitigate the risk of unforeseen delays in the completion of (the relevant part of) the DRC. Depending on how construction of the DRC and the rest of the section in the western part of the Netherlands is coming along, a decision may be made in the future as to what permitting procedure will be required and as to whether or not to actually build this sub-section.

Phase 4: upgrading (year not yet known, but will be after 2033)



4. Upgrading (year not yet known, but will be after 2033)

As soon as we have a fully interconnected network, we will move on to upgrading it. The following sections will need upgrades:

- Den Helder – Beverwijk
- IJsselmeer pipeline

And we are working on cross-border connections to cover situations where greater cross-border capacity is needed:

- Ommen – Winterswijk (Germany)
- Sanderbout – 's Gravenvoeren (Belgium)
- Zandvliet (Belgium)

In addition, we are already taking into account in the permitting process that a need may arise for a second hydrogen pipeline in this region at some point, namely the Maasvlakte-De Hoek pipeline. This hydrogen pipeline may then run from the Tweede Maasvlakte industrial area south of the port towards the east.

Finally, we expect an offshore hydrogen network to be developed in the future, and that it will be connected to Hynetwork's hydrogen network. Connections to future hydrogen distribution networks may also be on the cards.

5. Risks factored into the plans

Risks have been factored into the plans. These risks are at the basis of the expected completion dates and bandwidth between the P50 and P90 estimates of these dates. The risks include the following:

- Procedures before the Council of State that delay the project by up to a year.
- (Overly) limited scope for nitrogen emissions, and/or limited availability of equipment with low nitrogen emissions.
- Access restrictions due to birds' breeding seasons or other nature conservation measures.
- Water withdrawal restrictions during construction on account of water management and retention for nature, climate and/or agriculture.
- Delays in signing agreements under corporate law, access permissions and obligations to tolerate ('gedoogplichten').
- Interference with nearby other (infrastructure) projects (by the authorities and/or network operators).
- Late availability of natural gas pipelines that are to be repurposed for hydrogen transmission, which may happen when they are declared unfit for repurposing due to unforeseen damage.
- Limited availability of resources (material, equipment and workers) across the full supply chain.
- Increase in extreme weather conditions.
- Drills jamming in boreholes and problems during commissioning.
- Snowball effect of minor delays during the large number process steps of the project procedure, such as delays caused by additional consultations with stakeholders, extended review and inspection procedures around recess periods.

Risk categories such as the following have not been factored into the plans:

- Very rare events that, if they were to occur, would have a major impact ('black swans').
- Procedures before the Council of State that end up delaying the project by over a year.

6. What this means for your connection

With this roll-out plan, we want to give users clarity on the construction timeline for the hydrogen network, so that customer connections can also be set up in a timely manner. The timelines and phases presented in this roll-out plan relate to the construction of the Netherlands' national hydrogen network. As a national grid operator, Hynetwork focuses on connecting large parties and/or parties that operate at high pressure levels. Hynetwork does this for all parties in the Netherlands within the five industrial clusters and for those in cluster 6. Connections to the network will also be possible beyond the scope of the roll-out plan, as described in the aforementioned connection policy. These connections, both within the five industrial clusters and in cluster 6, are planned and prepared through a dedicated process that involves Connection Study Agreements (CSAs).

The following instruments that were recently announced by the Dutch government have made it even more important for market parties to have clarity on Hynetwork's timeline for both the network and connections:

- Providing the option to use hydrogen in refining fossil fuels, i.e. the 'refinery option'. Through this option, the Ministry of Climate Policy and Green Growth and the Ministry of Infrastructure and Water Management offer users the opportunity to fulfil (part of) their transport obligation under the Renewable Energy Directive (RED) by greening the hydrogen consumption needed to produce fuels for transport.
- The consultation on the annual obligation for industrial users of hydrogen. This gives industrial users greater clarity on their obligations related to their annual consumption of renewable hydrogen or renewable hydrogen carriers.
- Access to a subsidy scheme for the upscaling of fully renewable hydrogen production through electrolyzers (Opschaling volledig hernieuwbare waterstofproductie via elektrolyse, OWE), which has a total budget of €1 billion. The first subsidies under this scheme are expected to be granted early next year.

Hynetwork aims to make the Netherlands a strategic player in the international hydrogen market and recognises the importance of connecting the Netherlands to Germany and Belgium. Hynetwork works with network operators in neighbouring countries to establish cross-border connections between our networks. This is not only about building these connections but also about aligning operational aspects such as pressure, international network balancing and hydrogen quality. Collaboration between network operators and market parties is critical in matching international hydrogen supply and demand. We were, are, and will continue to be in close and constructive talks with the Belgian and German network operators to align timelines and make more concrete agreements on the development of border points to enable European hydrogen transmission. The timing of the construction of the cross-border connections, on both sides of the border (Germany and Belgium), is in line with when these cross-border connections are expected to be used.

By pulling together at an early stage, we will shape the development of the hydrogen market. To make this possible, we urge parties who want to be connected to the hydrogen network and who have not yet submitted a CSA to contact us as soon as possible.

7. What's next?

Over a period of over seven weeks, you will have the opportunity to share your views on this draft proposal to amend the roll-out plan. After that, HNS will incorporate the feedback from the consultation into a final proposal to amend the roll-out plan, which will subsequently be submitted to the minister of Climate Policy and Green Growth for approval.

Appendix I: planned dates by network section

We have split the Netherlands' hydrogen network into various sections. The table below shows the bandwidth of the planned completion of these sections.

Phase 1: Rotterdam (2026)

Route	P50*	P90**
3. Rotterdam	2026 Q1	2026 Q3

Phase 2: Industrial clusters along the coast (in of before 2030)

Route	P50	P90
1. Northern Netherlands	2029 Q2	2030 Q1
2. North Sea Canal Area	2030 Q1	2030 Q4
4. Southwest Netherlands	2029 Q4	2030 Q3
5. Scheemda-Oude Statenzijl	2029 Q4	2030 Q3
14. Schoonebeek-Vlieghuis	2029 Q2	2030 Q1

Phase 3: Connections between the clusters (2031 - 2033)

Route	P50	P90
6. Spaarndam-Mijnsheerenland	2031 Q4	2032 Q4
7. Rotterdam-Boxtel	2031***	2032
8. Limburg	2032 Q2	2033 Q2
9. Ommen-Ravenstein-Boxtel	2031 Q2	2032 Q2
11. Angerlo-Zevenaar	2031 Q2	2032 Q2
17. Mijnsheerenland-Rhoon-Pernis	2031 Q4	2032 Q4

Phase 4: Upgrading (year not yet known, but will be after 2033)

Route
10. Ommen-Winterswijk
12. Den Helder-Beverwijk
13. IJsselmeerroute
15. Sanderbout-'s Gravenvoeren
16. Maasvlakte-De Hoek

* We expect to meet this planning with 50% certainty
 ** We expect to meet this planning with 90% certainty
 *** A P10 was given here because this was agreed upon with the government

Sections hydrogen network



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Appendix II: List of project procedures and sections

Projectprocedure	Tracé(s)	Noot	Huidige status Projectprocedure
Waterstofnetwerk Groningen	1. Noord-Nederland 5. Scheemda-Oude Statenzijl	Noord-Nederland tot provinciegrens Groningen-Drenthe	Concept Voorkeursalternatief (concept-VKA)
Waterstofnetwerk Drenthe-Overijssel	1. Noord-Nederland 14. Schoonebeek-Vlieghuis	Noord-Nederland vanaf provinciegrens Groningen-Drenthe	Notitie Reikwijdte en Detailniveau (NRD)
Waterstofnetwerk Oost-Nederland	9. Ommen-Ravenstein-Boxtel 11. Angerlo-Zevenaar		In voorbereiding start procedure
Waterstofnetwerk Limburg	8. Limburg 15. Sanderbout-'s Gravenvoeren		In voorbereiding start procedure
Delta Rhine Corridor	7. Rotterdam-Boxtel 16. Maasvlakte-De Hoek		Voornemen en voorstel voor Participatie (VenP)
Waterstofnetwerk Zuidwest-Nederland	4. Zuidwest-Nederland		Notitie Reikwijdte en Detailniveau (NRD)
Waterstofnetwerk West-Nederland	6. Spaarndam-Mijnsheerenland		In voorbereiding start procedure
Waterstofnetwerk Noordzeekanaalgebied	2. Noordzeekanaalgebied		Vorbereidingsbesluit (VBB)
Waterstofnetwerk Ommen-Winterswijk	10. Ommen-Winterswijk		Nog niet gestart
Waterstofnetwerk Noordwest-Nederland	12. Den Helder-Beverwijk		Nog niet gestart
IJsselmeerroute	13. IJsselmeerroute		Nog niet gestart
	3. Rotterdam	niet via Projectprocedure	
	17. Mijnsheereland-Rhoon-Pernis	niet via Projectprocedure	

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