



masterplan ems 2050

**Working together
for a navigable and
living river**

Content

Introduction	3
Objectives	6
Measures	12
FAQ	25
Glossary	31
Contract	34



Ecology and economy - working together for the Ems region

Working together for a navigable and living river. Commerce and nature are given equal priority on the Ems - the contract partners of the Master Plan Ems 2050 are bound by these principles. The federal and state governments, the Emsland and Leer districts, the city of Emden, Meyer Werft, and the environmental associations BUND, NABU, and WWF have agreed to realise these goals by the year 2050. This placated a conflict smouldering for decades. In other words: EU directives on nature, water and sea conservation will be fulfilled, and jobs will be secured and created.



A massive undertaking - a large alliance

A comprehensive and long-term undertaking like the Master Plan Ems 2050 requires support from a wide variety of interest groups. A large, cooperative alliance stands behind the plans, and ensures the fine-tuning of the measures and the security of the interests of all involved over the span of 35 years.

The image displays the logos of the alliance partners. From top to bottom, they are: BUND (Friends of the Earth Germany), Emsland, Landkreis Leer, MEYER WERFT (Papenburg 1795), NABU (Niedersachsen), Niedersachsen, Stadt EMDEN, WSV.de, and WWF.

The Ecological Goals of the Ems Region



The Ems is in poor ecological condition. The water contains little oxygen, a lot of suspended matter, and too much salt. This state is a consequence of, among other things, the increasing deepening of the river since the '80s that has disorganised the tidal balance so much that the Ems can no longer independently carry out with the ebb all of the silt that washes in with the flow. Typical riverbank habitats like riparian forests, reeds, and tidelands with tidal creeks have vanished in many areas, and elsewhere they are in danger of vanishing as the Ems was straightened and fortified, thereby destroying nearly natural riverbank zones.

It is thus necessary to act, especially as the European Commission has made it clear with a so-called "pilot procedure" that it will not continue to tolerate violations of numerous European environmental standards in the long term, thereby obligating the state of Lower Saxony to improve the situation.

The contract partners have thus defined concrete measures that aim to improve water quality and habitats in the Master Plan Ems 2050. As a result, the European Commission has initially suspended the pilot procedure, but would like to be informed semiannually of progress in the Ems. The threatened contract violation proceedings before the European Court of Justice, with potentially high penalties, is thus not completely off the table.

The quality of the water is most troubling. A cloud of loose silt washes to and fro with every flow into the river, and when combined with the lack of oxygen and rising salt levels this makes life difficult or impossible for a lot of aquatic wildlife and plants, especially in the summer. Microscopic creatures that primarily consume the organic components of the silt need the oxygen released into the water to do so.

A number of solutions to this problem are considered in the assessment. A tidal control system is to be installed in the Ems barrage that would use a bearing threshold or technical regulation of flow conditions to halt the incoming silt. So-called tidal polders - newly dredged basins along the edge of the river - will gather water and silt. The outflow from the polders should strengthen the ebb current over time, thereby helping to wash out the silt.

But that is not the only solution. The objective "Giving the River More Room" foresees the formation of "typical estuary habitats" like tidal riparian forests, reeds, and tidelands with tidal creeks along the banks of the Ems through the targeted acquisition of space and the installation of polders. The new system of such tide-dependent areas along the river should compensate for the loss of such habitats, giving flora and fauna the chance to recover or re-settle. The Master Plan Ems foresees the acquisition of 500 hectares by the year 2050. An additional 200 hectares of meadow bird habitat will be created inland by 2050 to replace the grassland areas claimed in the foreland.

Structures that currently prevent fish and other animals from straying into bodies of water adjacent to the Ems shall be made more traversable throughout the duration of the Master Plan Ems 2050.

The Economic Goals of the Ems Region

Along with agriculture and tourism, ship transportation shapes the Ems region. While the shipping industry, as a sub-sector of the maritime economy, is largely concentrated in Haren and Leer, shipbuilding and port logistics are based in Papenburg and Emden. Bulk goods like salts, fertiliser, construction materials, and agricultural products are largely processed at the inland harbours of the Ems. Large industrial locations for the automotive industry, paper manufacturing, and wind energy plants, among others, have developed near these harbours, serving the Ems region and the global market.

Along the Ems federal waterway, nearly 15,000 employees work in this economic sector in the drainage basin of the Ems thoroughfare. According to an assessment released by the Lower Saxony Institute for Economic Research in 2014, Meyer Werft currently employs around 3100, half of whom come from the Emsland and Leer districts, plus more than 2200 full-time positions with direct vendors and more than 200 with indirect vendors. An employment effect of about 20,000 full-time positions in Germany is expected by 2017. One-fifth of vendors from the region benefit from technological advances and innovations, according to the report. With its strong development and engineering divisions, Meyer Werft is a crucial driving force for the development of this economic region with relatively few epicentres of innovation.

In addition to this are another estimated 20,000 positions with companies from sectors that directly depend on the harbours (e.g. VW, ENERCON, Nordland-Papier), vendors and companies working for corporations that depend on the harbours, and the expanded commerce and service sectors.

This immense employment volume with a strong regional base ensures a special degree of regional added value through its dynamic nature and innovation. Families, retail, and service providers thus benefit as much as the municipalities and districts of the Ems region who receive considerable fiscal revenue from the regional economic effects – and with it the creation and maintenance of local infrastructure and quality of living.



A sufficiently navigable, year-round federal waterway – the Ems – is crucial for shipbuilding, port logistics, and all other harbour-related sectors. However, the heavy sedimentary contamination of the Ems necessitates extensive dredging to keep the fairways at the necessary draught. The harbours along the Ems are also suffering from the massive silt contamination. The silt reduction measures suggested by the Master Plan Ems 2050 could thus lead to visible economic relief.

Objectives

The objectives defined in the Master Plan Ems 2050 should achieve three things:

Secure the economic infrastructure of the Ems region.

Create a vibrant Ems that offers plants and animals significantly better water quality and revitalised habitats along its banks.

Avoid contract violation proceedings by the EU with unforeseeable financial consequences. The time frame for implementing the measures by 2050 is considered realistic, as the contract's demands entail a number of tasks that, due to geographic extensiveness and labour-intensiveness, are highly challenging.

Less silt, more oxygen

Resolving the silt problem and restoring water quality

Through changes in the river's course - straightening and deepening - as well as the disappearance of natural silt accumulation areas, the ratio of ebb and flow duration in the Ems has shifted considerably, greatly increasing silt contamination. Because the river became deeper and straighter, the incoming flow has become faster and heavier, running up to the edge of the tidal inflow in Herbrum in an ever shorter amount of time. The ebb current, on the other hand, has become slower and more consistent. Because of this asymmetry, current speeds during the flow are much greater than those during the ebb. This means that the flow current carries far more sediment into the tide than the ebb can carry back out. Silt from the harbour in Ems - where the state of Lower Saxony dredges - is no longer removed from the river system, and is thus no longer stored on land.

The Ems is much more heavily contaminated with silt than other rivers. This not only means that a lot of sediment accumulates on the river bed and along the banks, but also that there is a very high amount of dissolved silt in the river's water itself. According to measurements by the coastal research station of the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation (NLWKN), the concentration of sediment in the water of the Ems is 100- to 1000-times that in the Elbe and Weser.

Primarily in the summer, when little water flows from the headwaters and the ebb is further weakened as a result, an actual layer of fluid mud forms on the river bed and only moves slightly up- and downstream with the tide. Despite the very high sediment content, this mixture remains fluid but behaves differently than water, and is not habitable for wildlife. This "system state" of the river is very rare, according to the coastal research station, and international knowledge of this topic remains "highly incomplete".

That is why the NLWKN and the coastal research station, among others, are taking extensive samples and sets of measurements of specific parameters of the Ems water. These measurements also serve to improve the existing calculation models for planning the measures to resolve the silt problem.

One initial measure for resolving the silt problem was commenced by the Steering Committee in January:



“flexible tidal control” with the gates of the Ems barrier. Before the Federal Waterway and Shipping Administration (WSV) and the NLWKN had consolidated their very different approaches of a weir and tidal control at the Ems Barrier in a feasibility study. The effectiveness and technical feasibility of flexible tidal control with elements from both approaches was verified. It was also determined that there are currently no exclusion criteria for implementation from an environmental and shipping perspective. Because of this, the Steering Committee commissioned the NLWKN and WSV to compile the basis for a planning process. This is expected to commence in 2020.

The WSV and Lower Saxony Department of Commerce have already entered talks with harbour operators, shipping companies, and harbour-related businesses to cooperate with their representatives in finding ways to minimise shipping restrictions by blockages of the Barrier during tidal control. The basis for working out the specific operation plans for tidal control is a balance between effectiveness of silt reduction in the Ems and compatibility with maritime commerce.

In order to achieve the desired results as quickly as possible, the contract partners agreed in the Master Plan Ems 2050 to commence planning for flexible tidal control before the feasibility study for the tidal reservoirs on the Ems - the third improvement measure - is ready, presumably by late 2018. Should

the tidal reservoirs prove to be feasible and effective, they can be combined with the flexible tidal control. In addition, the expected minimisation of silt in the Ems is expected to have a positive effect on the planned state of habitats in tidal polders along the Ems. They should not silt up as quickly as they do under the current conditions.

The heavy turbidity of the Ems and contamination with suspended sediment often leads to a very low oxygen content in the water. No oxygen is present in some parts of the river during the summer months. A certain increase in oxygen is always apparent in the winter. By resolving the silt problem, the oxygen content is expected to increase and the Ems should become a year-round habitat for fish once more.

Another consequence of past river enlargements is the threat of saltwater flowing further into the Ems system with the flow tide than before. The brackish water zone (the zone where freshwater and saltwater meet) has thus shifted further upriver.

**Stefan Wenzel,
Minister for Environ-
ment, Energy and
Climate Protection
of Lower Saxony,
during a sample taking**

Life between two worlds

What makes the Lower Ems so special

The Lower Ems downriver from Herbrum is influenced by the ebb and flow, has freshwater/saltwater/brackish water zones, and is thus one of the “expanded mouths” that experts refer to as an estuary. Before human encroachment such landscapes between the river and sea – such as the Elbe, Weser, and Eider – were shaped by distributaries and tidal inlets, marshlands and ponds, still bodies of water and shallow water zones, riparian forest and reeds. Now many of the habitats typical of an estuary are threatened, or have vanished, as a result of straightening, deepening, reinforcement, and embankments.

The Master Plan Ems 2050 intends to recreate typical estuary habitats while maintaining the Ems’s function as a shipping waterway.

Estuaries are the point of transfer and contact between marshland, river, and sea wildlife. Migrating fish species that return to their spawning grounds as adults use the estuary as a passageway. Only when this is possible is the animals’ offspring secure. Shallow water zones play a crucial role as “nurseries” for the young fish. These habitats are necessary for the survival of migrating species of fish like salmon, houting, sturgeon, lampreys, eels, and shads, as well as many non-migrating fish and large mussels. One future objective is for bearded tits, among others, to breed in expanded reed belts. Large riparian forests are also a habitat for penduline tits, orioles, and otters, among others.

Furthermore, brackish water marshes produce a lot of biomass and are home to a multitude of invertebrate species – a crucial source of sustenance for many breeding birds and passage migrants.

In order to improve and expand these habitats and their biodiversity, the Master Plan Ems 2050 stipulates the creation of more estuary habitats along the banks of the river. The Master Plan foresees the acquisition of 500 hectares near the river by 2050 for this purpose. New inland bird conservation areas are planned for the potential deterioration of meadow bird habitats (e.g. through the formation of riparian forest and reed zones).

More protection for birds

Safe breeding, nutritious resting grounds

The protection of breeding and passage migrant birds is a component of the Master Plan Ems 2050. Some measures of the Master Plan Ems 2050 in the dyke foreland could potentially jeopardise the habitat of some of the birds currently living there. The re-waterlogging of old Ems loops, which should create estuary habitats with riparian forest and reed zones, would deteriorate the quality of meadow bird habitats near the river. This is also why the Master Plan Ems 2050 stipulates the acquisition of 200 inland hectares for bird conservation by the year 2050. The breeding birds in question are primarily lapwings, black-tailed godwits, redshanks, large curlews, and common snipes. Passage migrant birds would also find refuge in the bird conservation areas. The river course, forelands between the dykes, and adjacent inland areas have also been reported as bird conservation and FFH areas.

Before finalising the Master Plan the environmental associations and Meyer Werft, in conjunction with the ship crossovers, agreed on bird conservation measures. This agreement is one of the foundations for the future securing of a location for the shipyard. In the agreement from 2009 the shipyard obligated itself not to convey any large ships during the birds’ breeding period – specifically from 1 April to 15 July – for 30 years. This will protect egg clutches in the foreland from flooding via *Ems damming*.

The Master Plan Ems 2050 stipulates the acquisition of 200 inland hectares for bird conservation by the year 2050



Green light for ships

The Ems as a federal waterway

The contract partners of the Master Plan Ems 2050 have committed themselves to reconcile the equal *ecological* and *economic* interests. This is why the Ems's efficiency as a *federal waterway* must be maintained by all measures for improving the river's ecological condition. In concrete terms, this means that both the security and ease of ship traffic are guaranteed and the availability of all ports is ensured. The Ems and Ems-Dortmund canal are part of the central network of federal waterways in Germany, meaning they are significant in terms of traffic. The Federal Waterway and Shipping Administration, a division of the Federal Department of Transportation, is responsible for this. Ships can reach the entire European waterway network through the Ems and the channels and rivers connected to it. The region's economy is heavily dependent on the maritime industry.

A year-round, navigable Ems as a federal waterway is significant for all maritime sectors. The high sediment contamination of the Ems is currently resulting in extensive dredging with the objective of keeping the fairways at the required target depth. The ports on the Ems are also suffering from the high sediment contamination. A reduction in silt contamination via the measures in the Master Plan Ems 2050 could thus also result in visible economic relief.

The following ports can be reached via the Ems federal waterway:

The **Emden sea port** is a base harbour for automobile transshipment for Volkswagen. The Volkswagen Group shipped 1.31 million cars in 2014. Furthermore, renowned paper corporations have conducted transshipment of forestry products like cellulose, paper, and wood here for decades. The wind energy industry ships components for onshore and offshore facilities here. Package freight, construction materials, project loads, and solid/liquid bulk goods are also cleared and loaded in Emden. There are specially secured areas for hazardous and military goods.

The **Leer sea port and inland port** is one of the most important municipal ports in Lower Saxony, and is the lifeblood for more than 20 directly port-related business. With about 20 shipping companies, the city is the second-largest shipping location in Germany. Numerous companies that depend on the port are



Cruise ship from the Meyer Werft in Papenburg

also located in Leer. The main transshipment goods of the port in Leer are construction materials and agricultural goods. The tideless port of Leer can be reached from the Ems federal waterway via a sea lock (192 metres long, 26 metres wide, 7 metres deep).

The **Papenburg sea port and inland port** can be reached by sea ships despite its distance of about 60 nautical miles from the North Sea, making the importance of the federal waterway quite clear – three-quarters of its total transshipment comes from sea traffic alone. Papenburg is Number 1 in Lower Saxony for peat transshipment, and construction materials, agricultural goods, iron and steel, wood, and project loads also pass through the port. The transshipment and commercial spaces at the port are currently being expanded. The port is also becoming more active as a service provider for the offshore wind energy sector.

The **Emsland freight village (FV) in Dörpen**. The northwestern-most FV in Germany began operating in 1996, and in 2015 it transshipped about 5.5 million tons of goods. A total of 450 people are employed here. Ships with triple-layered containers reach the wharfs via the Ems federal waterway. The goods are transported further via railways and roads. One of the main users of the FV is the forwarding company UPM Nortrans, who regulates the transportation of goods and raw materials for the UPM Nordland Papier factory in Dörpen.

A lot of work on the river

Securing economic growth in the region

The primary objective of all partners who signed the Master Plan Ems 2050 is to reconcile the equal ecological and economic interests of the region. In concrete terms, this means considering and ensuring the economic strength and infrastructure of the region in all plans and measures for the mutually agreed ecological restoration of the Ems and the neighbouring habitats, and thus the opportunities for local companies and their employees to thrive. Industry, shipbuilding and shipping, agriculture, and tourism make up the backbone of the regional economy, and the Master Plan ensures that all industries will be able to further develop and grow.

The relationship between the Ems and regional economic strength is clear. Large companies from the automotive, wind energy, and paper industries have settled here because they are able to utilise the Ems and its harbours, as well as the many local shipping companies, to connect to international markets. Nearly 15,000 employees work in this industry along the Ems federal waterway and the catchment area of the Ems axis. According to the

assessment released by the Lower Saxony Institute for Economic Research in 2014, the Meyer Werft shipyard alone hires around 3,100 employees, half of whom come from the Emsland and Leer districts. In addition to these are more than 2,400 full-time workers at direct and indirect suppliers. One-fifth of the suppliers from the region benefit from the shipyard's technical advances and innovations.

Another estimated 20,000 employees work at companies in sectors that directly depend on the ports (e.g. VW, ENERCON, Nordland-Papier), suppliers, and firms who work for these port-dependent companies, as well as the wider commercial and service sectors.

In order to not excessively strain the agricultural sector with the need for land for the Master Plan, the process for acquiring land for bird conservation and typical estuary habitats is being jointly coordinated with this sector's representatives. The tourism industry is expected to benefit from the improved attractiveness of the region.



Another economic aspect of the contract is securing the future of the location of the Meyer Werft shipyard. In 2009 the shipyard and the environmental associations agreed on bird conservation in accordance with clear regulations. This agreement is still in effect, and a number of aspects are included in the Master Plan Ems 2050. The winter passages of ships into the yard is legally assured until 2019. Recommendations for the summer of 2019 and the period after 2020 are currently being discussed and worked out.

Furthermore, the Master Plan Ems 2050 is linked to the location assurance contract that the state of Lower Saxony, the shipyard, and IG Metall Küste concluded in early 2015 in order to secure the long-term location in Papenburg - at least until the year 2030. The contract guarantees that personnel, training, and research and development in Papenburg and the region as a whole will be retained.



Measures

In order to realise the objectives defined in the Master Plan Ems 2050, the contract partners have established testing projects for specific measures as part of the agreement. A number of feasibility studies are already being conducted. Once the results are available, they will first be discussed in the respective task forces and then submitted to the Steering Committee. The Committee's decision marks the beginning of the concrete planning for all necessary permits before implementation can begin.

Should individual measures prove to be infeasible, they will be replaced with new, similar recommendations. For example, measures for improving water quality cannot be replaced with measures pertaining to bird conservation.

Working together against silt

Country and state develop "flexible tidal control"

The country and state have agreed on a joint technical model for declaring war on silt contamination in the Ems: the gates of the Ems Barrier should control the tide in such a way that the ebb current carries more sediment out of the Ems than the current prevailing flow current carries into the river. The fundamental feasibility of the "flexible tidal control" was verified in two feasibility studies conducted by the Federal Waterways and Shipping Administration (WSV) and the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation (NLWKN) with support from renowned technical assessors. Based on this, on 25 January 2017 the Steering Committee of the Master Plan Ems 2050 assigned the preliminary work for a permit process that should result in an approvable, detailed plan. The contract partners expect the tidal control to begin in 2020.

The federal and state governments had previously followed different models. The federal weir aimed to raise low tide levels, and the NLWKN wanted to halt the flow current. Both sides now favour a concept that primarily affects flow current because the greatest possible effects can be achieved this way. However, a method for lifting low tide levels is also still in place. This concept includes many control methods for being able to respond flexibly to all Ems-related situations - including the demands of interior draining and ship transit. An operating plan is to be developed during the public law permit process in which all affected parties are involved.

Leading up to the process, the Federal Waterways and Shipping Administration held discussions with representatives from shipping, port administration, and port-related companies. The closing times of the Barrier will impair ship traffic along the Ems. These exchanges aim to determine ways of minimising these restrictions while simultaneously ensuring the effectiveness of the silt retardant.

The model calculations from the Federal Waterways Engineering and Research Institute predict that the spatial impact of the flexible weir on the silt will reach as far as Knock, beyond Emden. If the plans are finalised successfully, current information from the Federal Waterways Engineering and Research Institute (BAW) foresees the construction of the first



Minimisation of silt in the Ems by regulation of tidal

storm flood structure for the planned and permanent control of the tide in a river course. The Barrier need not be structurally altered for this purpose, but the riverbed above and below the structure must be reinforced with stone bed protection in order to prevent erosion. An administrative agreement concerning the distribution of the foreseeable overall expenses of about 30 to 40 million euros is being negotiated between the state and federal governments.

The decision that has now been made consolidates two of the three measures for improving water quality, for which the contract partners commissioned feasibility studies in March 2015: a weir adjacent to, and tidal control with, the Ems Barrier. In order to reach the desired results as quickly as possible, the contract partners of the Master Plan Ems 2050 agreed to implement the scheduling process before the feasibility study for the tidal reservoirs on the Ems - the third improvement measure, expected by late 2018 - is available. Should the tidal reservoirs prove feasible and effective, they can be combined with the flexible tidal control. Furthermore, the expected minimisation of silt in the Ems should have a positive effect on the planned establishment of habitats in tidal polders along the Ems. They would not be contaminated by silt as quickly as current conditions allow.

Test-run for the reservoir idea



Offshore land surface potential for the tidal reservoir

The Vellage tidal reservoir

The planned tidal reservoir in Vellage is fundamentally different from the polders that will potentially be installed to improve the estuary habitats along the river: it is a “pilot reservoir”, meaning that it will be used to test whether and how tidal reservoirs influence the desired improvement of water quality - and it is not installed permanently.

The testing phase has been given a temporary term of about two years before the tidal reservoir in Vellage will be relinquished, as per the current planning, and left to natural succession. During the flow tide a part of the incoming tide will be provisionally stored in the reservoir in order to support the outflowing water during the ebb. This, along with any potential measures with the Ems Barrier, aims to counteract any further silt contamination of the river. The Vellage tidal reservoir shall test the mathematical models underlying this hypothesis under real conditions.

Two types of location were initially investigated for the construction of the tidal reservoir in the vicinity of the Vellage oxbow lake. The planning both within the levees on the former peninsula and the offshore land surface (a larger basin with afflux and influx of parts of the oxbow lake) was discarded in the meantime. After the results of the soil samples taken in September during the Ems damming for the assessment of the “Genting Dream”, the planning is now concentrated on the oxbow lake, as this location requires less soil transportation and it is expected that the sediment stored in the oxbow lake can be

accommodated more easily. The soil samples had revealed that the soil in the oxbow lake of the Ems in Vellage consists of material similar to the silt commonly found in the Ems. This preferred location could be realised within a territory of ten hectares in the existing oxbow lake. This minimises encroachment in the surrounding environment. The initial estimation amounted to 20 hectares.

By validating the hydromorphological modelling results the pilot polder should provide realistic information about the challenges of such construction measures, e.g. how to handle the soil excavated during construction of the polder - and how quickly such polders will be re-contaminated with silt. This information will be incorporated into the feasibility investigation for “tidal reservoirs”.

Current state

The soil samples in the oxbow lake required for further planning were examined for a third time in September. Because of these delays, it currently appears that construction will not commence by the end of the 2017 bird breeding season (mid-/late July). The Master Plan schedule for the Vellage tidal reservoir is thus delayed by one year. The feasibility study of silt reduction by the tidal reservoir would then be complete by late 2019.

New life on the river

A manmade biotope

One priority of the ecological measures of the Master Plan Ems 2050 is recreating lost habitats along the river. These biotopes are special because they are influenced by the ebb and flow, meaning they are dry at times and submerged at others. Ideally, shallow water zones, brackish and freshwater reeds, sand and silt flats, and tidal riparian forest would form.

One of the attempts at creating such a biotope should be realised in the municipality of Westoverledingen, close to the former bend in the Ems near Coldemüntje. The area located behind the Ems dyke consists of the remains of a former Ems loop that was cut off in the first half of the 20th century. The Grotegaste oxbow that formed here was filled with dredged materials from maintenance of the fairway and was later completely separated from the Ems by the construction of the new main dyke line. A silted lake and few biodiverse biotopes are now located here.

Tidal inlet structures will be created in the tidal polder during construction, and a freshwater pond will be formed at the higher altitude of the planned area. Because it is expected that no water will be able to flow out of the Ems for a number of days during the summer because of greater sediment loads, additional irrigation via the Coldemüntje sluice will be considered. Along with the tidal polder that is expected to form tidal inlets, a freshwater pond is also expected to be created at the higher altitude of the planned area. A structure installed in the dyke to allow the influx of water should ensure that the uppermost layers of the water column around the flood waters can flow into the polder from the body of water. This will ensure that only the surface water of the Ems that is less heavily contaminated with sediment will enter the polder. The dyke line remains untouched. Furthermore, a settling basin should prevent excessively rapid silt buildup. The structures will be designed in such a way that fish can also pass through them.

Based on the NLWKN feasibility study submitted late last year, the Steering Committee for the Master Plan Ems 2050 decided in January to commence permit proceedings in the Leer district to realise the Coldemüntje tidal polder. Around 340,000 cubic metres of dredged materials must be removed to construct the polder. Plans are currently being discussed to determine how to disturb the residents as little as possible - including by leaving more material in the



Bird's eye view of the biotope area

planned area. The municipality of Westoverledingen will constantly be kept up to date. The state will bear the expenses of around seven million euros.

Under the current circumstances, it is assumed that the measure is feasible and can be realised according to schedule (2020).

Current state

Based on the feasibility study, in January 2017 the Steering Committee recommended implementation of the Coldemüntje measure. The NLWKN is currently preparing the proposal paperwork for the permit proceedings, with the Leer district as the permit authority.

Coldemüntje feasibility study

The document now publicly available here is a feasibility study. It not only contains plans that will be realised, but also verification of the fundamental technical feasibility and effectiveness. Documents are currently being compiled for the permit proceedings, during which a permissible, detailed plan will be drafted by the public and all parties involved as part of a constitutional process.

Everything in the river

Open for tides in Stapelmoor

South of Weener, near Stapelmoor, a river loop was penetrated and separated from the river in the first half of the twentieth century, and nearly completely filled with silt like many other places along the Ems. This land is now heavily used for agriculture, and there are only a few protected biotopes there. A polder could also be installed here, where the tide can flow in and create typical estuary habitats. The possible effects of the respective plans on the existing water conservation area will be determined.

Current state

The feasibility study is underway. It concerns, among other things, the potential impact on the water conservation area located within the planned area. The Steering Committee will decide on implementation, and then the plans would commence in close cooperation with the Leer district. The goal is then to activate the polder by late 2020. The acquisition of the required land will depend on the results of the feasibility study and detailed plans.

Land along the Ems used for agriculture



The Ems nature conservation station



The Ems nature conservation station

As part of the Master Plan Ems 2050, the state of Lower Saxony is obligated to establish an Ems nature conservation station – and this has happened in the meantime. Two employees from the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation (NLWKN), Peter Pauschert and Heinrich Pegel, have been working at the nature conservation station since May 2015. It is currently housed in the state land registry building in Leer, but will move to a property directly next to the Ems in July 2017. Only there, in direct proximity to the river, will the nature conservation station be able to completely and adequately fulfil its intended tasks, such as the arbitration of nature conservation and technical public relations work in the nature learning centres.

The physical emphasis of the nature conservation station's work is in the Natura 2000 areas in and along the tidal Ems. The field of activity here is concentrated on the areas outside of the dyke between Herbrum and the outer Ems. The emphasis lies on documenting species and habitats, planning/executing/monitoring care and development measures on state land, economic management of state land, general nature conservation consultation, and cooperation during the implementation of Master Plan Ems 2050 projects.

The Aurich, Emsland, and Leer districts, the city of Emden, and – along certain parts of the coastal waters – the NLWKN are distinctly responsible for the official nature conservation as subordinate nature conservation authorities. The nature conservation station works in close cooperation with them. The two employees are involved in the implementation of Master Plan Ems 2050 projects, as well as other Ems projects in which the NLWKN is involved. They are currently involved in the technical preparatory planning for the Vellage tidal reservoir, the Coldemüntje and Stapelmoor tidal polder, and are cooperating in the economic management of state nature conservation areas (outer dyke).

A large-scale search

Acquiring space for the Master Plan

700 hectares of land will be required by the year 2050 to implement the Master Plan Ems 2050. A total of 500 hectares is to serve for developing typical estuary habitats, and 200 hectares shall be provided for meadow bird conservation.

Currently this land is primarily being used for agricultural purposes. To this day the announcement of the wish to purchase this much land has caused great uproar and protest from farmers and farmers' associations, especially in the Leer district, even before conclusion of the contract. They fear scarcity of land and higher leasing expenses. A very large, overriding target area for the space was thus determined in the Master Plan Ems 2050, largely as a reaction to this criticism. This target area includes parts of the Emsland, Leer, and Aurich districts, and the city of Emden. All sales or land exchanges only occur with the landowners' consent - no land will be confiscated. The Office for Regional State Development Weser-Ems is responsible for this.

In order to achieve equal distribution of land throughout the entire target area, and to consider agricultural and water management aspects during the acquisition of land, the Steering Board for Land Management - chaired by the Office for Regional State Development Weser-Ems - was established in April 2015. This Steering Board consists of the three affected districts (Emsland, Leer and Aurich) and the city of Emden, the representatives of the three environmental associations involved in the Master Plan Ems 2050 (BUND, NABU, and WWF), the Lower Saxony State Chamber of Commerce, the NLWKN (Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency), two representatives of regional water and soil associations or dyke associations (Rheider Embankment Committee, Oldersum Drainage Association), and five regional representatives of agricultural interest groups (Chief Agricultural Society of Eastern Friesland, Society of Rural Residents of Emsland, Association of Rural Agriculture AbL Lower Saxony/Bremen, Federal Association of German Dairy Farmers, and Lower Saxony Rural Youth), as well as the Office for Regional State Development Weser-Ems (chair).

In 2016, 52 hectares of land were acquired for meadow bird conservation. They are located in the northern district of Emsland and the district of Aurich.



The land for the Master Plan is currently being used for agricultural purposes

The land for meadow bird conservation will be leased out to local farmers after being acquired by the state of Lower Saxony. This lease will be subject to conditions that grant meadow breeders like black-tailed godwit, lapwing, curlew, redshank, and common snipes, among others, suitable breeding and feeding grounds. The land will be arranged in such a way that it will provide attractive nesting grounds for the birds. Very high water levels in the spring before mating season, for example, are very favourable.

No land has yet been acquired for the arrangement of typical estuary habitats, as these measures are largely dependent on the results of further planning and feasibility studies.



Step by step

Improved fish ladder at the Herbrum weir



The Federal Waterways and Shipping Administration declared in the Master Plan Ems 2050 its willingness to improve ecological traversability at the Herbrum weir by 2021. The fish ladder erected with the weir in 1959 no longer completely meets modern traversability requirements, thereby making it an impediment to the migration of sea fish and cyclostomes (lampreys). It should thus either be expanded or replaced with a new fish ladder.

Free movement for aquatic wildlife

Traversability of sluices



The Ems is connected to many inland bodies of water via a system of sluices and pumping stations. These structures, which separate the river from neighbouring bodies of water, are often impossible or difficult for fish and other animals to traverse. In order for these animals to be able to regain their original habitats, the Master Plan Ems 2050 plans to work with dyke and drain associations to find solutions for making these structures more traversable for animals, significantly expanding the species' habitats.

The EU also feels that this would considerably improve the quality of the Ems estuary, taking consideration of the European Water Framework Directive and its call to improve water quality.

Based on the positive results of a feasibility study, a preferred method for improving traversability at the Knock sluice has been selected: among other things, reprogramming the gate controls will foreseeably improve conditions for migrating species by spring of 2017, in time for spawning season.

Examinations conducted at the Oldersum sluice have revealed that better traversability will be possible with specific fish locking at the Oldersum sluice. This is also expected to begin in 2017.

Further examinations for improvements are also planned for the following sluices:

- Sautel sluice
- Pogum sluice
- Ditzum sluice
- Coldeborg sluice
- Jemgum sluice
- Soltburg sluice
- Stapelmoor sluice



Open borders

No barriers for fish

With its tributaries and sluices, the Ems is actually one cohesive habitat. However, the drain and irrigation systems have increasingly blocked the paths of migrating species. The Master Plan Ems 2050 thus stipulates that, in the interest of the ecological improvement of the Ems and its neighbouring bodies of water, structures in the river or confluent bodies of water be made more traversable for fish and other animals.

Currently these plans are primarily concentrated in Knock and Oldersum. The Lower Saxony State Organisation for Water Management, Coast and Nature Conservation (NLWKN) is cooperating with the draining associations and, in the case of Oldersum, with the Federal Waterway and Shipping Administration.

The Knock sluice will be separated from the river by a sluice and pumping station at the confluence with the Ems at the southwestern point of the East Frisian peninsula. The sluice itself is about 35 kilometres in length and, with the adjacent bodies of water, drains broad expanses of western Eastern Friesland. Ecologically optimal sluice management is currently being worked on to acquire this broad aquatic habitat for fish and other creatures from the Ems and other bodies of water.

In Oldersum, the Oldersum sluice and the Ems by-channel are jointly considered in the interest of improving traversability. The two bodies of water are connected, but enter the Ems separately - the channel via the Oldersum lock, the sluice via the pumping station. The NLWKN currently favours the lock. Under the current conditions, additional fish locks can be used to improve access for fish and other animals. The NLWKN and WSA Emden are currently working closely together to resolve the matter.

Current state

All authorities, draining associations, and dyke associations involved are jointly examining ways to make the sluices more traversable. Operations at the Knock sluice will commence this spring.

Room for ebb and flow

Internal tidal polders and backward relocation of dykes

Along with the tidal polders in Coldemüntje and near Stapelmoor, the Master Plan Ems 2050 also foresees about 450 to 500 hectares of land for additional polders, which shall be installed behind the main dyke or formed through backward relocation of dykes. Their location depends on the availability of land and the results of the feasibility study on the tidal reservoirs, as well as their effectiveness with regard to improving water quality. A tidal polder on the Leda is also included in the measures. No land has yet been acquired for the establishment of such typical estuary habitats, as these measures largely depend on the results of further planning and feasibility studies. Furthermore, Article 13 (2) of the Master Plan Ems 2050 states that the development of tidal riparian forest, reeds, and marshland is the priority, followed by the formation of estuary habitats after considerable reduction of silt in the Ems.

Internal tidal polders



Water creates life

More room for the river

The Master Plan Ems 2050 foresees the opening or demolition of overflow dams and levees to create typical estuary habitats. These measures shall allow the tide to flow into the land in front of the dyke, thereby creating habitats.

Overflow dams protect agricultural land from light storm tides, wind floods, and summer floods, as well as damming during ship crossovers. Levees, on the other hand, are low earth walls on the banks of bodies of water that generally don't offer any protection against flooding. Neither overflow dams nor levees are covered by the Lower Saxony Dyke Act (NDG) or have any significance for the calculation of the height of the main dykes. They are not significant for coastal protection.

Before the Steering Committee decides where such a demolition could be feasible, the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation (NLWKN) will assess the seven suggestions made by the Master Plan Ems 2050:

- Levee at Bingum
- Levee at Coldam
- Kirchbogum
- Coldemüntje
- Tunxdorf/Vellage
- Nüttermoor
- South of Leer

Anything but monotonous

Hidden life in the reeds

Many reeds have disappeared along the Ems as a result of digging, straightening, and bank reinforcement. These reed belts, which appear plain at first glance because of the lack of plant variety, are actually a diverse habitat and also contribute to the self-cleaning processes of bodies of water. The Master Plan Ems 2050's list of measures includes a number of measures for reestablishing reed zones. They are expected to be established in the planned tidal polders and the river neck in Rysum, where existing reed belts should also be preserved.

Reed zones are especially crucial to bird species who specialise in living and breeding in this habitat, including reed warblers, rails, and reed buntings. Many fish and amphibians also spawn here, and their offspring have enough room to grow. Many invertebrates also call this habitat home.



Existing reed belts should be preserved

Banks will be reshaped

Reinforcements may change

Over time the banks of the Lower Ems were protected by massive stone embankments in order to protect the coast from breaks in the shoreline. The Master Plan Ems 2050 aims to determine in certain increments whether it is possible to reshape the banks through biological engineering without jeopardising coastal protection and the function of the federal waterway.

The Federal Waterway and Shipping Administration (WSV) is thus taking a closer look at specific sections of the shore along the Lower Ems and the Dortmund-Ems canal. As the topic of biological-engineering bank reinforcement in the tidal range with ship traffic is unique in Germany in this particular form, it has commissioned the Federal Waterways Engineering and Research Institute and the Federal Hydrology Institute to draft corresponding assessments, concepts and plans.

In accordance with the cooperative approach of the Master Plan Ems 2050, the WSV will involve the affected districts, dyke associations, municipalities, water and soil associations, the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation, and the three environmental associations in the project. Should such measures prove unfeasible, the Master Plan Ems 2050 is obligated to search for feasible alternatives.

Wherever the bank reinforcement can be reshaped, sand and silt may build up and (nearly) natural bank zoning with shallow water areas, broken shorelines, reeds, and riparian woodland may form on top of it. The suitability of multiple target areas along the river is being examined.

The banks of the Ems were protected by massive stone embankments

Connection to the current

Revitalising meanders and runnels

Distributaries and old river loops of the Ems are now separated from the river and current, and some have silted up. Reconnection to the ebb and flow by penetrating barriers not only facilitates the recreation of habitats, but also a weakening of the flow current. Opening and revitalisation could thus contribute to improved water quality, but primarily to the development of typical habitats of the Ems estuary. Such measures will be tested in Coldam and north of Tunxdorf.



Life with tides and salt

Salt marsh habitats



Salt marshes are a highly specialised ecosystem whose plants have adjusted to the harsh living conditions of high salt levels and mechanical strain from wind and currents, as well as tide-induced flooding. Salt marshes are home to about 2,000 species of animal. About 50 per cent of these species can only be found in the salt marsh.

In order to protect and develop these salt marsh habitats, the Master Plan Ems 2050 foresees special measures in the Manslagt neck at the Wadden Sea National Park.

Under control

Monitoring for the Master Plan Ems 2050 measures

The effectiveness of recently implemented measures and the state of the Ems are ensured through monitoring. An existing, intensive water management measurement system that has already been used by the state (NLWKN) and the federal government (WSV) on the Ems for many years will be used for this purpose. This system includes, among other things, ten measuring stations that continuously record water quality parameters (salt content, temperature, oxygen content, liquid-silt ratio, depth profile, currents), numerous long-term measurement devices, and measurement campaigns.

The effects of damming for ship crossovers by Meyer Werft on the Ems is accompanied and documented via monitoring.

Current state

The monitoring is constantly updated with current measures and requirements.

One of ten measuring stations



Committees for Cooperation

The Master Plan Ems 2050 designates various committees and task forces, as well as a branch office, that aim to prepare and ensure technical measures that equally consider the interests of the contract partners and regional players.

1. Ems Steering Committee

The Ems Steering Committee is the central body for the implementation of the Master Plan Ems 2050. All contract partners are high-priority. It convenes at least once per year and is chaired by the State Chancellery of Lower Saxony. The Ems Steering Committee:

- is responsible for achieving the goals of the contract and regularly assesses the achievement of these goals
- makes decisions concerning the implementation of measures
- appoints task forces
- makes public relations decisions.

The Ems Steering Committee makes all decisions unanimously.

2. Ems Branch Office

The Ems Branch Office is located at the Federal Commissioner's Office for Regional State Development Weser-Ems. It supports the Ems Steering Committee, prepares the meetings of the Steering Committee, ensures an exchange of information between the various task forces of the Master Plan Ems 2050, and compiles progress reports on the implementation of the Master Plan Ems 2050 for the Steering Committee. The Steering Committee may also assign it additional tasks as needed.

One of the Ems Branch Office's special roles is tending to press and public relations work for the Master Plan Ems 2050.

3. Task Force "Hydraulic Engineering Measures/Other Measures and Concepts"

This Task Force was appointed by the Steering Committee to develop and accompany the measures defined by the Master Plan Ems 2050, and to submit these to the Steering Committee for a decision (as per Article 10 paragraph 9 and Article 13 paragraph 5, Master Plan Ems 2050). The Task Force is chaired by the State of Lower Saxony Ministry for the Envi-

ronment, Energy, and Climate Protection. All contract partners are represented in the Task Force. The respective professionals from the contract partners' operational level work together on the Task Force to develop and discuss the measures stipulated in the Master Plan Ems 2050, and to prepare these measures for a decision by the Steering Committee.

The Task Force meets on a regular basis every 3 months or so.

4. Task Force "Prospective Process for Ship Crossovers"

This Task Force was appointed by the Steering Committee and has been meeting regularly at 6-week intervals since 18.5.2015. It is chiefly responsible for the preliminary development of suitable minimisation, compensation, and consistency measures of prospective necessary, additional permit processes for Meyer Werft ship crossovers for the sufficient consideration of the requirements of environmental conservation. Special attention shall be paid to bird conservation (cf. Article 18 of the Master Plan Ems 2050). The results shall serve to swiftly achieve mutual solutions in any permit processes. However, the results may not forestall or even replace the required formal permit process. The primary objective is to make ecological and economic interests in the Ems region compliant with the contract goals.

The State of Lower Saxony Ministry for the Economy, Labour, and Transportation chairs this Task Force. All contract partners are represented in the Task Force.

5. Steering Board for Land Management

The Steering Board for Land Management, chaired by the Office for Regional State Development Weser-Ems, was established to consider regional interests during the acquisition of land for the implementation of the Master Plan.

This Steering Board consists of:

- the three affected state districts (Emsland, Leer, Aurich) and the city of Emden,
- the representatives of the three environmental associations involved in the Master Plan (NABU, BUND, WWF),
- the State of Lower Saxony Chamber of Agriculture,

- the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation (NLWKN),
- two representatives of regional water and land associations and embankment groups (Rheider Embankment Committee, Oldersum Drainage Association), and
- five regional representatives of agricultural interest groups (Chief Agricultural Society of Eastern Friesland, Society of Rural Residents of Emsland, Association of Rural Agriculture AbL Lower Saxony/Bremen, Federal Association of German Dairy Farmers, and Lower Saxony Rural Youth), as well as the Office for Regional State Development Weser-Ems (chair).

One of the Board's chief objectives is maintaining a balanced distribution of land throughout the entire overriding survey area. The Steering Board meets on a regular basis.

6. Public Relations Task Force

A Public Relations Task Force was formed and is chaired by the Office for Regional State Development Weser-Ems. Given the number of equally authorised contract partners representing various economic, ecological, and regional interests in the area, it is necessary to ensure coordinated public relations for the Master Plan Ems 2050 that considers all interests equally. The Task Force thereby supports the Ems Branch Office at the Office for Regional State Development, itself responsible for public relations for the Master Plan Ems 2050, and also drafts all conceptual public relations decisions for the Steering Committee. The operational level of all contract partners is represented in the Task Force, which meets on a regular basis.



FAQ

Why the Master Plan Ems 2050?

The European Commission demands the implementation of directives that have been in place for a number of years. Lower Saxony has long failed to sufficiently respond to such demands, thereby risking contract violation proceedings. The European Commission now demands the announcement of specific measures aimed at improving the conservation status of the Natura 2000 areas along the Ems. The Master Plan Ems 2050 was the last method accepted by the Commission for avoiding contract violation proceedings.

What exactly are the European Commission's demands?

The European Commission criticises the unfavourable conservation status of bird conservation areas within the EU, as well as FFH areas along the Ems in general. The Commission demands that the state districts execute the stipulations in accordance with European law as swiftly as possible. Furthermore, the Commission faults the poor water quality and believes that the Water Framework Directive is being violated. The Commission also accuses Lower Saxony of having exceeded deadlines for designating conservation areas.

What is the purpose of the Master Plan Ems 2050?

Regional players want to draft joint solutions for implementing the EU regulations and avoiding contract violation proceedings and all of the negative ramifications thereof. Together they accept responsibility and will work confidently and constructively in the future. The foundation for this is the Master Plan Ems 2050.

Why is the Master Plan Ems 2050 set to last for 35 years?

The establishment of a natural habitat on the Ems takes time - especially in light of the fact that the underlying deterioration occurred over the span of decades. The Commission has demanded the acquisition of an absolute minimum of 700 hectares of ecological compensation area. This long time period was agreed upon in order to make this plan socially viable.

Who benefits from the Master Plan Ems 2050?

The entire Ems region will benefit from the Master Plan Ems 2050 because it will result in a sound environment, economy, and habitat for people, nature, and business.

Specifically, this means:

- less environmental pollution and long-term recovery of the environment;
- a stronger regional economy. Districts and municipalities will benefit and jobs will be secured;
- Meyer Werft has legal security for ship crossovers;
- the region will be pacified.

How will the Master Plan Ems 2050 contribute to the regional economy?

According to an assessment from the Lower Saxony Institute for Economic Research (NIW) from 1 July 2014, the Papenburg-based Meyer Werft shipyard contributes significantly to the favourable economic growth of the Emsland and Leer districts. Werft's considerable innovative output will be preserved by the Master Plan Ems 2050 and has the potential for continued growth. Werft offers a broad range of jobs and training opportunities. It directly employs about 3,100 people, 94 per cent of whom reside in the Emsland and Leer districts. The entire direct, indirect, and induced employment effect amounts to about 6,700 jobs throughout the region. Werft has long become associated with the area: the location security contract settled between the state, shipyard, union, and advisory board in January 2015 covers the Papenburg location for at least 15 years, and with it the aforementioned effects for the entire region.

How will the overriding solution to the silt problem be achieved?

An assessment by the West Coast Research and Technology Centre of the University of Kiel (FTZ) has revealed that the weir, tidal reservoirs, and tidal control installations have the potential to improve the current situation.

What is a weir?

A weir is a structure that runs across the river near the Ems Barrier. In the assessment from the FTZ, a fixed weir with a crown at the height of the average low tide and an adjustable lock in the main ship opening was examined. Flexible locks in the other openings are now being examined in the meantime. By installing a weir at the Ems Barrier, the level of low tide - which has been reduced in the Lower Ems in recent decades - should be risen again. This aims to reduce tidal volume, and with it the delivery of sediment into the Lower Ems.

What does tidal control mean?

Tidal control means that the locks on the Ems Barrier are used primarily to alter the duration of the incoming tide. The expansions in the Lower Ems resulted in the increase in tidal range and uneven developments in ebb and flow. The duration of the flow phase decreased while that of the ebb phase increased by the same amount. This strengthened the flow, as it had to push the tidal volume into the Ems in a shorter period of time. The resulting asymmetry, especially in conjunction with low headwater runoff levels, resulted in upriver transportation channels for suspended materials. This has also caused very high concentrations of suspended materials around the Lower Ems. Through the temporary shrinking of the cross-section of the Ems because of the locks at the Barrier, the tidal control at the Ems Barrier aims to influence the incoming tide to the Lower Ems in such a way that the resulting influx of materials is reduced. The previous tidal volume should be maintained as much as possible in order to support the current cross-sections in the Lower Ems.

What are tidal reservoirs?

Tidal reservoirs consist of numerous basins along the Ems that gather tidal volume during the flow phase with a bed level beneath the average low tide, and then release this water - with a delay - during the ebb phase. The expansions in the Lower Ems resulted in the increase in tidal range and uneven developments in ebb and flow. The duration of the flow phase decreased while that of the ebb phase increased by the same amount. This strengthened the flow, as it had to push the tidal volume into the Ems in a shorter period of time. The resulting asymmetry, especially in conjunction with low headwater runoff levels, resulted in upriver transportation channels for suspended materials. This has also caused very high concentrations of suspended materials around the Lower Ems. The tidal reservoirs along the Ems work by increasing tidal volume and strengthening the ebb tide, thereby facilitating greater sediment transportation into the sea.

What are feasibility studies?

The feasibility studies examine the three aforementioned structures for reducing the sediment content of the Ems. They aim to examine technical feasibility and estimate the benefits, spatial requirements, spatial resistance, environmental risks, water management and traffic viability, and compatibility with other measures of the Master Plan Ems 2050. In addition, the resilience of these structures against the effects of rising sea levels and their adaptability/readjustment capacity shall be determined. The duration of the planning and approval processes, and potential implementation thereof, must be conveyed and an approximate cost estimation must be stated.

When will the feasibility studies be complete?

Under the current circumstances, the feasibility studies for the weir and tidal control with the Ems Barrier will be completed by late 2016, and the feasibility study for the tidal reservoirs will be completed by late 2018.

Why will the tidal reservoir study be finished later?

The feasibility study on the tidal reservoirs depends on the information that the pilot polder is supposed to provide. To this end the pilot polder must still be constructed, followed by at least one year of monitoring.

Why do we need a pilot polder?

With the tidal reservoir pilot measure in an oxbow lake outside Papenburg, it shall be verified that, with regard to the variant with potentially the largest surface requirements, the objectives can be achieved with the mid-term interim morphological development, and not only for the short term. The reason for this is that the sediment contamination leads to silt accumulation in the reservoir, thereby weakening the efficiency of this option. Strategies must thus be developed for the necessary maintenance (dredging) of the reservoirs. A large-scale investigation is necessary, as there are no sufficient grounds for this. Suitable monitoring and accompanying mathematical modelling shall ensure that costs and positive effects, including those on other parameters of water quality of the tidal Ems, can be accounted for.

Where is the pilot polder and how large is it?

The pilot polder is planned in the Vellage oxbow lake (Tunxdorfer loop), with a surface size of about 10 ha. Valuable habitats in this area, such as tidal grazing riparian forest (and areas for its development), freshwater tidelands, and important habitats for reed breeding and resting fowl shall be maintained.

Who does the space intended for the pilot polder belong to?

The planned areas belong to the public authorities. The owners, the federation, and the Emsland and Leer districts have already declared their willingness – namely in the declaration of intent from June 2014 – to support the land in the acquisition of the necessary space for this measure.

How is an option selected?

A task force appointed by the Steering Committee accompanies the development of the three feasibility studies and drafts a coordinated measure recommendation based on the catalogues of objectives and assessments, regarding which the Steering Committee will then make a decision and recommend the steps required for implementation.

What is space management?

Space management means the acquisition of land by the state of Lower Saxony by 2050, in the following increments:

- 200 ha by 2025,
- a total of 400 ha by 2035,
- a total of 600 ha in 2045 and
- a total of 700 ha by 2050.

Who conducts the space management?

Space management is conducted by the Office for Regional State Development Weser-Ems.

What is the space required for?

The space is required for the following measures:

- Typical estuary habitats in tidal biotopes and tidal polders on 500 ha by 2050, and
- meadow bird habitats, primarily inland and outside of existing FFH conservation areas on 200 ha by 2050.

Compensation or coherency areas required to implement measures of the Master Plan Ems 2050 for natural conservation regulations can be counted toward the 700 ha.

Why 700 ha?

The European Commission's initial demand of 1,500 ha was cut by more than half, to 700 ha. There neither was nor is any further room for downward negotiation. Throughout the negotiations, the environmental associations ultimately agreed upon signing the Master Plan Ems 2050 that the space management team will acquire said 700 ha by the year 2050.

Where are the 700 ha located?

The target area from which the 700 ha are supposed to be acquired throughout the next 35 years comes can be found on a map attached to the Master Plan as an appendix to Article 11 paragraph 2. The target area map can also be found on the homepage. The state will work toward even distribution of the measures within the target area during the space management process so as to avoid any disproportional strain on the Leer district.

How large is the target area?

The primary target area for land acquisition encompasses a total area of about 144,000 ha, of which the 700 ha required do not even make up 0.5 per cent. Taking the current agricultural land in the target area as a basis, about 1 per cent of this land would be incorporated into the space management programme.

Will agricultural business be affected?

The degree to which agricultural businesses will be affected varies from one case to the next, e.g. due to location, current and future use of land, the financial situation of owners or tenants, the location and characteristics of any potential land for substitution, etc. It is thus not possible to make any general statements concerning the consequences of the acquisition of the 700 ha by 2050 at the current time.

How will the space be acquired?

Primarily through purchase and land replacement.

Will there be any expropriation?

No. Consent from the respective landowner is required for the implementation of all measures.

Will land be consolidated?

Land consolidation is unlikely, and will only be considered if it is legally possible, and acquisition and replacement are insufficient.

Who will be involved in acquiring the land?

The Office for Regional State Development Weser-Ems is the primary leader. The Departments of Regional State Development, EU Assistance, Land Consolidation, Land Management, Domain Administration, and State Marshland Administration are also involved there. A Steering Committee will be appointed. This Committee will include representatives from: Lower Saxony Chamber of Agriculture; three regional representatives of agricultural interest associations; two regional representatives of dyke, water, and soil associations; the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation (NLWKN); three natural conservation groups (BUND, NABU, and WWF); the districts Emsland, Leer, and Aurich; and the city of Emden.

What does the Steering Board make decisions on?

The Steering Committee sets the guidelines for the search for and acquisition of suitable land, and helps determine management objectives. It provides support during the search for the required agricultural-compliant and individual company solutions, and considers the water management requirements, flood protection demands, and equality of space distribution throughout the entire target area.

Who determines the other measures, especially those from the appendix to Article 13?

The measures in Article 13 of the Master Plan Ems 2050 are suggestions that must first be assessed by the appointed task force. If this assessment declares that the objectives of the Master Plan Ems 2050 can be achieved with this measure, it will be submitted to the Steering Committee at least once per year. The Steering Committee will then make a unanimous decision to recommend execution to the respective representative of the measure.

How are these measures financed?

Every recommendation to the Steering Committee must include information on the financing situation. The Master Plan Ems 2050 stipulates that the federal and state governments are responsible for financing the individual measures within the scope of their legal accountability. If municipalities or districts are responsible for implementing measures at the order of the state, the state is financially responsible by community law. Furthermore, on a case-by-case basis a regulation between municipal bodies and the state must be made if they are also performing additional tasks pertaining to the Master Plan Ems 2050.

Have the respective locations been definitively set?

No, the determination of a location first concerns a target area. Should a suggested measure not be considered feasible, this will also not be executed. Another measure must then be determined. The catalogue in the appendix to Article 13 is not definitive.

Are affected landowners or dyke associations not involved in the execution of measures?

Of course they are, as every measure may only be implemented with consent from the affected landowners or respective dyke association.

Will the Coldemüntje measure be implemented at the expense of the building and agricultural property located there?

The areas there, which have yet to be planned, entirely belong to the public sector, except for some very small plots located around the edge. These can be omitted from future planning.

There is no intent to submerge the building of the Muhde sluice land. The detailed plans will show how the building shall be protected.

Article 13 discusses the assessment of an opening in the overflow dams. What does that mean?

Areas equipped with overflow dams can still be found in some parts of the Ems estuary. The goal is to develop typical estuary habitats, which are made possible by unhindered tidal patterns. Either the overflow dam has to be completely removed, or opened on time. It must be determined whether that is actually possible. The usage of private property to this end is only possible if the landowner has provided their consent (namely by selling the land).

Who is responsible for the Ems nature conservation station and how is it staffed?

It is a state-operated nature conservation station, and organisationally it is managed by the Brake-Oldenburg branch office of the NLWKN. It is staffed by two full-time employees. The provisional location is the federal state office in Leer, and is soon expected to move to a location along the Ems in the Leer district.

What does it cost to implement the Master Plan Ems 2050?

The contract parties are entering uncharted territory with the Master Plan Ems 2050. Given the long duration of the contract, nobody yet knows how costly it will be to restore the Ems. Time will show which measures will be suitable and necessary over 35 years. As a result, it is impossible to determine the overall financial expenses.

Who will bear the expenses?

The Master Plan Ems 2050 stipulates that the federal and state governments are responsible for financing the individual measures within the scope of their legal accountability. If municipalities or districts are responsible for implementing measures at the order of the state, the state is financially responsible by community law. Furthermore, on a case-by-case basis a regulation between municipal bodies and the state must be made if they are also performing additional tasks pertaining to the Master Plan Ems 2050.

Who is on the Steering Committee?

The Steering Committee includes representatives from

- the Federal Waterway Administration (as the Ems is a federal waterway)
- the environmental associations BUND, NABU and WWF
- the districts of Emsland and Leer, as well as the city of Emden
- the Meyer Werft shipyard and
- the state of Lower Saxony.

The state is represented on the Steering Committee by the state secretaries of the State Chancellery, the Department of the Environment, the Department of Commerce, and the State Department of Commerce. The Steering Committee may invite guest representatives depending on the topic at hand. However, only the regular members are authorised to vote.

What are the responsibilities of the Steering Committee?

The Steering Committee exclusively makes recommendations. It provides consultation as to how the objectives can be achieved and which steps, and especially which measures, are suitable and necessary to this end. Legal responsibilities for the implementation of said measures are unaffected.

Is the Steering Committee a recent idea?

No. The previous governments also appointed the "Ems" Steering Committee. Its members will also be members of the Steering Committee, in addition to the City of Emden, which also helped negotiate the Master Plan Ems 2050.

Why are the Meyer Werft shipyard and the three environmental associations represented in the Steering Committee?

When the negotiations commenced under great pressure for a time last summer, the state government used the committee structure established by the previous government for purposes of work efficiency. Meyer Werft and the three environmental associations BUND, NABU, and WWF were already represented in the Ems Steering Committee from the very beginning. Throughout the negotiations it became apparent that the city of Emden may also be affected. Emden was then incorporated as a member of the Ems Steering Committee and has participated in negotiations since autumn 2014.

It must also be noted that the allocation of responsibilities stipulated by state and federal law is unaffected by the Master Plan Ems 2050. Neither Meyer Werft nor the environmental associations will make decisions as to which specific measures should be taken. They, like the other members of the Steering Committee, only provide suggestions. The composition of the Steering Committee, which includes Meyer Werft and the environmental associations, shall be pacifying in nature.

Is the Steering Committee democratically authorised?

The Steering Committee would only need to be democratically authorised if it made decisions that could only be made by democratically elected representatives of the people. This is not the case, as the Steering Committee only provides recommendations as to which measures are suitable and necessary and should be taken in order to restore the Ems and fulfil the requirements of European law. The federal, state, or municipal government are legally responsible for implementing these measures. They then execute the necessary procedures and make definitive decisions concerning the measure.

Will the Master Plan Ems 2050 encroach on municipal planning sovereignty?

No, because the Steering Committee only makes recommendations. The decision as to whether the municipalities will implement the recommended measure remains with the respective municipality within the bounds of their legal responsibility. However, as in the past, they must consider the needs of environmental and nature conservation, as well as preservation of the landscape.

Why does the Steering Committee vote unanimously?

The Steering Committee's recommendations require unanimity. To this end, the regional players, as well as the federal and state, must incorporate their interests early on and be able to coordinate them together. This helps prevent conflicts that would otherwise only become clear at the implementation stage.

What are the benefits of membership in the Steering Committee?

Regardless of the fact that the Steering Committee cannot influence the legal planning sovereignty of the municipal governments and other administrative bodies, membership in the Steering Committee grants more than a vote: the districts and other members of the Steering Committee are involved in the very early stages of consideration that involve the federal and state governments in the consultation proceedings for resolving the problems along the Ems.

Have all contract partners agreed to the Master Plan Ems 2050?

All contract partners have agreed to it and signed it.

What would have happened if the Master Plan Ems 2050 had not been agreed on?

The European Union would immediately threaten Germany with contract violation proceedings. The environmental associations would abstain from their ability to sue only on the condition that the Master Plan Ems 2050 comes into effect - Meyer Werft would otherwise have no legal security for ship crossovers.

How extensive is the environmental associations' non petendo agreement upon conclusion of the contract?

The environmental associations' non petendo agreement legally validates the authorised expansion of shipping crossover opportunities from 15 to 31 March (so-called March realignment) of any given year. It also applies to all potential crossovers within this period. The non petendo agreement for the so-called autumn realignment (16 September to 31 October) secure crossovers in autumn until 2019. It is to be assumed that enough experience will be acquired by then to allow the assessment of crossovers thereafter.

What is the process for contract violation proceedings?

During contract violation proceedings, the Commission decides whether it will sue the member state (in this case, Germany) for violation of European law before the European Court of Justice. If the member state is party to such proceedings, the verdict must immediately be enforced. Should the member state not (promptly) adhere to this verdict, Phase 2 of the proceedings commences. The European Court of Justice may then impose fines on the member state.

How high is the penalty?

If Germany is sentenced by the European Court of Justice, it must be noted that the court may set both a penalty and a lump sum. These fines may be very high. Germany's economic strength, as well as the duration and severity of the contract violation, determine the amount fined. A daily penalty in the middle 6-digit range, and a considerable lump sum, should be expected.

What is the IMP Ems?

The Integrated Management Plan (IMP) Ems is a joint set of plans between Lower Saxony and the Netherlands. It is a collection of recommendations, coordinated by public and private interest groups in Lower Saxony and the Netherlands, for improving the overall ecology of the Ems estuary. The objective is to consolidate interests: the demands of German, Dutch, and European environmental and water conservation, and the demands of the maritime economy and society. The IMP Ems does not anticipate any individual weighing of interests for the subsequent permit proceedings. The IMP Ems is currently exclusively advisory and is still a draft in the coordination phase.

Is the IMP Ems legally binding?

No, the IMP Ems is not legally binding. It is an advisory, interdisciplinary plan.

Who provides consultation about the IMP Ems?

Creation of the IMP Ems is coordinated between the Netherlands and Lower Saxony. A planning group of authorities (e.g. districts of Leer, Emsland, Aurich/cities of Leer, Emden, Papenburg, Weener), associations, environmental organisations, and other parties involved in the Ems, is based in Lower Saxony. Since the project began in 2011, the planning group (about 40 people) has been working toward an agenda that strives not for unanimity, but an opportunity for consensus. Differing opinions are allowed and are additionally designated in text representations.

Where can I ask further questions?

Please direct questions to the press spokesman at the Master Plan Ems 2050 branch office at the Office for Regional State Development Weser-Ems, Mr Thorsten Kuchta.

Glossary

Estuary

An estuary is a coastal, funnel-shaped mouth of a river and is influenced by the tide. The Ems estuary forms the lower course of the Ems, which is subject to the tidal influence of the North Sea (saltwater) and the headwater (freshwater) flowing from the inland. When freshwater and saltwater mix, it is called brackish water.

Outer dyke/inner dyke

The land between the dyke and the river is called the outer dyke, and land on the side where the river is averted is called the inner dyke.

Scouring/kolk

Scouring is defined as the process of erosion at the bed of bodies of water, which turbulence swirls up into the current. The result: a deeper bed of the body of water, or a kolk. In natural bodies of water, for example, kolks can be caused by turbulence behind rocks on the land, collapse within the bed, or sharp river bends. With regard to the Master Plan Ems 2050, the planners for the low weir or tide control must address potential scouring upon technical encroachments on the tides.

Federal waterways

Rivers and canals that serve national economic maritime traffic are often declared to be federal waterways. These include inland and marine waterways, whereby the latter may include fairways and coastal waters. In Germany they are managed and maintained by the Federal Ministry for Transportation and Digital Infrastructure's Federal Waterways and Shipping Administration (WSV), which guarantees accessibility and ease of transit.

Traversability

This concerns the migration opportunities of fish and other small animals in flowing bodies of water which may be impeded by weirs or pumping stations, among other things. The goal is to improve the traversability of these migration inhibitors.

Ems damming

In order to be able to transport Meyer Werft's large cruise liners from Papenburg to the North Sea, the Ems is dammed. The Ems Barrier accumulates flood water for accumulation. Water at the Ems Barrier can also be pumped into the dam, as well as from the Leda via the pumping station there. The maximum target accumulation of 2.7 metres above sea level allows ships with a depth of up to 8.5 metres to pass. Such damming is only permitted outside of the breeding season of meadow birds, as the tracts of foreland are over-dammed at this water level. No more than 12 hours of damming are permitted during the summer months - a current legal level of 1.75 metres above sea level - so as not to harm the meadow birds. The damming allows for less dredging in the fairways. The Ems Barrier may be closed for a maximum of 104 hours per calendar year for damming.

FFH areas

The EU Fauna-Flora-Habitat Directive not only protects endangered species, but also typical habitats such as the Ems estuary and the homes of meadow birds. Such typical habitats should be interconnected and preserved, which is accomplished by designating Natura 2000 areas. Both EU directives have not been sufficiently implemented along the Ems. This is one of the reasons for the contract violation proceedings that were threatened and which initially impeded the Master Plan Ems 2050. The state of Lower Saxony must now regularly report to Brussels with progress on the implementation of the directives.

River loop/meander

Naturally flowing waters in plains form loops. The river then winds through the plain. In many cases these loops were penetrated to create a straight waterway for ship transit. The loops first became oxbow lakes, and were then often cut off from the river. Many have silted up and vanished completely.

Flood protection

In order to prevent flooding of the hinterland, dykes are installed along rivers which also prevent high tide or storm floods from overflowing into the surrounding land. Many tidal rivers are also equipped with barriers which close during storm floods and prevent this water from flowing into the river system. The Ems is equipped with the Ems Barrier and the barrier at the mouth of the Leda.

Hydromorphology

Hydromorphology describes water structures and the flow of water into a body of water. It concerns the interaction between the two. Hydromorphology also examines the extent of human encroachment on the structure (straightening, dredging) and their effects on runoff characteristics. For example, the potential of tide control on the Ems was examined with a hydromorphological model.

Feasibility study

Feasibility studies aim to determine whether a project or measure can be facilitated with the resources at hand. It is also ascertained - at least through theoretical calculations - whether the desired results can be achieved with the respective measure. Approaches to solutions are analysed, potential risks are identified, and the chances of success are estimated.

Natura 2000

Through the Natura 2000 programme the EU aims to interconnect the protected areas within the European Union. Within these specially protected areas, the member states must take all necessary measures to ensure the preservation of habitats and prevent their deterioration and the disturbance of species. The respective countries are responsible for submitting reports on protected areas. The Ems has been reported to the Commission as a region of general significance. The natural protected areas of the Lower and Outer Ems are currently undergoing the protected area designation process.

Pilot process

Potential contract violation proceedings commenced by the European Commission against member states are always preceded by a so-called EU pilot process. This is an informal, structured dialogue between the European Commission and the respective member state. This allows for the majority of presumed EU violations to be clarified in advance and usually even eliminated without the need for formal contract violation proceedings.

NLWKN

State matters concerning water management and nature conservation in Lower Saxony were completely delegated to the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation (NLWKN) in 2005. With the head office in the city of Norden (East Friesland) and eleven branch offices, the NLWKN is represented in 15 locations throughout all of Lower Saxony. These tasks include, among others, nature conservation, (storm) flood protection, coastal protection, and the implementation of the EU Water Framework Directive, which entails the improvement of quality of water and bodies of water, and prohibits deterioration thereof. The NLWKN is one of the most important authorities for the assessment, planning, and implementation of measures in the Master Plan Ems 2050.

Sluices and pumping stations

The draining of low-lying areas in the northern German plains (and the watering thereof during a drought) is one of the most crucial fundamentals of agriculture and life in the lowlands. Sluices are sealable water outlets in a dyke that lock from the outside upon the exertion of flood pressure, thereby preventing flooding in the areas located within the inner dyke. The sluice doors open during low tide and the water can flow out from the interior bodies of water. Pumping stations are also located at many sluices now; when the water level is low the body of water in front of the dyke is passively drained, and when the water level is high the water is mechanically pumped out of the sluice from the dyke. However, in order to be able to manage as much of the draining as possible without consuming energy, impounding reservoirs are located in some areas behind the dyke, where water can accumulate during the flood so that it may be drained during the ebb. These impounding reservoirs are especially important during floods that last for a number of days.

Weir

A weir is a structure that runs across a river. In the case of the Ems, it - in the event that it is built - is supposed to raise the low tide level to counteract silt contamination.

Bed protection

During the construction of the Ems Barrier, the bed of the river was protected against washout from the strong current with a fleece and stone embankment (partially braced with concrete). Should the Barrier be used to control the tide, the protection may have to be extended up- and downriver.

Tide

Ebb and flow.

Tidal asymmetry

In this context, tidal asymmetry means that the flow phase is considerably shorter than the ebb phase. Because of this, current speeds during the flow are much faster than during the ebb. This means that the flow current carries far more sediment into the tide than the ebb can carry back out.

More information: http://vzb.baw.de/publikationen/bawaktuell/0/BAWaktuell_03_2014.pdf

Tidal range

Difference in water level between high and low tide.

Tide control

Influencing tidal current and/or low tide level with the Ems Barrier.

Tidal polder

Dyked or walled-in, man-made bodies of water or reservoirs connected to the Ems so that the tide can flow in and out. They either serve to improve habitats for flora and fauna, or to improve water quality in the Ems (tidal reservoirs).

Bank reinforcement

The banks of many rivers with a strong current and/or deep fairways are reinforced. This is done with stone embankments, sheet piling, or a combination of the two. Bank reinforcements are supposed to slide down and prevent washout of the banks.

Contract violation proceedings

EU member states who, according to the European Commission, have violated a contract obligation give the respective state the opportunity to make a statement on the respective allegations. The Commission then releases a statement with justifications. Should the respective state not respond to this statement within the term set by the Commission, the Commission may call the European Court of Justice (ECJ). If this complaint is justified, the ECJ shall announce how the contract violation will be resolved. Otherwise a fine may be set. With regard to the Ems, the Commission commenced preliminary proceedings, but did not file a complaint after signing the contract for the Master Plan Ems 2050. The state must now regularly submit progress reports.

Water Framework Directive

The European Water Framework Directive standardises the legal framework for water policy in EU member states and directs it toward sustainable and environmentally friendly water consumption more than ever before. In Germany it is implemented by the Federal Water Act. This law states that bodies of water must be protected by sustainable management as a component of the natural balance, as a necessity for mankind, as a habitat for animals and plants, and as a usable good. Protection and consumption are thus interconnected goals of the law, with neither having priority over the other. Conflicts between usage interests and conservation requirements, such as those present for the Ems, must be considered and decided upon individually by the authorities. The European Water Framework Directive has made the ecological aspects more significant. Deterioration of the ecological and chemical condition of the water is not permitted through usage, but rather the water must be kept - or achieved in the event that such condition is not present, as with the Ems - in good ecological and chemical condition. With regard to bodies of water heavily altered by human activity, the priority is achieving ecological potential - namely the best possible condition of the body of water given current human usage.

Contract

„Masterplan Ems 2050“

The State of Lower Saxony, represented by the Prime Minister of Lower Saxony, himself represented by State Secretary, Ms Birgit Honé,
the Federal Government, represented by the Federal Ministry of Transportation and Digital Infrastructure, represented by the GDWS, itself represented by President, Dr Hans-Heinrich Witte,
the district of Emsland, represented by District Administrator, Mr Reinhard Winter,
the district of Leer, represented by District Administrator, Mr Bernhard Bramlage,
the city of Emden, represented by Mayor Bernd Bornemann,
the environmental associations:
World Wide Fund for Nature Deutschland (WWF), represented by Director of Natural Conservation Germany, Dr Diana Pretzell,
Bund für Umwelt und Naturschutz Niedersachsen e.V. (BUND), represented by Chief State Executive, Mr Carl-Wilhelm Bodenstern-Dresler,
Naturschutz Niedersachsen e.V. (NABU), represented by State Director, Dr Holger Buschmann,
and Meyer Werft GmbH, represented by CEO, Mr Bernard Meyer - hereafter referred to as the Contract Parties - agree to the following:

Preamble

In light of the great significance of the Ems region as a habitat, natural environment, and economic area, the Contract Parties jointly accept their responsibility for this region with the objective of reconciling their equal ecological and economic interests.

They operate with the intent to restore the aquatic environment and to achieve the long-term development of the Ems estuary. The Contract Parties cooperate faithfully and constructively, and with the Ems region of Lower Saxony, in the spirit of good neighbourship. The Contract Parties acknowledge that appropriate and necessary measures must be taken to improve the ecological condition of the Ems while maintaining the river's status as an efficient federal waterway.

In acknowledgment of, and to fulfill the tasks stipulated by the European regulations of the Habitats Directive (92/43/EEC), the Birds Directive (2009/147/EC), the Water Framework Directive (2000/60/EC), and the Marine Strategy Framework Directive (2008/56/EC), the Contract Parties operate with the strong desire to build on the declaration of intent signed on 16 June 2014, and to implement the agreed measures, as well as any that have not yet been agreed upon.

The following regulations form the necessary framework to this end.

Part I - General Terms

Article 1

Contract Objectives

- (1) This contract and its appendices forms a binding framework for "Masterplan Ems 2050" based on the declaration of intent signed on 16.06.2014. It also regulates the related cooperation among the Contract Parties.
- (2) Unless explicitly agreed otherwise in this contract, it will not justify any new public law responsibilities or rights and obligations beyond the existing legal regulations. Any regulations deviating from this term require explicit agreement.
- (3) Furthermore, additional obligations to implement the Habitats Directive (92/43/EEC), the Birds Directive (2009/147/EC), the Water Framework Directive (2000/60/EC), and the Marine Strategy Framework Directive (2008/56/EC) remain unaffected by this contract.
- (4) The objective of the "Masterplan Ems 2050" is the sustainable development and optimisation of the Ems estuary with regard to naturalness, security, and accessibility. Ecological and economic interests must thus be reconciled. These include the restoration, maintenance and development of a sound and dynamic ecosystem, as well as the security of the economic growth in the region and maintenance of the Ems as an efficient federal waterway including the accessibility of its ports.
- (5) This means especially:
 1. the primary resolution of the silt problem in the Lower Ems,
 2. improvement of water quality in the tidal Ems with the intent of achieving favourable states of preservation in accordance with the respective directives:
 - a. reduction of upriver conveyance of solid materials,
 - b. improvement of water ecology (water quality, better living conditions for aquatic flora and fauna),
 3. creating and/or enhancing typical estuary habitats and species with the intent of achieving favourable states of preservation in accordance with the respective directives,
 4. conserving birds and their habitats,
 5. maintaining the efficient transportation route of the Ems federal waterway for ports on the Ems as well as the port and waterway-related economy.

Article 2**Spatial Applicability of the Contract**

This contract applies to the Ems estuary, i.e. the Ems from the Herbrum sluice, Dortmund-Ems canal km 212.6 to the Ems km 67.76 (seaward limitation of the inland waterway). The Leda below the Leda Barrier is included.

Article 3**Terminology**

1. "Security" as defined by this contract is dyke security and flood protection.
2. "Accessibility" as defined by this contract is the security and ease of shipping.
3. "Concept" as defined by this contract is the description of a possible project.
4. "Measure" as defined by this contract is a project that is intended to be implemented.
5. "Programme of measures" as defined by this contract is the compilation of measures under no. 4.
6. "Type of measure" is a measure implemented in the same manner as the objectives in no. 1.
7. "Planning permission for the Ems Barrier" in its current version is the planning authorisation for the Ems Barrier and determination of measurements from 14 August 1998 in the amended planning permission as per Section 75 paragraph 1a VwVfG from 22 July 1999, the amended planning permission from 24 March 2000, the adjusted planning permission from 16 May 2001, the adjusted planning permission from 23 May 2001, the amended planning permission from 1 November 2002, the adjusted planning permission from 7 May 2003, the adjusted planning permission from 17 June 2003, the adjusted planning permission from 2 July 2004, and the adjusted planning permission from 1 September 2014.

3. makes recommendations to the responsible administrative parties for implementing concepts and measures in order to achieve the overriding objectives described in detail in Article 1, and recommends the steps required for implementation,
 4. makes recommendations to the Contract Parties concerning the underlying updates of appendices of this contract.
- (2) Furthermore, the Steering Committee is responsible for
1. supervising the Ems Branch Office,
 2. appointing task forces,
 3. determining the conceptual framework of public relations,
 4. evaluating the Masterplan Ems 2050 on a 5-yearly basis based on a status report to be compiled by the Ems Branch Office, and
 5. regularly submitting reports to the Contract Parties on the most pertinent developments in the implementation of the contract.
- (3) The Contract Parties are members of the Steering Committee, and each Party must appoint one executive-level voting representative to the Steering Committee.
- (4) The Steering Committee convenes once annually. Additional meetings may take place at the behest of one of the Contract Parties.
- (5) Decrees and recommendations from the Steering Committee are made unanimously.
- (6) If unanimity cannot be reached in the Steering Committee, the President of the Higher Regional Court of Celle will appoint a mediator with the intent of achieving unanimity.
- (7) The same applies in the event that there is disagreement between the Contract Parties concerning the interpretation, application, or execution of this contract.

Part II - Organisation and Accountability - Administration of the Contract

Article 4**Committees**

The following committees will be established to promote the objectives described in Article 1:

1. The Ems Steering Committee
2. The Ems Branch Office
3. Task forces

Article 5**Ems Steering Committee, Composition, Tasks, Working Method**

- (1) The Steering Committee
1. ensures the realisation of the overriding objectives described in detail in Part I,
 2. ensures the breakdown of the concepts and implementation of the measures of this contract,

Article 6**Responsibilities of the Ems Branch Office**

- (1) The Ems Branch Office appointed by Article 4 no. 2 supports the work of the Ems Steering Committee and ensures the exchange of information between the Contract Parties (e.g. through a web-based communication platform).
- (2) Furthermore, in individual cases, the Ems Branch Office is responsible for public relations for the Masterplan Ems 2050 based on the conceptual framework drafted by the Steering Committee.
- (3) The Branch Office reports to the Ems Steering Committee in accordance with the responsibilities delegated by the Steering Committee. This includes an annual report and, every 5 years, a status report on the implementation progress for the Masterplan Ems 2050.
- (4) The Branch Office is located at the Regional Commissioner's Office for Weser-Ems.
- (5) Pursuant to Article 5 paragraph 2 no. 1, the Steering Committee regulates additional roles, personnel, and other necessary details that concern the Branch Office.

Article 7

Appointment and Responsibilities of the Task Forces

- (1) The Steering Committee will appoint Task Forces to address specific topics.
- (2) The role of the Task Forces is the regular and exclusive, constructive accompaniment of the topics, concepts, measures, questions, etc. delegated to them. This includes the provision of financing recommendations.
- (3) Staffing, delegation, responsibility, financing, reporting, etc., of the Task Forces are determined by the Steering Committee.

Article 8

Cooperation among the Contract Parties

- (1) The Contract Parties are obligated to cooperate faithfully, constructively, and with focus on the objectives.
- (2) The Contract Parties agree that the objectives stipulated by this contract concerning the agreed concepts and measures should be achieved swiftly and in accordance with legal regulations.

Article 9

Principles

- (1) The Contract Parties shall compile a programme of measures of the concepts and measures agreed upon as per Article 13 paragraph 4, in accordance with the quantitative and temporal determinations.
- (2) To this end, the Contract Parties shall utilise a comprehensive objective and evaluation system designed specifically for this purpose as the basis for their decision concerning the potential measures.
- (3) Accompanying monitoring will take place to follow and supervise progress in the Ems estuary. This monitoring will be conducted for all objectives listed in Article 1 paragraph 5, especially the parameters salt, oxygen, and suspended material content. This will build upon past monitoring and the mutual knowledge acquired from it. Monitoring will also be in place for regular assessment of the effects of the individual past or ongoing measures.
- (4) The decision-making for the programme of measures and the execution thereof will be guided by the following principles:
 1. Effectiveness of the measures
 2. Cost-efficiency of the measures
 3. Interdependencies of the measures
 4. Cooperation among the various parties
 5. Incorporation of scientific research
 6. Preservation of the internal relationship between programmes of measures and measures with regard to the objectives named in the Preamble and Part I of this contract, as well as the updated evaluation of the programme of measures.

Part III - Concepts and Measures

Article 10

Hydro-Engineering Measures for Resolving the Silt Problem and Improving Water Quality in the Lower Ems

- (1) In order to sustainably stem the upriver conveyance of sediment and thus resolve the silt problem in the tidal Ems, and to improve water quality, the following three approaches will respectively be pursued in comprehensive feasibility studies. The feasibility studies shall be drafted as quickly as possible. The evaluation of the hydro-morphological assessment for examining solution-based approaches to improve the ecological condition of the Lower Ems (FTZ assessment) from May 2014 will be incorporated into the feasibility study. The results, with help from a comprehensive objective and evaluation system, will be used to decide which of the three following approaches, or which combination thereof, should continue to be pursued for implementation.
- (2) This includes the possibility of authorising a temporally-coordinated implementation of partial measures, and thus a preliminary start to this measure.
- (3) The anticipatory decision in favour of implementation of measures may be made if certain knowledge of their sustainable contribution to the achievement of objectives is available, and if this knowledge does not contradict the implementation of further pursuance and combination with other potentially necessary measures or approaches to achieving objectives as per Article 1 paragraph 3.
- (4) In order to accelerate the decision-making process, evaluation factors that may already be pertinent to the determination of "feasibility" should be considered for the three solution-based approaches. Regardless of any preliminary commencement, Lower Saxony will lead the feasibility studies to completion under their scope of responsibility.
- (5) With the installation of a weir at the Ems Barrier (feasibility under the federal government's purview), the low tide of the Lower Ems, which has sunk in recent decades, should be raised considerably. The tide volume, and thus sediment conveyance into the Lower Ems, will be reduced at the outset, and the evacuation of the system through the ebb will be promoted. Furthermore, the weir is expected to reduce the momentum of the incoming tide. The feasibility study is currently expected to be completed by late 2016.
- (6) The tidal control at the Ems Barrier (feasibility under the state's purview) is expected to influence the expansion of the tides into the Lower Ems via the temporary constriction of the cross section of the Ems at the Barrier in such a way that the reduction of the tidal asymmetry will reduce the resulting conveyance of sediment. The former tidal volume should thus be maintained as much as possible in order to support the current cross sections of the Lower Ems. The feasibility study is currently expected to be completed by late 2016.

- (7) The tidal reservoirs on the Ems (feasibility study under the purview of the federal government) work through raising the tidal volume along with greater seaward conveyance of sediment. The tidal reservoir pilot measure in an oxbow lake north of Papenburg shall, for the option with the largest potential area requirements, sufficiently verify through validation of the hydro-morphological modelling results that the objectives can be achieved under consideration of interim morphological development, and not only in the short term. Management strategies for the necessary accommodation of long-term tidal polders must also be conceived. Suitable monitoring and accompanying mathematical modelling shall ensure that positive effects can also be recorded in other parameters of water quality in the tidal Ems. The tidal reservoir feasibility study and the pilot measure are currently expected to be completed by late 2018.
- (8) The feasibility studies include estimations of the following aspects:
1. Technical feasibility
 2. Usage effects/level of achievement (with regard to the objectives of the Master Plan within and outside of the body of water, other uses)
 3. Land requirements
 4. Barriers of geographical distance
 5. Environmental risk analysis
 6. Water management compatibility (inland draining, flood and storm flood protection)
 7. Transportation compatibility
 8. Compatibility with other measures of the Masterplan Ems 2050
 9. Resilience of the measure against effects of rising sea levels
 10. Adaptability/re-adjustability of the measure
 11. Process and duration of planning/authorisation/implementation duration
 12. Approximate costs
- (9) A Task Force accompanies the drafting of the three feasibility studies and develops a coordinated measure recommendation based on the catalogues of objectives and assessments. The Steering Committee will then make a decision and recommend the necessary steps for implementation.

Article 11

Land Management

- (1) The state is solely responsible for immediately establishing a land management programme for measures for restoring a natural habitat under the direction of the Office for Regional State Development Weser-Ems. The land yet to be acquired with land management includes
1. 200 ha by 2025,
 2. a total of 400 ha by 2035,
 3. a total of 600 ha by 2045, and
 4. a total of 700 ha by 2050,
- and the measures will be implemented by 2050. If land consolidation is necessary, the respective office will conduct it.

- (2) The borders of the primary target area for the land can be found in the appendix to this article.
- (3) Should compensation or coherency areas be necessary for the implementation of the measures of the Masterplan Ems 2050 due to natural conservation areas, land from the pool of the aforementioned land management programme may be used to this end or counted toward the overall acquisition of 700 ha. All measures on land yet to be acquired or already owned by the state will be counted toward the 700 ha.
- (4) As it has become clear that the land in Petkum is not available, 50 ha shall be acquired in 2015 for the further optimisation of meadow bird habitats. Should this not be successful, it must be immediately recovered.

Article 12

Measures in Coldemüntje, Knock and Oldersum Sluices, Herbrum

- (1) The plan for acquiring typical riparian habitats around the Ems loop near Coldemüntje while retaining the existing protective dyke line has begun (scenario no. 6 of the Bioconsult study perspective "Living Lower Ems"). The measure shall be implemented by 2020. At the same time, it will be determined whether free tides in the planned area can render additional ecological enhancement. This measure will not be counted toward the 700 ha.
- (2) The state has provided budget funds for ecological consistency at the Knock sluice. The extent to which improvement of the accommodation of the outer lock can also improve consistency will be determined. The state will draft a fundamental plan to this end.
- (3) The consistency at the Oldersum sluice can be improved. The two aforementioned measures (Oldersum and Knock sluices) will be worked on extensively. As the Oldersum sluice measure does not connect to any other sections of water, the potential to improve consistency at other sluices along the Ems (e.g. Sautel sluice) should be examined at a higher cost.
- (4) The federal government - GDWS - will take steps to improve the ecological consistency of the Herbrum weir by 2021.
- (5) Should the planning reveal that measures are not feasible, the acquisition of land as per Article 11 still applies.

Article 13

Determination of Other Measures and Concepts

- (1) Other measures and concepts must be determined to achieve the objectives of the Masterplan Ems 2050. The coordinated IBP Ems will serve as an advisory basis for the determination of these measures.
- (2) To this end, the measures shall serve 5/7 of the inland 700 ha for measures concerning typical estuary habitats and 2/7 of the inland 700 ha for meadow bird conservation, and be located outside of the existing FFH protected areas. However, in individual instances, optimisation measures extending beyond the favourable state of conservation may be examined for feasibility. The following types of measures shall be examined in particular:

1. Creation of estuary habitats in tidal biotopes and polders; a two-step programme has been agreed: first the development of riparian forest, reeds, and tidal flats, and the establishment of aquatic estuary habitats after considerable reduction of the silt contamination in the Ems.
 2. Creation of inland meadow bird habitats.
 3. Improvement of consistency at sluices / pumping stations.
 4. Further examining the potential for the demolition of bank reinforcements and the opening of overflow dams.
- (3) The following target sizes for a total of 700 ha (plus Coldemüntje) are agreed in accordance with the regulation of Article 11 paragraph 3 of this contract:

Types of measure	by 2025	by 2035	by 2045	by 2050
Typical estuary habitats via tidal polders or backward relocation of dykes	152 ha (Holthusen, Coldemüntje)	153 ha	153 ha	72 ha
Land for inland meadow birds	78 ha	47 ha		28 ha
Hectares	230	200	200	100

- (4) The measures and concepts are described in accordance with the appendix to this article.
- (5) The measures will be suggested by the Task Force and decided upon once annually by the Steering Committee, who will also recommend the steps required for implementation.

Article 14
Ems Nature Conservation Station

- (1) By spring of 2015, the Lower Saxony State Organisation for Water Management, Coast and Nature Conservation will establish an Ems nature conservation station for the Leer district in the state office in Leer as a branch office of the department for Nature Conservation, Brake-Oldenburg office.
- (2) Its responsibilities primarily include field research and active public relations on-site. The environmental associations will be involved in the nature conservation station's work from the outset.
- (3) The station will be staffed with two full-time employees.

Part IV - Regional Economic Structure

Article 15
Meyer Werft Location

- (1) As a global leader in the construction of cruise liners, Meyer Werft is an industrial centre for the region. This status, and its potential for growth, are significant for the regional economic structure. This importance for the region, the state of Lower Saxony, and the federal territory - especially employment and the fiscal aspects - is acknowledged.
- (2) In light of this, the Contract Parties intend to secure Meyer Werft's location in Papenburg.

Article 16
Shipping and Ports

- (1) The Contract Parties agree to implement appropriate measures to improve water quality in the tidal Ems, especially by reducing silt contamination, in the interest of more profitable business at the ports on the Ems.
- (2) The objective is the long-term preservation of the performance capacity of the Ems federal waterway as a seaward access point for the local ports and residents, as well as an inland connection via the Dortmund-Ems canal.
- (3) Measures for achieving these objectives will be decreed by the Steering Committee, who will also recommend the steps required for implementation.

Part V - Process for Securing the Location

Article 17
Process for Securing the Location of Meyer Werft

- (1) The adjustment of the planning permission of the Ems Barrier for extending the winter damming period from 15 March to 31 March of the respective year was made by the permit authorities on 1 September 2014.
- (2) With regard to the planned adjustment of the planning permission of the Ems Barrier for the period from 16 September to 31 October of the years 2015, 2016, 2017, 2018, and 2019, the state retroactively transferred project responsibility to the Emsland district and implemented the approval process.
- (3) The steps required for implementing measure no. 4b in the appendix to Article 13 paragraph 4 of this contract by the year 2020 will be implemented alongside the process named in paragraph 2.
- (4) The environmental associations declare that they will abstain from legal redress (including any redress already filed) against the plans described in paragraphs 1 and 2.

Article 18
Future Procedure for Securing the Location of Meyer Werft

- (1) In accordance with the bird conservation agreement between Meyer Werft and the environmental associations from 11 June 2009, the time frame for ship transfers through Meyer Werft with the Ems Barrier is a summer dam (NHN +1.90 m) from 1 April to 15 July, and a winter dam (NHN +2.70 m) from 16 July to 31 March of a given year.
- (2) Prior to the necessary approval process, appropriate minimisation, compensation, and coherence measures must be drawn up. The results of these shall serve the consensual and swift execution of formal permit processes, but may not forestall the results and any potential judicial evaluation thereof.
- (3) The Steering Committee will promptly appoint a Task Force to this end. This Task Force's primary responsibility will be developing a system that can ensure compensation and coherence measures by the year 2017. Special attention must be paid to bird conservation.

- (4) Meyer Werft is obligated to keep the closure of the Ems Barrier for ship transfers as brief as possible.

Part VI - Financing

Article 19

Fundamentals of Financing

- (1) The state government has applied budget group 80 in the individual plan by the Department of the Environment, Energy, and Climate Protection in Chapter 1502 for the purpose of "Measures for Improving the Infrastructure and Implementing Natura 2000 on the Ems", and budgeted the necessary funds until 2018. This objective will be renamed "Measures for Implementing the Contract 'Masterplan Ems 2050'" in the 2016 fiscal year. As of 2019, the state government will consider the necessary funds for the implementation of this contract when drafting the budget plans and updating the respective interim financial planning.
- (2) The state and federal governments are responsible for financing the measures decided or agreed upon by them as per their respective purview.
- (3) A regulation concerning the financing of decreed or agreed measures within the purview of municipal authorities must be decided between the state and the respective municipal authority.
- (4) Furthermore, each Contract Party is responsible for paying their own respective personnel and material expenses.

Article 23

Cancellation of the Contract

Only for compelling cause may this contract may be cancelled by the contract partners of the state of Lower Saxony in writing with a term of 6 months to the end of the year following the declaration of cancellation.

Article 24

Coming into Effect

This contract and its appendices come into effect on the day on which it is signed.

Part VII - Closing Provisions

Article 20

Severability Clause

Should individual terms of this contract be entirely or partially invalid or infeasible, or should they become invalid or infeasible after conclusion of the contract, the validity of the remainder of the contract is unaffected. Any such invalid or infeasible term shall be replaced by a valid or feasible term that most closely resembles the effects of the objective of the initial term.

Article 21

Contract Relationship to Third-Party Rights and Obligations

The terms of this contract apply to the extent that other legally regulated rights and obligations of the Contract Parties are not affected.

Article 22

Amendment Process

- (1) Changes to this contract may be recommended by the members of the Ems Steering Committee.
- (2) Changes must be consensually agreed upon by the Contract Parties.
- (3) Changes agreed upon in writing by the Contract Parties come into effect on the date of the change being signed by the Contract Parties.



Contacts

Rosemarie Gorthel
Masterplan Ems 2050 Office
Theodor-Tantzen-Platz 8
D-26122 Oldenburg
T | 0441 799-2141
F | 0441 799-6-2141
M | Rosemarie.gorthel@arl-we.niedersachsen.de

Thorsten Kuchta
Press spokesman
Theodor-Tantzen-Platz 8
D-26122 Oldenburg
T | 0441 799-2602
F | 0441 799-6-2602
M | thorsten.kuchta@arl-we.niedersachsen.de

Layout

bme werbeagentur, Hannover

Printing

BWH, Hannover