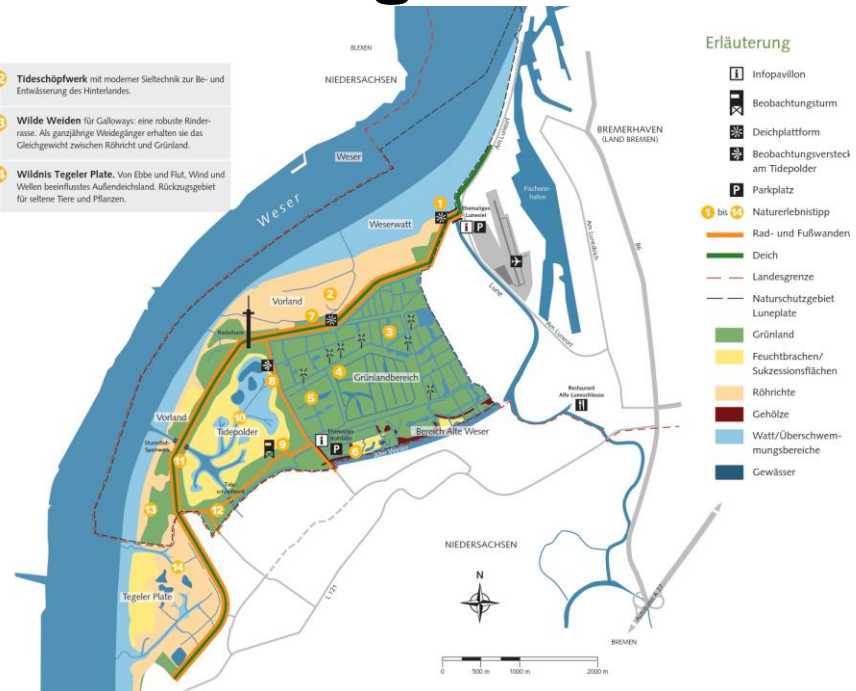


# Landward Solutions Luneplate managed realignment with storm surge lock

Das Naturschutzgebiet entdecken ...

- 1 **Deichvorland am ehemaligen Lunesiel.** Bei Niedrigwasser Hunderte von Säbelschnäbeln, Krickenten und andere Wasser- und Watvogelarten. Beeindruckend der ständige Wandel der Wattlandschaft im Tidelformismus vor der Külture breemischer und niedersächsischer Halten- und Industrieanlagen.
- 2 **Deichvorland** mit weiten Röhrichten als Lebensraum für Röhrichtbrüter.
- 3 **Vogelparadies Grünland,** geprägt durch zahlreiche Gräben und Kleingewässer. Wiesenvogel im Frühjahr, Tausende von Gänsevögeln im Herbst, vor allem Gänse.
- 4 **Windschöpfwerke** sind die Herzen des Wasserhaushalts auf der Luneplate, um hohe Wasserstände für Wasser- und Watvögel sicherzustellen.
- 5 **Wasserbüffel.** Zwei kleine Herden der saftigen schwarzen Riesen halten das Gras kurz für Brut- und Raubvögel.
- 6 **Die Alte Weser** war einmal ein Seitenarm der Weser. Eine stille, ungestörte Auenlandschaft mit Galeriewald, Komoranenschlafplatz und seltenen Gästen, z.B. Fischotter oder Seeadler.
- 7 **Deichplattform am Grünland** bietet Westblick über die Weser, Röhrichte, endlose Weiden und Vogelschwärme.
- 8 **Beobachtungsversteck** mit Ausblick auf die Vogelwelt des Tidepolders und des Grünlandes: Auge in Auge mit Wasser- und Watvögeln, wie z.B. Brandgans, Säbelschnäbler, Silberreiher, Krickente und Uferschwalbe.
- 9 **Beobachtungsturm** mit weitem Panoramablick auf den Tidepolder. Ein Picknickplatz lädt zum Verweilen ein.
- 10 **Tidepolder.** Der regelmäßige Wechsel von Ebbe und Flut findet hier auch hinter dem Deich statt! Typische Landschaft der großen Flussmündungen mit Tide, Watt, Röhricht und viel Weite.
- 11 **Sturmflutsperrwerk.** Verbindung zwischen Weser und Tidepolder. Normalerweise geöffnet, nur bei hohen Fluten geschlossen.

- 12 **Tideschöpfwerk** mit moderner Sielttechnik zur Be- und Entwässerung des Hinterlandes.
- 13 **Wilde Weiden** für Galloways: eine robuste Rinder rasse. Als ganzjährige Weidegänger erhalten sie das Gleichgewicht zwischen Röhricht und Grünland.
- 14 **Wildnis Tegeler Plate.** Von Ebbe und Flut, Wind und Wellen beeinflusstes Außendeichland. Rückzugsgebiet für seltene Tiere und Pflanzen.



The Luneplate nature reserve (1438 ha) has been ongoing since 1996 but was extended especially from 2003 onwards. With the realization in 2012 of the tidal polder it was completed. The latter is a remarkable form of managed retreat as tidal channels, banks and tidal flats have been constructed in a former agricultural area which is in open connection with the Weser estuary via an inlet with a storm surge lock. The area is rapidly silting up with mud.

In the 14<sup>th</sup> century the mouth of the Weser was a delta with several separate channels and was also connected to the Jade. Butjadingen was still an island at that time. Before the major Weser correction by Ludwig Franzius in 1888 the tidal channels constantly changed course. The island Luneplate formed around 1800 in the Weser estuary due to mud deposition and became covered with reeds. It was separated from the mainland by the tidal river Lune, the Weser and one branch of the Weser, the „Älte Weser“. It was poldered in 1922 and used for agriculture. In the 1920s, the extension of the fishery port area was under discussion. In 1939, the area was designated as a new industrial and fishery port and as a naval base. Later, in the 1960s, the plans for industrialization re-emerged and led to an agreement between the federal states of Bremen and Lower Saxony in 1979. However, all these plans were never realized. Since 1996, an area of 1438 ha of the Luneplate was in steps given a nature function as ecological compensation for the expansion of the Container Terminal Bremerhaven. The total costs for the project are around 50 MEuro. It has especially high value for bird life. Some 70 species of birds use the area during part of the year.

In 2012, as compensation for Terminal CT4 and other harbor related projects, a former 90 years old agricultural area of 215 ha called Tidepolder was changed into a tidal polder, by removing 560.000 m<sup>3</sup> of sediments. An inlet in the Weser dike and a dug out tidal channel system allow for unhindered flow of a tidal prism of 1\*10<sup>6</sup> m<sup>3</sup> (the amount of water flowing in during flood plus the amount flowing out during ebb divided by two). The tidal polder can be closed by means of a storm-surge lock during floods above +2.5m above Normalhöhennull (NHN). Since completion of the polder and the opening of the storm surge lock in autumn 2012, watercourses and banks changed, and new mudflats formed. Fish, crabs, tubifex worms, mussels and snails came in with the Weser water and have quickly colonized the new habitats. At this location the salinity of the Weser estuary is characterized as oligohaline (0.5-5 g salt per kg water). Saltwater-tolerant plants have started to grow along the banks of gullies, tidal ponds,



on higher mud flats and in the grasslands. Galloway cows graze from spring to autumn to keep the landscape open.



*Panorama tidepolder on the Luneplate in 9<sup>th</sup> of February 2020.*

At the southern edge of the Luneplate the Alte Weser area with a size of 130 ha is present. The habitat function of the Alte Weser, a former branch of the Weser, is water fauna. The adjacent wide shore zone is used for natural succession typical of floodplain areas. The shore zone passes into temporary to regularly extensively grazed grassland biotopes. Here side arms and ponds were dug out. Construction measures were completed in 2012.

Via the tidal polder, the 28 km<sup>2</sup> inland Dedesdorfer marsh area to the south east of it, can be flooded during the summer season or drained from surplus rain water during the winter season. This done via a tidal pumping station, which has been placed in 2009. With two pumps in total some 5.2 m<sup>3</sup>/s can be pumped. During pro-longed storm surges the tidal polder can serve as a catchment basin for water which is pumped out of the Dedsdorfer area

Outer dikes, to the W of the Luneplate, Galloway cows are grazing the meadows and control the development of peat area. To the S of this area the older compensation area of the Tegeler Plate is present. East of the tidal polder, in the about 209 ha area of the “Vogelparadies Grünland”, the agricultural structure of ditches has been widened and extended. The works were ended by 2010. Four polders with differing high-water levels are maintained via a series of windmills and six dams in the ditches. In this way birds can find food in a marshy environment even during a hot summer. The area is primarily developed for breeding and roosting birds. Agriculture is restricted to extensive grazing. The two herds of newly introduced water buffaloes are meant to maintain a landscape favorable to breeding and resting birds. Locally this is supplemented by mowing. During autumn the ditches are cleared to avoid filling up and clogging. More than 10.000 geese are present in winter. A 51-ha large compensation area developed in 1996 for the Terminal CT III has been integrated in this area. Also, here the water levels are regulated, and the area is used for extensive grazing.

The Luneplate has become property of the Land Bremen as recent as 1<sup>st</sup> of January 2010 when a large part was transferred by Lower Saxony (Land Oldenburg) after the buy by Bremen (30 million Euro). Bremen aims at integrating the planning of maintenance and development measures for the compensation area and of management measures for the European nature conservation area. The holistic concept is intended not only to cut costs, but also to pinpoint untapped potential for environmentally compatible local leisure uses. At present, it is the largest nature reserve of the Freie Hansestadt Bremen. On 17 February 2015, the 1438 ha [Luneplate Nature Reserve](#) was designated as part of the Natura 2000 network. A large part of the Luneplate is consisting of the [EU bird sanctuary](#) "Luneplate" (EU-Reporting No. DE2417-401, with a size 940 ha). It has outstanding importance as a resting area for Nordic Geese and Swans. As a breeding area, it is of great importance for species of birds that inhabit reed lands as well as for waterfowl. Since 2014 an information sites and a tower and observation posts to watch bird life were put in established along the walking and bicycling routes in the area to make it more accessible to the public.

### **Research**

All areas are monitored on a regular basis on biotypes and flora. It turns out that the large part of the Tide polder developed into biotopes influenced by brackish water. Due to ongoing sedimentation the subtidal areas, which originally covered some 10% of the area have largely changed into intertidal to supratidal areas. Within the “Vogelparadies Grünland” area a species-rich mesophilic and wetland biotope developed which is brought about by the water levels and extensive grazing.

### **Lessons learned**

This is an example of integrated management of several different areas with a wetland character. In it, the relatively large managed retreat area of the Tidepolder is the only part which receives massive volumes of mud from the estuary. The silting up is proceeding rapidly, and the question arises how long this can continue.

### **Stakeholder process**

Originally the Luneplate was largely property of Lower Saxony, who also was interested in the development of the Ports of Bremen, as was the Freie Hansestadt Bremen and Bremenports GmbH & Co. KG. This is also visible in the compensation measures which already started in 1995/96 and were extended in the period 2003-2012, thus partially before it was official property of Bremen. The biggest push came from the discussions to establish an offshore harbor for windmill production on the Luneplate. Nature protection organizations threatened to fight this initiative up to the European Union. As the CT4 harbor extensions were needed badly it was decided to cancel these plans in 2010. At the same time the final and biggest nature compensation projects on Luneplate were carried out. The developments are largely paid for by Bremenports GmbH & Co. KG and the EU European Fund for Regional Development.

### **Discussion points**

The area of the Tidepolder is silting up relatively fast. It implies that the areal extent of subtidal and perhaps intertidal areas will decrease, which will lead to a loss of natural diversity. The question is therefore if such costly measures are worth their money.

### **Literature**

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### **Research**

A development period of 15 years has been foreseen for the Luneplate area. Within the development period, different ecological success checks are carried out at different intervals on the various sub-areas (grassland area, tidal polder, old Weser area, eastern extension area) of the Luneplate. These are intended, on the one hand, to document the stock developments on the land and, on the other hand, to indicate whether the fixed compensation targets are being met with the current development on the land.

### **Approach**

### **Results**

### **Lessons learned**

### **Stakeholder processes**

### **Discussion points**

### **Literature**

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