

near Sengwarden have remained fully intact. The water tower on „Landeswarfen“ west of Hohenkirchen is a landmark visible from a great distance, constructed by Fritz Höger in 1936 to serve as Wangerooge's water supply.

Of the above-mentioned scattered settlements characteristic to this region, two set themselves physically apart and therefore represent limited forms within this landscape.

Some sections of the old dyke ring whose land was considered dispensable from a farming or land ownership perspective served as building space for erecting small homes of farm labourers and artisans who otherwise made their homes in small numbers on larger mounds. Among these were the „small houses“ referred to in oral tradition north of Middoge, the Oesterdeich (an early groden dyke), the Medernser Altendeich, the Norderaltendeich and foremost the area west of Horumersiel up to Hooksiel. With few exceptions, the houses themselves are all renovated, however.

The second deviating type of settlement is a sluice harbor. While all sluices on the Jeverland side of the Harlebucht have no real function since dyking has been completed on their seaward side, two sluices on the Jade have at least indirectly retained their function. When the first dyke was constructed in front of the groden in 1542, Horumertief, Hohenstief, Crildumer Tief and Hooktief (1546?) each had a new sluice constructed. With the passage of time the three northern canals were linked up and since 1962 they drain off water via the Wangersiel to the south of Horumersiel. All that is visible of the Crildumer Siel today is the dyke line with a closeable opening. The other two sluices have been shut down. The Horumer sluice harbor has in any case always been of only modest significance, and only a single historical building, a former storehouse, reminds us of its existence. After the silting up of the Hooktief in Jever's harbor rendered it impassable, Hooksiel became the main harbor of the Jeverland, attested to by the harbor bowl with three large warehouses from 1821 as well as numerous inns and residential homes of the 18th and 19th centuries. The sluice itself was renovated (as was the older sluice near Rüschenstede) in 1885. It relinquished its functional role to a new sluice gate facility after dredging works and extensive dyking were completed from 1971-74 at the Voßlapper Groden. The most recent extensive growth of communities is attributable (similarly in Horumersiel) to summer visitors.

With the exception of the northern section's tourist visitors, the Voslapper Groden mainly serves as a sea rampart for Wilhelmshaven's commercial buildings, a function also served by the Rüstersieler Groden (1960-63) and the Hepenser Groden, first laid out as a dyke line from 1936-38, although construction only started in 1955. It remains to be seen whether the historically preserved parishes of Sengwarden and Fedderwarden, now already part of Wilhelmshaven, will come to terms with the consequences of this and the inexorable urban growth through appropriate planning.

The cultural landscape of the Wangerland and the Jeverland has been able to preserve its unmistakable character to a considerable degree. The genesis of landscape forms is mirrored in the patterns of settlement, the lay of arable land and in landmark monuments. The variety offered by this cultural landscape is still largely free from the effects of large-scale intrusions such as extensive commercial or industrial development, while new home development has not yet spilled out into the countryside to mar or destroy the total impression.

In addition to the unavoidable highways, there is unattractive development in the areas bordering the cities of Wilhelmshaven and Jever. The increasing levels of tourism along the coasts have also left their mark on the landscape. A particularly insensitive measure was the establishment of the main garbage tip for the administrative district of Friesland north of Jever.

#### 4.4.2.5 Harlingerland

The Harlingerland covers the whole northern part of the East Frisian administrative district of Wittmund, including the two islands of Spiekeroog and Langeoog. The north-western part of the Harlingerland, formed by what was once the Dornumer Bucht, extends into the Aurich administrative district. In its north-eastern extension large parts of the re-dyked former Harlebucht, which borders onto the Wangerland, already belong to the Oldenburg district of Friesland (Frisia). The border begins near Dornumersiel in the north-west and runs along the Dornum Canal to Dornum. From here it stretches south along the Sielhammer (Accumer) Canal and follows the extension of that canal along the present-day boundary between the districts of Aurich and Wittmund until it reaches the so-called „Ewiges Meer“ (permanent mere). In the south-west the border runs through the Meer-

husen and Tannenhausen Moors to the north of Tannenhausen, Plaggenburg and Middels towards the Norder Tief and the Leerhafer Tief (Harle). Here, the border corresponds roughly to the former boundary between the judicial districts of Friedeburg and Wittmund. In the south-east, Wittmund und Asel, lying on the edge of the geest, are included before the border line bends towards the north-east. The eastern shoreline of the Wittmund and Sandel branches of the Harlebucht, where in mediaeval times the sea had broken in, represents the eastern boundary of the Harlingerland to the Wangerland, which is part of Jeverland. The border between Jeverland, a part of Oldenburg, and East Frisia (the „golden line“) was established in 1666 and finally confirmed in 1743. For the mainland this border line is still in force today and runs virtually through the middle of

the Harlebucht where the dykes have been rebuilt.

Thus, the Harlingerland features every type of landscape that the coastal region of Lower Saxony has to offer. These include the dune islands formed from alluvial sand, the Wadden Sea with its salt meadows offshore from the present mainland, the recent (sea) marshes of the former Dornumer Bucht in the west and of the Harlebucht in the east, the old marsh and the brackish marsh off the geest edges, as well as the regions of geest and boggy marsh in the geest ridge of Oldenburg and East Frisia, formed in the Ice Age, with the large offshore geest island of Esens.

The old moraine landscape of the Pleistocene geest represents the oldest soil and geological formation. According to K.-E. Behre (1995, 7ff) the geest ridge of Oldenburg and East Frisia is

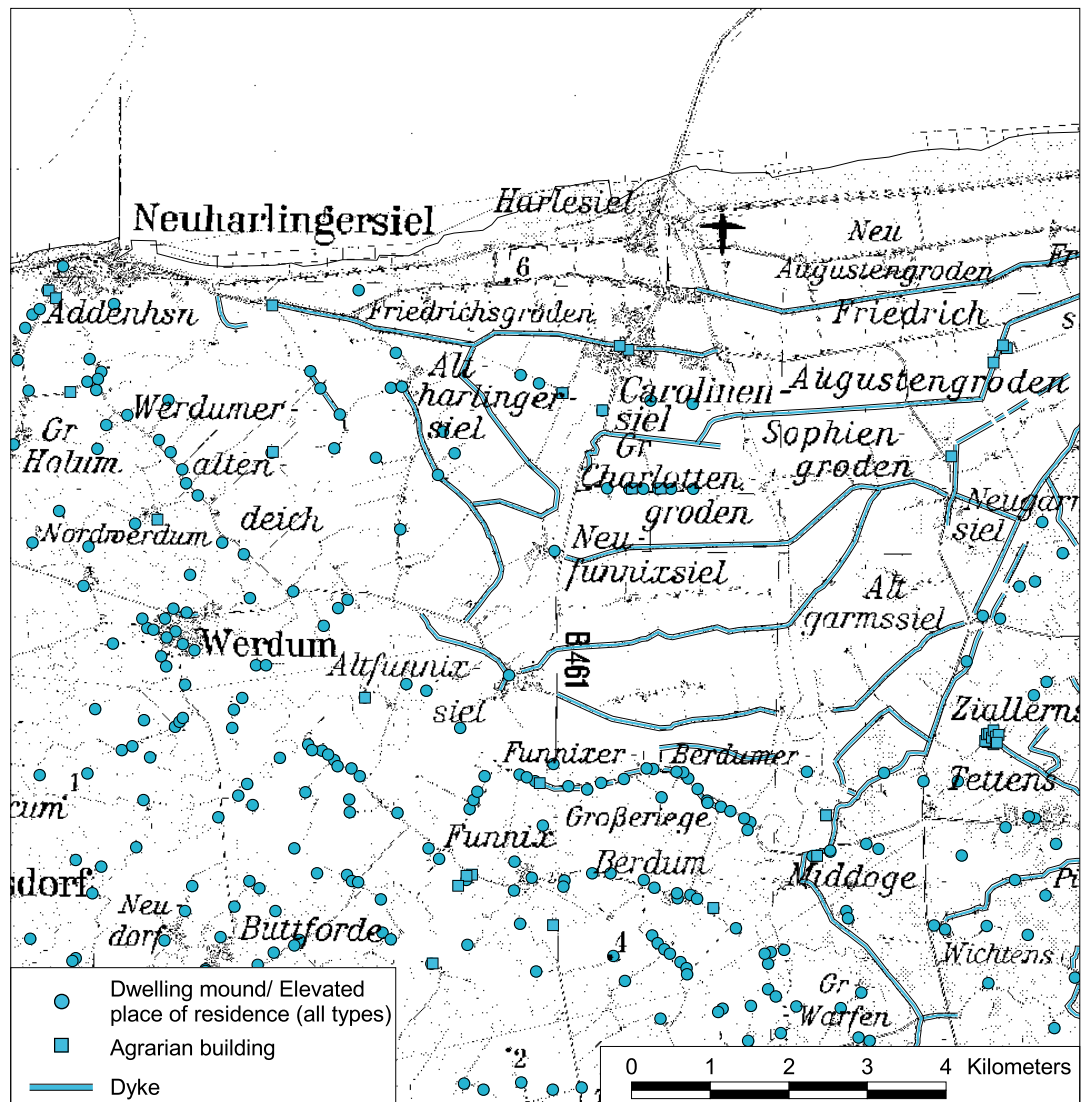


Fig. 4.64:  
The dykes and dwelling  
mounds in the region of  
the Harlebucht  
Source: LGN

thought to have formed during the Elster Glacial period and was definitely laid down during the Saale Glacial period in its final form, with rivulets draining off to the North Sea. The Lauenburg clay from the Elster Ice Age, which is frequently used in the manufacture of bricks, can be found just beneath the surface on the northern edge of the geest between Norden, Esens und Wittmund. In the older phase of the Saale Ice Age large boulders of granite were carried here by the ice. In the Neolithic age these were used in the erection of megalithic tombs and, in the High Middle Ages, were squared off into blocks and used for building churches.

During the Eem Interglacial period that followed the Saale Ice Age, about 125 000 to 115 000 years B.C., the southern coastline of the North Sea extended roughly to what is now the chain of islands. At this time the lower moorland was formed in the geest valleys and on the coastal rim. During the subsequent Weichsel Ice Age East Frisia lay in the periglacial border region, largely free of vegetation, in which westerly winds brought about sand drifts which, over the years, leveled out most of the terrain. Finer material was deposited in the eastern regions as a thin, infertile covering of drifting sand. Important nutrients, especially calcium, were flushed out of the soil as a result of water run-off.

At the end of the Weichsel Ice Age, the land was once again completely covered in vegetation, first with herbage and then with bushes (predominantly juniper) before birches came in as the first tree species in the Alleröd Interglacial Period, followed by pine trees. After a deterioration of the climate in the more recent Tundra Period, the pre-boreal warming at the beginning of the Holocene since about 9000 B.C. caused the land to be finally covered in forest, with poplars, hazels and subsequently with varieties of mixed oak woodland. The first types of cereal grains, established from various pollen diagrams, are an indication of Neolithic agriculture starting in the fourth millennium before Christ.

In the Holocene there was a rise in sea level which was not continuous, but occurred in different phases of transgression and regression. In general it can be said that during the periods in which the sea level rose above the coastal moorland, silt was deposited by the sea. The silt dried out when the sea level was stable and it was then covered by vegetation, which in turn led once again to the formation of a low-lying moorland. As the water table rose, the lower moorland also reached greater heights on the

edges of the geest. In the second half of the Atlantic period and the subsequent Subboreal a more or less continuous covering of high moorland developed along the peaks of the geest ridge, which remained unaffected by ground water. Old surfaces of the marsh have been discovered by drilling at about 5 m below mean sea level (foundation of the present marsh) as well as between 3 and 2 m below sea level. This latter layer had been covered over a wide area by coastal edge moorland since the beginning of the second millennium B.C. Pollen analysis and, in part, archaeological evidence have shown dates for more recent marshland surfaces of 1000, 500 and 200 years B.C., with the last phase representing today's marshland of hedgerows or brackish water, containing clay and largely devoid of calcium. The recent sea marsh, characterized by fertile calcareous sediments, developed from the renewed rise in the sea level in the Early Middle Ages.

At the time of the birth of Christ, the coastline of the Harlingerland more or less resembled the present one, with the exception of the small Dornumer Bucht. The intrusion of the Harlebucht, almost 15 km wide and at its peak with three arms touching the geest ridge of Oldenburg and East Frisia, did not take place before the 9th century A.D. in the Early Middle Ages. A possible cause for this intrusion is seen in the displacement to the east of the offshore island of Wangerooge which had previously acted as a kind of protective embankment for this low lying section of the coast. Likewise, the protective effect of the displacement to the east of the island of Spiekeroog could provide an explanation for what was initially a natural drying-up process of the coast in the high and Late Middle Ages. In the 11th century the first so-called ring dykes were built around the meadows of the village mounds of Oldorf and Tettens in the eastern Jeverland district, and presumably also around the area of Funnix, Werdum and Eggelingen in the western East Frisian region. This was followed during the high and Late Middle Ages by the establishment of continuous lines of dykes along the sea walls of the bight (the Werdumer Altendeich in the west, the Tettenser, Medernser and Funnenser Altendeich in the east), before the first complete dyking of the separate arms of the bight could be implemented thanks to the progress made in the technology of sluice construction in the 15th century. From early in the modern era until the end of the 19th century the whole Harlebucht was again completely covered

with groden dyke works, in which a new sluice harbor was set up according to plan at each point where the sea dyke crossed the artificially excavated river Harle. These include Altfunnixsiel, which was presumably already established in about 1500, Neufunnixsiel in 1658, Carolinensiel in the year 1729 after dykes were built on the Carolinengroden, and finally Harlesiel in the year 1956. The sluice harbors, the old lines of dykes and the farmsteads surrounded by fertile cultivated fields located between the dykes all are characteristic features of the landscape in this area of the Harlingerland.

In the remainder of the Harlingerland the archaeological monuments that have been preserved above the soil correspond to the diversity of landscapes. The only known Neolithic monument, a megalithic tomb of the funnel beaker culture, is in ruins however. Its remains on a geest ridge near Utarp were investigated in the year 1878 and again in follow-up excavation in 1984. Fields of grave mounds and individual barrows, thrown up here since the latter part of the Neolithic age (e.g. Westerholt), have been preserved and these are the oldest relics in the geest regions. The Radbodsberg in the Brill district near Dunum, the Barkholter Berg barrow directly south of the road from Norden to Esens, as well as a field of six barrows west of Nord-Dunum are representative of these. In the Moorweg district, on the northern edge of the geest, there was once a field that probably had seven barrows and lay on a spur extending into the depression of the Hartsgaster Tief. Evidence of settlement activities at the end of the Neolithic and in the earlier Bronze Age was discovered in nearby excavations. The dune region was used as a burial site from the Bronze Age until the time of the Roman empire.

On the basis of the archaeological survey by the Ostfriesische Landschaft and the compilation of the inventory of archaeological monuments by the Institut für Denkmalpflege in Hannover (now Niedersächsisches Landesamt für Denkmalpflege) nearly 300 dwelling mounds in the Harlingerland district have been recorded. 220 farm mounds, 33 village mounds and 18 church mounds (around the Wittmund district) are well preserved. Most of the village mounds and church mounds were set up on the edge of the geest, while the majority of mounds for individual farms were sited in the recent marsh, with a marked concentration in the area of what used to be the Harlebucht. Several conspicuous strings of mounds can be seen on the lines of

older dykes. It is possible that these „mounds in dyke positions“ are the remains of old dykes which, following their decommissioning, served as the foundations for so-called dyke row settlements. Sluice harbors have already been mentioned as a particular kind of settlement in which the exclusively non-agrarian buildings were built on the inner side of the dyke embankment.

In the high and Late Middle Ages, as well as early in the modern era, several castle complexes or fortified manor houses were built in the Harlingerland in the districts of Berdum, Buttförde, Esens, Funnix, Seriem, Utarp, Werdum and Wittmund. Their more or less impressive remains can still be seen today.

Virtually no recognizable ruins remain above ground of the monasteries of Marienkamp (about 1 km south-west of Esens) and Schoo (in the Moorweg district), both founded in the Late Middle Ages. In the case of Schoo, however, the artificially constructed fish pond with its above-ground dam wall is still recognizable. The site of the Marienkamp monastery is now covered by farmland; building rubble and individual pieces of pottery from the Late Middle Ages and early modern times were found here, in an area about 325 m long and 140 m wide, divided into two halves and raised by about 1.5 m.

A few inconspicuous hills under which so-called field furnaces are concealed bear witness to the manufacture of bricks in former times. These first „brickworks“ were set up either right next to the clay pits or close to the buildings for which the tiles and bricks were to be used.

The activities of permanent rye cultivation and peat digging, which were pursued on a massive scale since the early and High Middle Ages and which did change the landscape, have not yet been recorded as archaeological monuments.

#### 4.4.2.6 Norderland

Norderland, situated in the administrative district of Aurich, once extended across the geest edge and the Arle marsh towards the west, to the place where the sea reigned. In the early Atlanticum the sea advanced to the current chain of islands and gradually flooded the mainland, which was able to stand its ground as the island Bant – probably the ancient „Burcana“ – up to early modern times. South of the island Juist, on the geest between Nordland to the north, Koper Sand to the south and Itzendorfer Plate to the east, the growth of the moor was

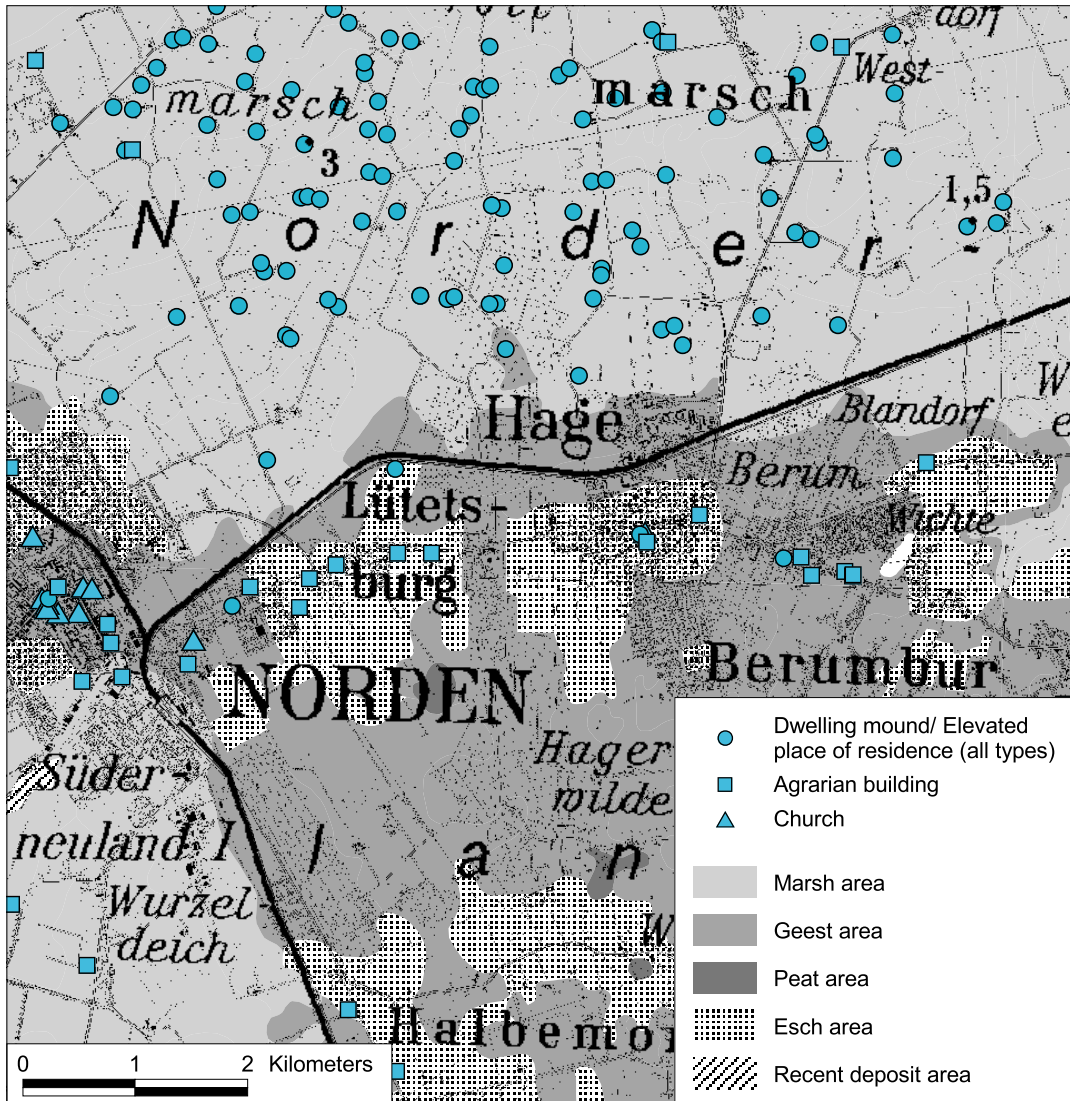


Fig. 4.65:  
The elongated settlement  
of Hage were laid at the  
edge of the geest  
Source: LGN, NLFb

first interrupted by the Dunkirk I Transgression in 300 B.C. with widespread flooding and still or flow-through water. The same occurred in the low-lying (up to 2.5 meters below sea level) areas of the East Frisian geest substrate in Norderland. Prehistoric settlement would have been possible up to this period, demonstrated by scattered stone instruments both from the Neolithic as well as the Late to Middle Bronze Age. That sites from the Iron Age and Roman Empire have not yet been found on the higher-lying sandy area near the city of Norden can for now be attributed to a lack of research, because sites dating to the Roman Empire have been found further east at the geest edge.

The history of marsh settlement began after the large losses of land to the sediments of the Dunkirk I Transgression, which in turn created new marshland from moor and clay, as in the

Krummhörn, and above which bights formed from canals worn into the ground during the Pleistocene period. Settlements from the Holy Roman Empire bordered the higher silted-up seashore zone from Westeraccum and Dornum in the east across Ostdorf and Westdorf to Süderhaus in the west. These two latter sites straddled both sides of the bight, which later came to be called Hilgrienrieder Bucht. In the course of the Dunkirk II Transgression all settlements developed into large dwelling mounds, each of which certainly held large numbers of farmsteads up until the migration of the peoples. As in the Krummhörn, it can be presumed that the line of settlements continued further towards the west, following the seacoast, and that settlement also took place on Norden's geest island and the sunken marshland west of the current dyke (Burcana). Ceramic finds at sites in Süderhaus and

Westdorf, on both sides of the bight, were from the same period, allowing the settlement to be dated to the time of Christ's birth. The settlement on the flats in Westdorf was later raised by at least two meters on another three occasions until a humus surface resulted at the time of the migration of the peoples. The same observations were confirmed in a soil analysis taken from a sample in Westeraccum. A reduction in the population density in the 4th and 5th centuries and partial use of the mounds for gardens, farmland and pasture can thus be assumed. These mounds show datable signs of occupation from the Early Middle Ages, the 7th and the 8th centuries, and settlements were probably set up in the low-lying new marsh. As on the shores of Hilgenrieder Bucht, the high and dry marsh areas lying close to the sea – and since inundated – were also probably inhabited. According to research on names the towns of Lintel and Ekel, and Norden itself, were founded in the Early Middle Ages. Even today the patron saint of the Luidgeri church testifies to the rapid growth of Norden's importance. St. Luidger has been beloved as a protector primarily in the 9th and 10th centuries. It is unknown what effect the Norman raids had on the settlements – migrations in any case followed the known examples set in the Krummhörn and the Brookmerland. In the climatically favorable period of time from the 9th to the 11th centuries, when the rise of the sea level came to a halt, increased development was not only aimed at the marsh, where single farm mounds and block-shaped fields were created, but also at the low-lying pasture lands (Sietland, Wischen), which were hard to drain naturally, because they were located behind a high marsh.

As in the Brookmerland the moor near the geest became covered with sediment from the sea. The elongated settlements of Bargebur and Hage were laid out behind the marshy moor, at the edge of the geest. Their fields were up to three kilometers in length and extended to the high moorland. The castle sites of Lütetsburg and Berum were located on the raised area at the end of each row of plots. From the 9th and 10th centuries until the 13th century, the Sietland areas in the moor marsh were also dotted with small, artificial, mound-like hills, providing space for single farmsteads. There were working areas nearby, on the sandy hills in the moor near the streams, which served as places for winning iron from the locally available ores (proven in one case) and for other purposes. This discovery demonstrates that there were additional reasons

for frequenting the moor marsh besides subsistence and pasture farming. It can be assumed that the management of different natural environments was networked and interrelated up to the Late Middle Ages, and that very lucrative economic specialisation had already started in the 9th and 10th centuries, with trade of goods, both near and far, conducted via Nesse and Norden. In this context it is remarkable that the property of the church and the Theelacht (a cooperative society for land administration, located in Norden) are today for the most part still located on reclaimed land behind the late mediaeval dyke, which closed off the Hilgenrieder Bucht, and north of the old settlement area marked by a row of large dwelling mounds. This demonstrates the effects of forces that went beyond agricultural habitation for mere subsistence, combining the economic potential of rich marsh pastures and locally available iron ore and linking it by building dykes and systematically reclaiming land. Norden profited from this and expanded its marketplace (to over 6 hectares) in the first half of the 13th century.

Even today this marketplace is of impressive size, while the outskirts of the city of Norden have overtaken the surrounding settlements. The moor and marsh areas have for the most part preserved the settlement structure of the Late Middle Ages and only a few wind farms have been erected, although on some parts of the coastline summer homes of non-local architecture have been built.

#### 4.4.2.7 Brookmerland

The Brookmerland is situated in the administrative district of Aurich in the western part of East Frisia and covers the edge of the geest from Osteel in the north right down to Forlitz-Blaukirchen in the south. It is not completely certain whether the so-called Zuderland with the villages of Simonswolde, Riepe, Ochtelbur and Bangstede also belonged to it at one stage. In addition to Marienhaf, Aurich was also mentioned as the market town of a provincial district in the Brookmer title (13th century), and so it is possible that the Zuderland and the Auricherland later became autonomous entities.

In the Middle Ages, the central high moor zone of the East Frisian geest ridge dominated the east of the Brookmerland, while the moor marshland spread out to the west of the geest edge. It developed as a result of the rise in sea level during the Holocene era. As in the

Krummhörn, this brought about a dovetailing of peat layers and water sediments until the sea pushed forward during the Dunkirk I Transgression and arrested the growth of the moorland. This resulted in the formation of a small bight into which the watercourse of the Ley flowed. The Dunkirk II Transgression enlarged the bight and, in the 7th and 8th centuries, left behind a cultivable layer of clay in the moor marshland. The Abelitz, originating near Marienhaf, flowed towards the south and drained the Brookmerland and what is today the „Große Meer“ (great mere) region into the Bight of Sielmönken until the dyke construction in the bight during the 12th and 13th centuries necessitated a diversion into the Leybucht. The present „Große Meer“ region was then part of a region of marshland and woods south of the Brookmerland being wedged in between the high marshland of the Krummhörn and the geest edge. This increased flow of water into the bight was a prelude to the enlargement of the Leybucht and the catastrophic loss of land in the late 14th century during the Dunkirk III Transgression.

The beginnings and the nature of the settlement of the Brookmerland remain largely unexplored, but we know that around the year 1000 the conditions for the colonization of the marshland regions were favorable. Archaeological finds and investigations into the geography of settlements point to the fact that even in the Early Middle Ages, in the 9th and 10th centuries, the cultivation of the land was under way. Thus, fragments of earthenware from this time have been found not only on the edges of the geest in Osteel, Tjüche, Uggant, Upende and Fehnhusen, but also in the marshland of the present „Große Meer“ region. Moreover, the study of place names linked the place referred to as „Cuppargent“ in the mediaeval land register of the Fulda monastery (9th to 10th centuries) with the present-day Uggant, and the place named „Uuibodasholta“ in the register of the Werden monastery with Wiegboldsbur.

The dates for the history of settlement known up to now allow the conclusion that the colonization and the settlement of the interior of the Krummhörn marshland completed in the 10th century then moved on to the Brookmerland in the 10th and 11th centuries. Thus the original names of Loppesumwalde for the present Bedekaspeel and Südwolde for Forlitz-Blaukirchen – place names of the elongated settlements in the present „Große Meer“ region – give proof of

the origin of the settlers from the Krummhörn, from Loppersum and Hinte.

The geest edge of Brookmerland offered itself as a starting line for the initiators of settlement. Long lines of settlement were formed by the process of elongation (in German „aufstrecken“, rendered in Low German as „upstrecken“). This indicates that the settler, whose allotment of land had a predetermined width, continually drove the cultivation of his land forward into the adjoining high moorland. The length of the allotment remained indefinite until it reached a natural obstruction, such as a watercourse or another settlement, and was thereby terminated. In the silted-over moor marshland lying in front of the geest edge animals could graze without protection from dykes. The settlers were organized into autonomous local district authorities which represented judicial associations with their own administration of justice and political power of decision. This controlled settlement movement reached its peak in the 12th and 13th centuries. Documented evidence shows that in East Frisia alone forty-one villages came into being through this form of settlement. The line of settlement through Bundehee, Boen and Wymeer has a direct continuation on the Dutch side with the elongated settlements of Bellingwolde and Vriescheloo. These settlements carry on along the geest edge through the Dutch provinces of Groningen, West Frisia and North Holland.

The level of prosperity that was attained by the inhabitants of the Brookmerland by farming, cattle grazing and above all by trade manifests itself especially in the churches of the land. The churches of Marienhaf, Osteel, Engerhaf and Victorbur (the latter two of which were preceded by wooden churches) were erected in the middle of the 13th century and were of a size that is difficult to reconcile with the moderate size of the farming communities. Their erection represents a landmark in the history of church building in Frisia.

The Church of St. Marien in Marienhaf, erected as a basilica with three naves, and featuring a length of 72 meters and a width of 32 meters, was the largest church in East Frisia until its partial collapse in 1829. It was comparable to the Osnabrück cathedral in its dimensions. The mighty cathedral vaulting reached a height of 21 meters at its highest point. This church was also famous for its rich architectural sculpture. A circumferential frieze located under the roof cornice consisted of 127 individual pictures of

knightly scenes, satirical images and mythical creatures, and 41 statues stood in niches on the façades of the transept. Apart from the size of the church and its decor, the self-image of the Brookmerland population was also expressed in the extravagantly designed lodge for the dignitaries in the west tower. The wealthy upper class of the population felt that they were perfectly equal to the nobility of the empire.

Less than two kilometers north of Marienhafte the Osteel church was built, likewise a vaulted cruciform church more than 50 meters long and also featuring an imposing west tower. Regrettably here, too, the transept and the choir were taken down in 1830. The third vaulted church in Engerhate, about 60 meters long, suffered the same fate. In 1806 the apse and the western bay section of the church, formerly five bays long, were pulled down. A good hundred years later

the eastern bay was taken down as well. The church in Victorbur, another member of this group, was largely preserved, however, even though the magnificent west tower is now missing, having been demolished in 1831. Even in their reduced form of today, all these churches allow one to imagine them in their original monumentality, the models for which are to be found in the cathedrals of Osnabrück and Münster.

While these church buildings still document the historical courses of settlement, the ribbon-like structure of the elongated settlements in the district of Brookmerland has completely dissolved in the last decades. Just as the construction of new traffic connections in the 19th century, such as the railway and causeway between Norden and Georgsheil, had severed the eight hundred year old settlement structure, the last 25 years have done as just much harm through

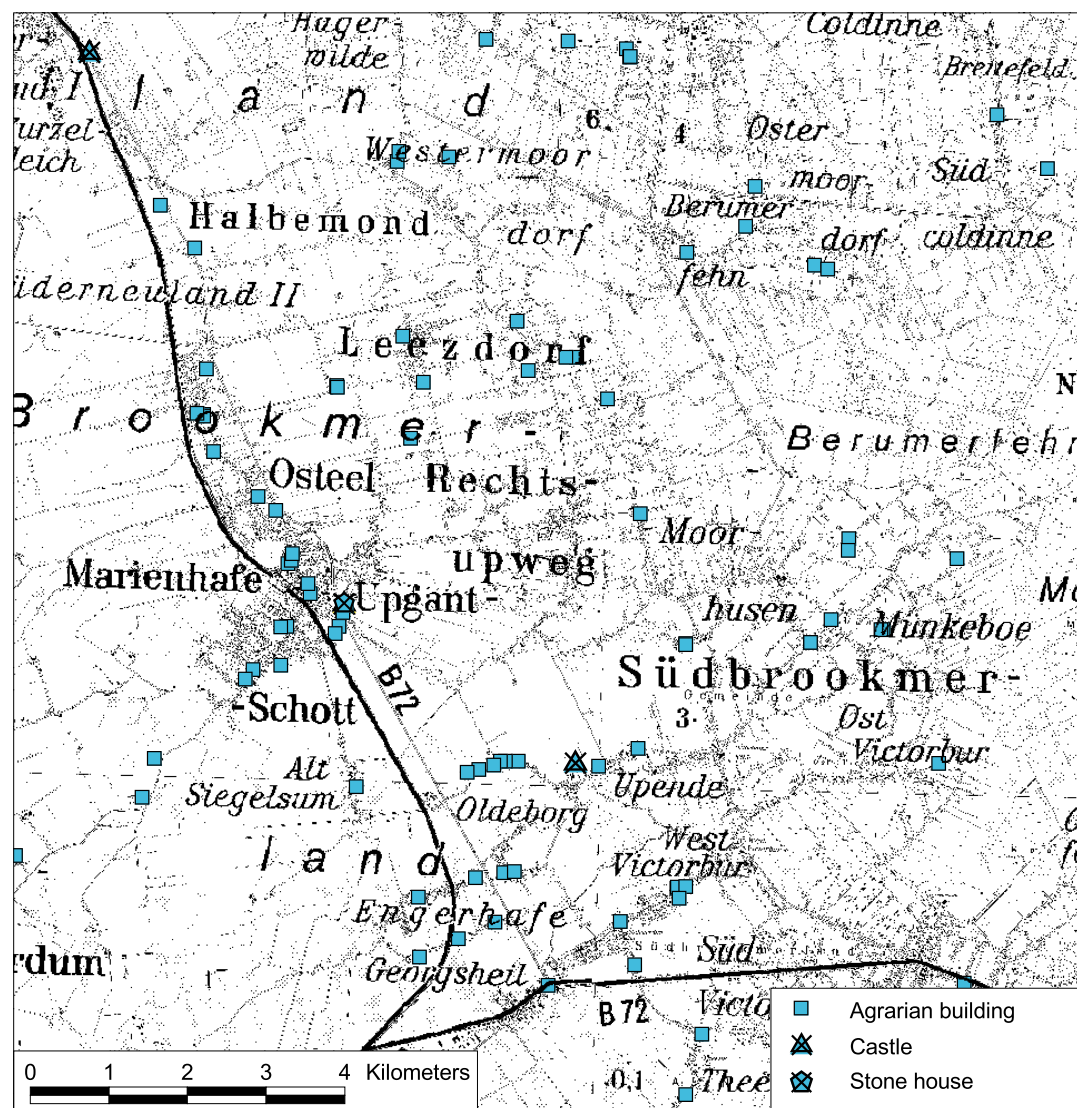


Fig. 4.66:  
The agrarian buildings,  
stone houses and castles  
around Uppgant-Schott  
Source: LGN

the unrestrained growth in residential and industrial areas. This has been accompanied by the loss of numerous farms featuring the voluminous gulf houses, which by way of the longitudinal orientation of their roof ridges along their farm allotments used to exemplify the historical form of settlement in an impressive way.

On the high ridges of the geest edge of Upgant-Schott the loss of farms significant in cultural history is particularly evident. Little remains of the impressive line of large farms, among them six manor estates, which showed many examples of older structures from the 16th and 17th centuries. In its edition of 1977, the „Dehio“ art guide still describes „Hof Upgant“ no. 64 as featuring a baroque garden layout with gate pillars, pedestals and figures, among which are four marble busts following the antique model – today, nothing remains of this garden. Entities that have been preserved are: a) the Haneburg (Upgant no. 61), a two-storey stone house with a stepped tower, probably built in 1597, with two gulf barns belonging to it, b) the farm complex of Upgant Castle, also a stone house, originally of several storeys, from the time about 1500, with a middle house from the 17th and 18th centuries and gulf barns from the same time. It is thanks to the proprietors that this valuable group of buildings, including their interior furnishings, could be expertly restored in the last few years. Despite the reservations of the heritage authorities, the Brookmerland council granted permission to develop an extensive industrial area on the original open access corridors in front of these farms. This will permanently ruin what is now an instructive view from a distance toward this mediaeval line of settlement.

In Marienhaf, newly established industrial and residential areas made the original main street, oriented as it was towards the market square, utterly unrecognizable and formed new centers. Wind generation parks like the one in Riepe are still the exception in the Brookmerland.

#### 4.4.2.8 Krummhörn and Leybucht

The Krummhörn, which today forms part of the administrative district of Aurich, is situated on the western edge of the Pleistocene sand and loam ridge of the East Frisian peninsula. Here the land slopes down to the valley of the Ems. The marsh of the Krummhörn, formed by deposition during the Holocene rise in sea level, spreads out

over it. As early as 9000 years ago, at the beginning of the Atlantic epoch, the sea extended approximately to the present-day line of islands and created a backwater in the Ems. The water penetrated inland by way of the watercourses in the Pleistocene subsoil and impaired drainage. As a result, the cover of moorland increased over that part of the geest near the sea where the sediments had been deposited. In the Krummhörn an alternation between moorland growth and sedimentation ensued, resulting in an increase in the thickness in the layers of moorland towards the interior and a deepening of the layers of sediment towards the course of the Ems. An amphibious landscape of watercourses, moorland, marshy woodland and wooded meadows developed beyond the Ems until the dry land with a top layer of peat gained the upper hand from 1600 to 800 B.C., followed by the sea from 1200 to 300 B.C. with sedimentation on the mud flats. It is not certain whether the varied landscape was partially settled in the 5th, 4th or 3rd millennium B.C. – for which there appears to be evidence in the form of separate finds from around the Ems embankment – or whether any attempts at settlement took place during the dry land phase in the later Bronze Age. The natural space was completely altered from 300 B.C. at the latest as calcareous sediments were deposited on the mud flats by the Dunkirk I Transgression, the coast line shifted south, the Ems became wider, the intertidal difference increased and the Campener and Sielmönkener Buchten were formed. A surface layer of humus (so-called „Blauer Strahl“) formed on the sediments of this transgression which was suitable for settlement at the end of the Iron Age. Since then the Krummhörn has been occupied more or less continuously, probably with only one brief interruption.

The marshy peninsula of the Krummhörn attained its clear outline only in the early modern era. In the Early Middle Ages the band of marshland in the west of East Frisia, up to 15 km wide, had a very rugged coast line caused by the inlets of the sea pushing far inland. These were – from north to south – the Leybucht, the Sielmönkener Bucht and the Campener Bucht. While the Leybucht was considerably enlarged by the storm surges of the 14th century and reached almost as far as the geest edge, by about 1300 the narrower inlets were already largely silted up so that by 1561 the coastline could be straightened out into its present form by a dyke in the west. After that, only minor

shifts in the coast line occurred in the south until the beginning of the 20th century, when a straightened coast line was created here as well.

The present-day topography of the Krummhörn is on the one hand characterized by the wet low-lying regions which are not very suitable for cultivation. These were formed where silted-over layers of moorland gradually shrank due to the overburden and due to drainage so that the lowlands lie well below sea level today (Freepsumer Meer), in some cases by more than two meters. On the other hand, the bights of Campen and Sielmönken as well as the Leybucht divide the Krummhörn into the old marshlands, covered in hedgerows and brackish water, and the calcareous, fertile young marsh.

The name Krummhörn appeared only with the formation of a coherent peninsula at the beginning of the 16th century, so that with the passage of time the older division into the Emsigerland to the south of the former Sielmönkener Bucht and the Federgau to its north would be forgotten.

On the edges of the bights into which the watercourses flowed lay the settlements on the flats from the time of the Roman empire, as well as those from the Early Middle Ages. Little is known about the development of early settlement. Thus, at the moment it can only be surmised that with the onset of the Dunkirk II Transgression at the time of the Roman empire dwelling mounds were thrown up and that these possibly lie hidden under the mediaeval layers of the present-day mounds. These large village mounds still characterize the picture of settlement in the Krummhörn today. In the south, a line of mounds had been formed on the Ems embankment. Rysum, Loquard, Woltzeten and Upleward lie on the edge of the Campener Bucht, and both the northern and southern edges of the low-lying Sielmönkener Bucht are lined with a dense fringe of mounds. As early as the 10th century the economic importance of the settlements was such that many of them were recorded in the land register of the Werden monastery or in the register of grants to the Fulda monastery.

The churches are situated in the center of the large village mounds with their concentric structures, thus occupying their highest point. They are of an impressive size, at least in comparison to the size of the parish, and they often originated from the late Roman and early Gothic era. All of these churches are of high architectural standard (e.g. Eilsum or Campen). Particularly

impressive – not least when viewed from a distance – is the cruciform church of Pilsum with its unique crossing tower. The once numerous castles, for example, which could serve as witnesses to the regional domination by families of headmen before the Cirksena were raised to the rank of imperial counts in East Frisia, beginning with Ulrich in 1464, have almost all disappeared, but the allotments on which they stood have often been preserved until today, in the form of open spaces.

In the 16th century the forms of construction began to be differentiated in a development parallel to that of social stratification. An extensive process of consolidation of property ownership into large farms now began. These farms often lie in a continuous row, preferably at the edge of the dwelling mound, with the outhouses overlooking the fields being cultivated. This layout impressively accentuates the sharp boundary between field and village. The few surviving smaller farms often lie in the intermediate ring. In time, the small houses of craftsmen and farm workers took up the positions in the middle of the village as well as between the farms. There often was and in quite a few cases (e.g. in Uttum and Rysum) there still is a windmill, which is very prominent in the long-distance visual aspect of the village. The traffic of the mounds was allowed to flow through ring roads and narrow laneways arranged radially. A system of ditches along the allotments served to collect rain water and also took care of drainage – in all, a structure that has been maintained nearly everywhere until the present day.

As a new form of settlement, three *wik* settlements, originally trading villages on long mounds right by the sea, were established in the Early Middle Ages, namely Grimersum on the southern bank of the Leybucht, Groothusen on the southern bank of the Sielmönkener Bucht and Emden on the northern bank of the Ems river. Grimersum and Groothusen display their characteristic features right up to the present time, even after the silting up of the bights – with their elongated shape, the village lane on the highest point of the mound, the way in which residential and business houses dominate the rural features, with the church at one end and a castle at the other. While the Grimersum castle has virtually disappeared, leaving only fragmentary remains, in Groothusen the Osterburg with its structure from the late 15th to the early 18th century has been preserved, along with its moat and park. The town, once of some

importance, had two more castles whose sites are now occupied by an imposing gulf house and a dwelling. In contrast, Emden has maintained its access to the sea and has been able to develop into the most important city in East Frisia.

Among the old mound villages, the administrative centers of Hinte and Pewsum developed along somewhat different lines. With a strong focus on commerce even early on, they still have intact castle complexes today. The agricultural element is almost completely absent in both places, though from about 1900, especially in Pewsum, a series of residential houses in the style of villas was established as retirement homes for wealthy farmers from the surrounding area. The building activity after the Second World War also focused on these two places, though smaller residential areas were and still are being appended to other village mounds as

well, thereby making their once clear outlines less distinct.

After the bights silted up and the line of dykes was completed, small groups of farms, and in particular large individual farms (often with the characteristic name endings of „-burg“, „-husen“, „-hof“ or „-heerd“) were set up in the marsh flats outside the old villages and functioning as subsidiary settlements. They stand alongside the domain farms, some of which have come into private hands and which are similar in appearance. These were developed out of monasteries or their outlying estates and can still be recognized as such by their names, such as Kloster (monastery) Aland, Kloster Sielmönken, Kloster Miedelsum. These are particularly numerous in the Krummhörn and form the last visible evidence of a cultural

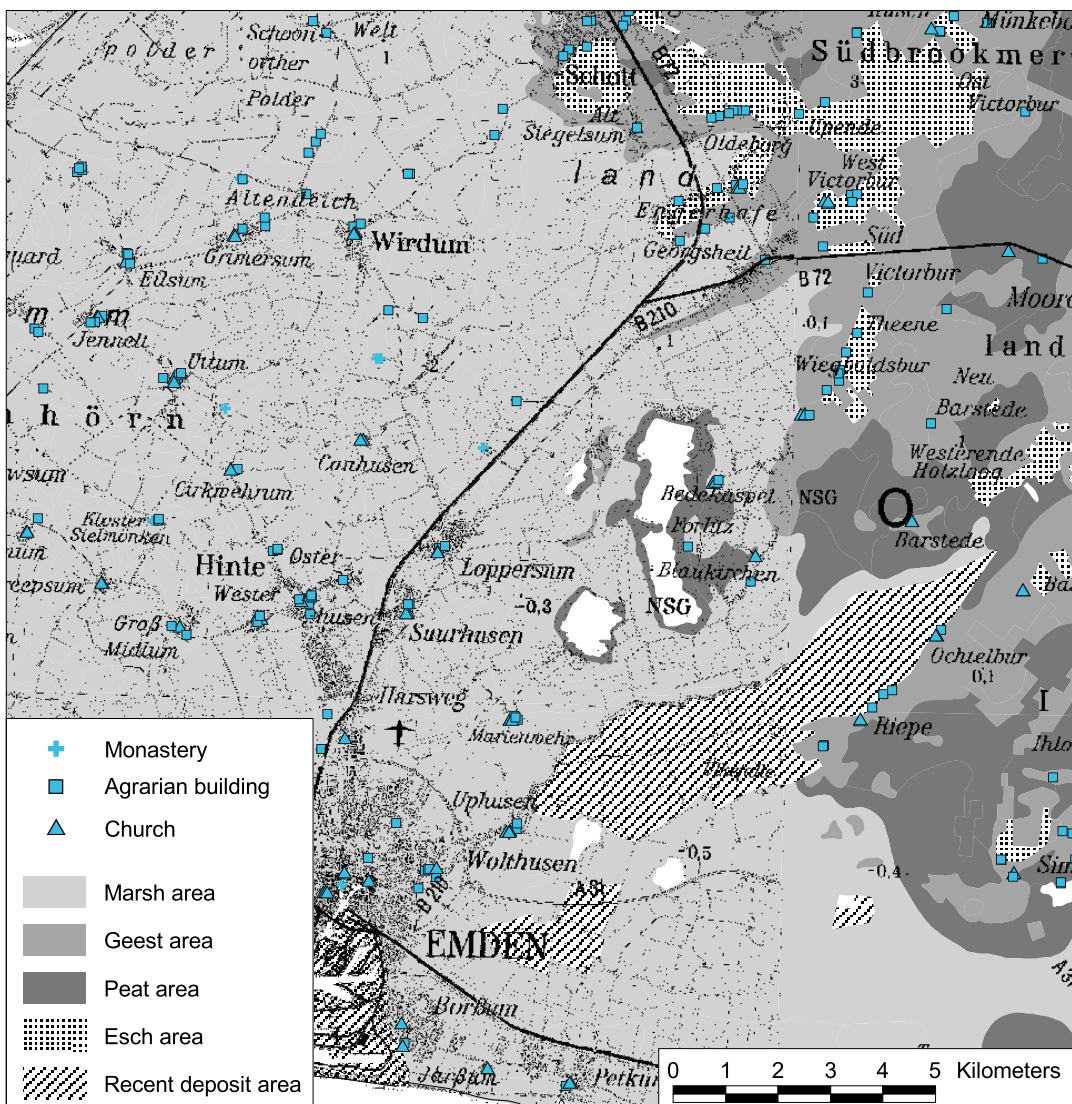


Fig. 4.67:  
The agrarian settlements  
and the monasteries  
around Hinte  
Source: LGN, NLFb

stratum that was otherwise destroyed after the Reformation.

Here, the structure of the cultural landscape is shaped not only by the old settlements but also by the drainage system. As early as the 14th century Greetsiel was established in the north-west corner of the Krummhörn where the northern part of the marsh peninsula was drained through the old and the new Greetmer Sieltief. With its castle and its private foundation church and as the first residence of the Cirksema family, Greetsiel developed into a harbor town of great regional importance. In 1891 the new sluice was constructed on the edge of the town. Even though both of the sluices no longer perform their function since new locks and a new pumping station were built in the Leybucht, the historic layout of the sluice dating back to 1798 – temporarily obscured by reinforcements of the dykes – could be restored and shown in a particularly vivid form. The funnel-shaped harbor basin, lined with imposing houses and the small-town manner of building development along a main street, have been preserved. The twin mills on the eastern exit have virtually become an emblem of the town. The agricultural sector is represented, among other things, by the count's so-called „Schatthaus“, the building where farmers delivered their tributes, and by other farms on the edge of town, whereas the castle of the Cirksema was demolished in the Prussian era.

The southern part of the Krummhörn is now drained through the Knockster Tief, which runs in a long diagonal path from the „Großen Meer“ to the Knock river in the south-west corner. It collects the water from the smaller canals which emanate from a series of large mound villages from Pewsum to Rysum and which are named after these. A remarkably rigid and regular system of waste water drains has been formed about them – they are aligned parallel and perpendicular to the canals and drain into them. In the Knock river two old sluices from 1720/64 and from 1881, which were never modified to form a harbor, have been preserved, although they lost their function after the construction of a pumping station in 1968. The two lighthouses erected in 1889-92 as beacons for the Ems are worth mentioning in this connection as technological monuments. They stand on the dyke in front of Campen and Pilsum and are the only lighthouses on the East Frisian mainland.

The region of what was once the Leybucht, lying to the north of the Krummhörn, presents with a completely different landscape and dif-

ferent settlement characteristics. At the time of its greatest extent around 1400, separate arms of the Leybucht reached as far as the town of Norden in the north, almost as far as Marienhaf in the east, and in the south to the hinterland of Wirdum. These places were starting points for the reclamation of the land, probably beginning in the 15th century and becoming more intense in the 16th century (in 1556 the Süderneuland near Norden and the Wirdumer Neuland were reclaimed). The formation of these polders continued into the 19th century, particularly in the northern section, where the Norder Sieltief had to be kept free to provide access to the Norden harbor. These polders were created in a process involving numerous stages, which resulted in an arrangement of over 20 individual small polders. The process can still be clearly discerned today in the system of ditches and fields, in the paths taken by the roads on old dykes or in the numerous remains of the dykes themselves.

The extensive dyke-building of the Schoonortherpolder in 1913, the construction of the Leybucht sluice at Neuwesteel in 1929 (which finally blocked off the Norden harbor and made all earlier sluices superfluous) and of the Leybuchtpolder in 1950 changed the picture somewhat. While numerous smaller settlements were still being established at that time, the most recent large-scale dyke-building served mainly to protect the land from high water.

In addition to the small houses built along some old dykes (e.g. on the Grimersumer and Wirdumer Altendeich in the south and on the Wurzeldeich in the north) the old polders were generally occupied by large individual farms with rectangular fields or broad strip fields from the 16th to the 19th century. The great distances between individual farmhouses means that even a row of these still gives the appearance of separate farms, as can be seen most impressively in the Schoonorthen-, Südercharlotten- or Schulenburgpolder.

It is the large farm houses in particular that dominate the picture of the settlement of the village mounds and the scattered settlements throughout. In the Krummhörn proper, very old buildings can be found in above-average concentrations. The following structures are worthy of mention: remains from the time before gulf houses were introduced (stone houses from the second half of the 16th century), the oldest gulf barns (one of them dating back to the end of the 16th century), and the first actual gulf houses from the second half of the 17th century, con-

sisting of a stone house and a barn joined together.

Rather imposing even then and later in the 18th century – even though they still featured relatively small living quarters in the tradition of stone houses – the gulf houses again grew in size (up to about 60 m in length) during the last two thirds of the 19th century, as a result of the strong growth in the agricultural economy. Their architectonic form also gained in stature, now boasting living quarters incorporating two storeys, and reaching a high point with their late classical and historical forms.

By this time the gulf houses had passed the peak of their development. Due to the concentration and amalgamation of agricultural enterprises resulting from the structural changes, the preservation of the barns – especially those that were no longer required for farming – became a problem, albeit one that is not restricted to the Krummhörn. This problem can only be solved permanently where the change in their utilization for touristic, industrial and (semi-)public purposes is also supported by planning measures.

Today, the cultural landscape of the Krummhörn is still characterized to a large extent by the contrast between compact mound villages and open areas of marshland, interspersed with only a small number of individual farms that use the marshland for agricultural purposes. The original structures from the Early Middle Ages, supplemented by elements from the Late Middle Ages and early modern times, still dominate the landscape. At their center nearly all the village mounds still display the historical settlement structures, but they are increasingly coming under threat from the large number of residential developments featuring single family houses. As is true for the settlement structures, the views of many of the mounds are being impaired, and in some cases even ruined completely. The development of the city of Emden in particular can only be described as alarming. The city is expanding towards the Ems embankment and is swallowing up not only old village mounds, but also young polders.

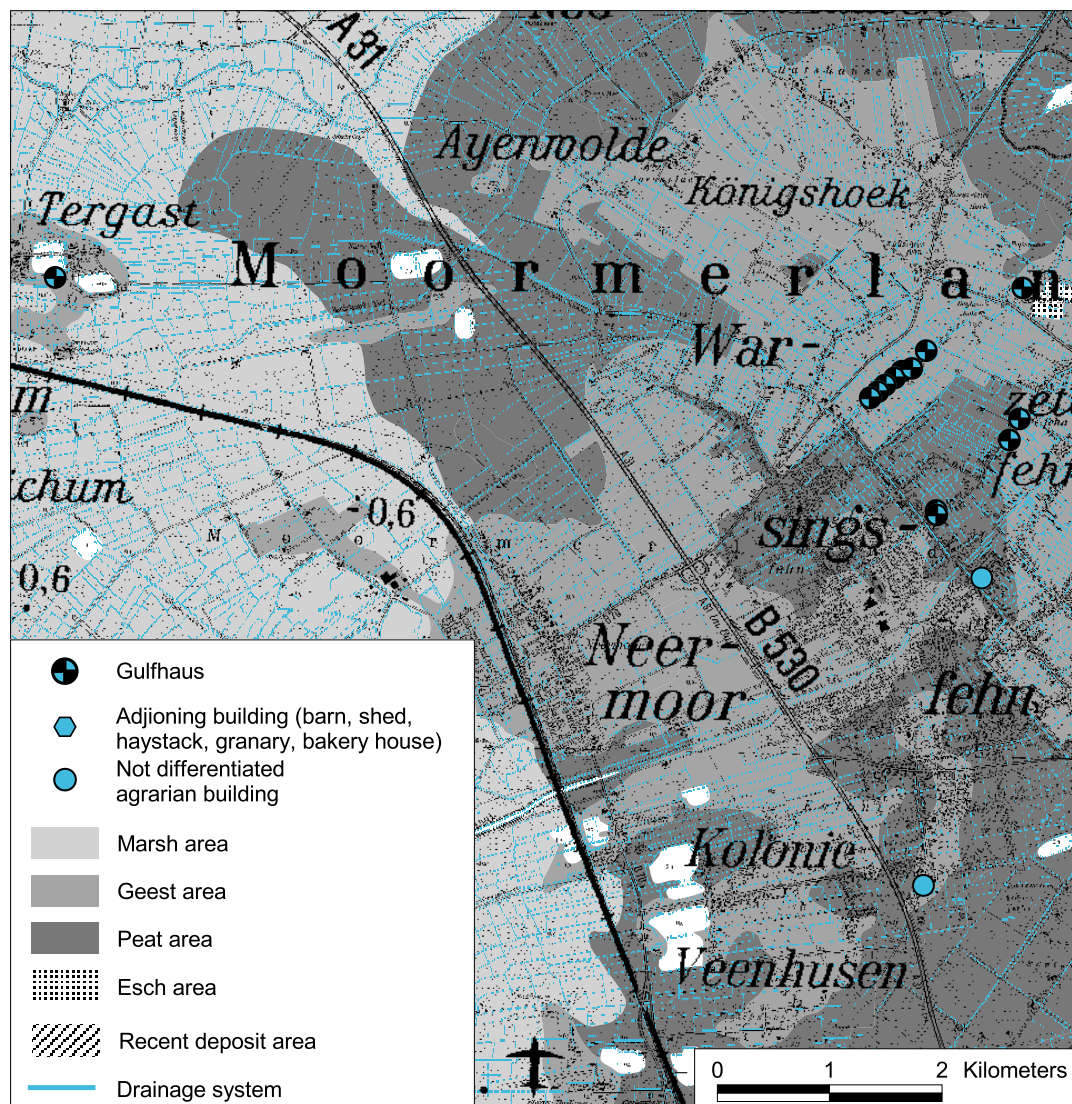
It is evident that there is no coordinating development plan that would designate areas of economic, residential and recreational activities from the point of view of an organically grown cultural landscape.

#### 4.4.2.9 Moormerland

Moormerland is the mediaeval name referring to the East Frisian region which extended past the area to the south and east of the boundaries of today's district of Leer. In the south, the area extended to the waters of the Leda and Jümme and to the west to the Ems, including Leer. The high geest, with places such as Hesel, Holtland and Logabirum, is situated in the centre of this area. Towards the Ems, which has an embankment on this side as well as on the Rheiderland side, the edge of the geest runs roughly parallel to the river on its way from Neermoor to Leer. Located just before the geest edge, there is an area silted up with clay from the Ems, which partially extends into the lower-lying moor areas. The moor areas have been almost completely stripped of peat, transforming the former extensive range of the moors into a characteristic marshland landscape with straight drainage canals, so-called Wieken, and linear settlements (e.g. Warsingsfehn, Iheringsfehn and others). The old geest villages Filsum, Ammersum and Hollen are situated in what used to be the southern part of the Moormerland area, beyond the Holtlander Ede and in the middle of extensive hedgerow areas.

The presence humans in this area began in the Mesolithic period, which was characterized by hunting and gathering. Numerous stone tools found on the surface in addition to excavations of fire and cooking pits attest to the presence of hunters. Charcoal remains from pits of this type in the Hesel forest have supplied the oldest archaeological data for East Frisia discovered so far, going back almost 9000 years. Sedentary life characterized by farming and the holding of livestock began with the Funnel Beaker culture in the middle of the Neolithic period. The remains of megalithic tombs in Leer and Brinkum, as well as numerous surface findings, seem to support this theory. Recently, a crematory grave site from the late period of the Funnel Beaker culture was excavated near Leer. This finding represents the oldest data available today on the practice of cremating the dead in northwest Germany. In the late Neolithic period, an expansion of the settled area seems to have occurred. This is supported by graves attributed to the Single Grave and Bell Beaker cultures excavated in various locations around the geest. Only with the onset of the subsequent Bronze Age does information about prehistoric settlement structures begins to emerge. In Hesel, in the vicinity of which a few

Fig. 4.68:  
The linear settlements and  
the drainage system in the  
moorland around  
Warringsfehn  
Source: LGN, NLFb



grave mounds are still preserved, various dwelling ground plans from the Bronze and Early Ice Age have been documented which supply exemplary evidence that, in the course of time, rural farms were regularly relocated within this settlement area determined by the surrounding environment and its natural resources. Settlement of the central geest seems to have been abandoned in the middle of the Pre-Roman Iron Age in favour of locations on the river marsh. Areas in Hesel which were formerly cultivated but now covered with drifting sand suggest that over-exploitation of the soil may have led to erosion which made any further use of the land impossible.

The high geest of Moormerland shows few if any signs of settlement during the time of the Roman Empire. Similar to the Dutch Westerwolde, the area only seems to have been used for

passage. In contrast, numerous areas of settlement on the right bank of the Ems as well as on the Leda and Jümme provide evidence of a new preferred area of commerce. Roman imported artefacts, such as coins, found in these areas suggest the presence of interregional trade, which probably dealt primarily with livestock. Coinciding with the end of the Roman Empire, these structures began to disintegrate. A distinct decrease in the level of settlement activity might also have been a result of these changes. Nonetheless, some findings from the time of the migration of peoples are available. In Loga, for example, a house foundation dating back to the first half of the 5th century was recently excavated. In the Early Middle Ages, according to current information primarily in the Carolingian period, levels of resettlement began to increase, including the high geest. Excavations, for exam-

ple in Hollen, Hesel, Loga or in the Nortmoorer Hammrich, have shed new light on the history of settlement in the Middle Ages, allowing for a better understanding of these processes. Inexorably connected with this historical development is the change in agricultural use of the geest to the form of cultivation known as perpetual rye cultivation. This was made possible by the onset of a combined form of plaggen farming with regular cultivation of rye from the 10th century onwards. The possibility of fertilizing the fields made regular movement of the farmsteads unnecessary. The farms became fixed in location and formed the nucleus of settlements still present today.

Plaggen manuring was imperative to life on the geest up until the introduction of South American bird manure (guano) in the 19th century. Nonetheless, in some cases the cutting of plaggen from the heath had already led to serious damage to the environment by the beginning of the modern era. The source of this damage was the newly uncovered sand, which was blown about the area leading to the formation of vast areas of dunes. In this way, drifting sand dunes, such as the ones located in today's Hesel forest, were created. These processes had not yet begun at the time the nearby Premonstratensian monastery Barthe was founded. From the early modern era on, vast areas of the moor regions located in the marshlands mentioned above were developed and used for peat mining. Previous construction of the Ems dyke and the creation of a tidal protection system with sluices allowed increased levels of drainage to be achieved for these areas. Today, only a few patches of high moorland have been preserved in this area.

The modern transformation of the Moormerland is primarily being effected by integration of the area into the interregional freeway system. Regardless of the type of landscape, industrial areas with drab steel buildings and large-scale factory sites covering numerous hectares have emerged in almost every community. At the same time, residential areas continue to expand, transforming the former structure of characteristic villages into faceless collections of single-family homes. Even the increased area of arable land continues to lose more and more of its original form due to land allocations. Only the protected hedgerow areas have been able to retain most of their character. Further changes can be seen in the wind farms which continue to be

planned and erected not only on the Ems but increasingly in the geest area as well.

#### 4.4.2.10 Rheiderland

Four different kinds of landscape lying in very close proximity to each other characterize the Rheiderland region. The Lower Ems river, which also forms the region's natural eastern and northern boundaries, divides the geest through its embankment and a narrow strip of marshland from which sandy knolls rise (the Jemgumgaste, the Holtgaste and the Bingumgaste). To the west of the river an originally boggy area of old marsh stretches to the Bunderhee geest tongue and continues at the edge of the geest southwest of Bunde. On the western side of this area stretch the new sea marshes. The western boundary of the Rheiderland area is marked either by the Dollard Bay or the German-Dutch international border.

Since the end of the Ice Age, deposits of sediment have occurred in the Ems valley, mostly caused by rises in sea level. With the melting of the glaciers the sea level rose not only gradually but also in sudden surges. This counteracted the river's natural flow, thereby causing increased silting as well as the formation of boggy areas. Through the effects of the sea, clay carried in by the flood tides was also deposited, mainly in the vicinity of the water courses. In this way a raised embankment was formed that marked the edge of the water course, behind which swamp forests, bogs and reed beds formed in the low-lying waterlogged Sietland of the river valley. During sudden rises in the sea level, the so-called transgressions, these areas were also partly or even completely flooded and covered with clay sediment. During the flood phases not only the river flatlands but also the embankments were unsuitable for habitation.

Depending on the forms of the landscape and above all the soil and the land contours, quite distinctive types of settlement and economic activity developed. The patterns of settlement on the sandy soil followed those of the East Frisian geest. The settlement of the embankments along the river Ems and the northern and western alluvial plains took a different form on account of other ecological conditions.

About 7000 years ago, at the end of the Atlanticum, the hunters and gatherers of the late Mesolithic period were able to visit the amphibian landscape of the lower Ems region, which consisted of bogs, marshes, water courses and

sand islands, and use them for their own needs, as individual archaeological finds show. Whether there were already temporary or even permanent settlements of the Funnel Beaker culture on the Ems embankments in the Neolithic is not yet known. Proven settlement dates only from the end of the Bronze Age and in the Iron Age, which have been partly investigated by archaeologists. Further settlement activities date from the time of the Roman Empire and the Early Middle Ages, the latter continuing uninterrupted into modern times.

In this way, in the 7th century B.C. a settlement that was later rebuilt twice was established at ground level in the marsh near Jemgum. Pastoral farming was established here based on the keeping of cattle, although there was also a limited amount of farming of beans and grain. A second farming settlement is that of Hatzum. As protection against the increasing flooding, the settlement area was filled in several times and the houses rebuilt on the higher ground. Shortly after the Hatzum settlement was abandoned in about 300 B.C. new settlements were established on the embankments. What became of the inhabitants from the 4th and 3rd centuries B.C. is still unclear, especially because, down to the upper layers of the Iron Age settlements, the strata were destroyed by the extensive digging up of clay for brick-making in the Rheiderland area, with the result that continuity with the layers from the Roman times cannot be established.

During the Roman period, areas along the tidal gullies near the high Ems embankments were again utilized for settlement. These kept the area dry and offered navigable passages both to the sea and inland. For a number of reasons it can be assumed that initially a loose settlement of the best land occurred through individual farms, until in the 2nd century, a concentration took place in a small number of places that, as a result of strong tidal floods, had developed into dwelling mounds. Some individual farmsteads developed into large undertakings whose economic success was based on pastoral farming, which enjoyed a period of substantial prosperity in the marsh region due to the markets for the cattle in the cities of the Roman provinces in the Rhineland. In exchange, consumer and luxury goods flowed into the coastal area. The importance of this trade is shown by archaeological finds in Bentumersiel. Here in a protected setting between two tidal gullies lay not a farming property, but a commercial site that has been inter-

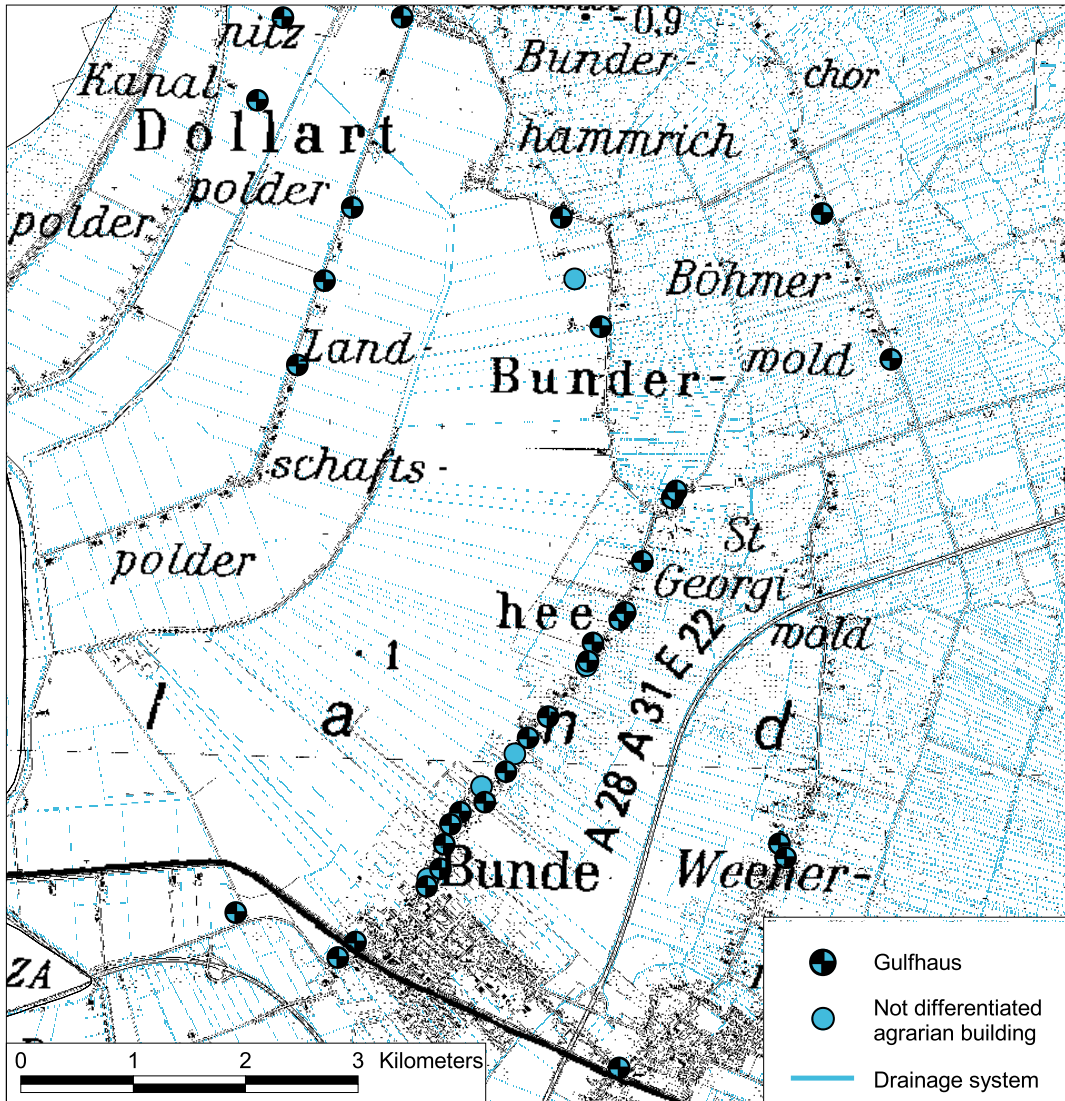
preted as a collection point for cattle and a storage area for goods. The pieces of Roman armour discovered here can be related to the expedition of Germanicus in 15-16 A.D.

The early mediaeval settlement of the Rheiderland region is confirmed both by layers of remains in the mounds and also by a burial ground near Oldendorp that dates from the 7th to the 9th century. The Middle Ages settlements also followed a course of development that led to a concentration of settlement and the emergence of village-like group settlements on the mounds.

In the Late Middle Ages the building of dykes made it superfluous to increase the heights of the mounds. Internal colonization followed, accompanied by an extension of the settlements into the Sietland and utilization of the boggy regions, including peat mining.

By the end of the 13th century the Dollart Bay had already begun to broaden, resulting in the constant loss of land. In the wake of this process, which reached its peak with the Cosmas and Damian flood of 1509, large areas of the Rheiderland region were covered with fresh clay. The partial reclamation of this land – and as a result the emergence of polders – began in the southwest (on the German side) with the Bunderneuland in 1605 and the Charlottenpolder in 1682. The process continued with the successive dyke constructions against the Dollart: the Bunder Interessentenpolder and the Norder- and Süder-Christian-Eberhards-Polder in 1707/1708, the Landschaftpolder in 1752, the Heinitzpolder in 1796 and the Kanalpolder in 1885. Most of these dykes still exist: the Heinitzpolder dyke as a secondary protective dyke (and therefore with a closable opening in the dyke where the road enters the Kanalpolder), those from 1707/1708 and 1752 as substantial fragments, and the Bunderneuland dyke as a section of the federal road no. 75.

The soils and the topography lead not only to different economic and population patterns but also to different flow control and drainage systems. The entire Rheiderland region drains into the Ems. In the case of the geest and the old marshes this is the natural situation; numerous short streams originally flowed into the river via sluice gates. Between the Dieler Siel in the south to the Pogumer Siel in the north the existence of 22 historic sites has been proven; in the case of two thirds of these, more or less substantial remains have survived or been superseded by pumping stations.



For the south-western regions and the new polders the Westerwold Aa - which is also the western border of the Rheiderland region - would be the natural flood runoff, as indeed it was for a long time, despite the unfavorable relative heights as well as problems that arose from the fact that the river belongs to the Netherlands. Finally and with great effort these problems were solved when the Kanalpolder was enclosed within dykes by digging a canal inside the polder, the Wymeerer Siel, that led north to the Pogumer Siel. In addition, the old Dollard Dyke had to be breached with a sluice so that the canal could flow through in the „wrong“ direction. In a similar way, the Ditzum-Bunder Sieltief flows to the north on the inside of the dyke from the Bunde Interessentenpolder to Ditzum on the Ems.

There are also stark differences in the landscape forms within the ditch system that leads the water into the canals. In the marsh areas near the river it forms an irregular network around small block-like land holdings. The water had to be pumped out of particularly low-lying areas of the old marshes by pumping mills, of which one, in the Wynhamster Kolk, a breach in the old Dollard Dyke, has been preserved. The colonization measures in the former boggy marshes have led to a regular system of ditches running parallel to each other at right angles to the particular canal, around very narrow strip-like land holdings. This system was also used in the polders, although in successively newer ones with increasingly broader strips of land, that have in some cases become almost square.

The most important mediaeval settlements are situated on the edge of the qeest. Among these

Weener – already mentioned in the 10th century as having a manor house and a church, seat of the Münster provostery since the 13th century, and since 1508 a market town – developed into the main center of the Rheiderland region, although it did not receive the status of a city until 1929. It profited from its favorable location, with the roads running along the edge of the geest from Groningen and Münster meeting here and, utilizing the Ems embankment, ran on to Leer or Emden. In addition, the sheltered Ems harbor, established in 1576 on the northern edge of the city, lay directly on this road. The harbor bowl survives until today, with small residential and warehouse buildings around its rim.

To the south and on both sides of the highway – the old military road – dense settlement has developed. Although this consists to a considerable degree of (former) gulf houses, their stately one- and two-storey residential sections from the 18th and early 19th centuries, fronting directly onto the street, give the impression of a small city. This is reinforced by the dwelling houses and residential/business buildings erected since the middle of the 19th century. In the southern third, this unitary picture is interrupted by an area in which public buildings are located: a church with its churchyard and church portal on the western side, a bell tower and a cemetery and south of that the former town hall on the eastern side. To the west, outside the old settlement, the poor-house with its three wings was built in 1791, highly comparable to the two almost contemporary examples in Leer.

On an older historical level, Stapelmoor has survived as an open small village. Its former significance is testified to even today by an impressive, in its own way unique, collection of three buildings. In the center is the church, a „stately vaulted building in the shape of a cross with a west tower dating from the late 13th century, one of the most remarkable sacred buildings of East Frisia“ (Dehio). The parsonage, a two-storey brick building dating from 1429, is the oldest building of its kind in East Frisia. In the residential section of the Drakemond farmstead, behind rebuilding dating from the 16th and 19th centuries, stands a tower building, probably also from the 15th century.

The town of Bunde forms a topographical and historical link between Stapelmoor and Weener. A heavily built-up town center – consisting of residential and residential/business buildings today – has developed around the historically significant church, which dates from the period

around 1200/end of the 13th century. Its original form as an agricultural linear settlement can still be seen in the shape of the plots and the pattern of building on the outskirts of the town. In the west, the surviving farmsteads follow the edge of the geest and in the north they break off at the Bunderhee geest tongue.

In Bunderhee, originally completely limited to the eastern (interior) side, the long, uniform and relatively close packed row of large farm holdings has been particularly impressively preserved. As the oldest building, the so-called Steinhaus Bunderhee, a multi-storey tower structure from the early 15th century, with a later wing from the middle of the 17th century, fits perfectly into this row. Two gulf houses stem from the middle of the 17th century (one is dated 1662, the other is possibly somewhat older). However, it was not until the enclosure by dykes of the Bunde Interessentenpolder and the accompanying increase in available land that a sudden surge occurred in the introduction of this form of house, as large numbers of examples show. Apart from these old buildings, the classical and historical residential areas primarily determine the current picture. In the 19th century, a few farmsteads and landholdings of retired farmers also came into existence on the west side.

The linear settlements on the edges of the old high moorlands from Weenermoor to Marienchor and southwest from Bunde in Boen and Wymeer are structured in a similar way, although the sequence of farmsteads and the distances from the road are less uniform. Moreover, individual historical buildings are less well preserved. A special feature, at least for the Rheiderland region, is offered by Weenermoor, which in the course of its history as a result of increasing water-logging of the original low-lying boggy areas, „migrated“ in two stages from east to west and had already reached its present location by about 1650 with the construction of the „Steinhaus Weenermoor“. From its first site a few individual farmsteads (Einhaus, Dreehusen), from its second the old cemetery, remain as relics of its history of settlement.

Although as a settlement it comes from a different historical context and is completely different in appearance, the construction of homes along the old Dollard Dyke north of Bunderhee deserves to be mentioned here due to its principle of building along a continuous row. A largely residential area made up of farm workers' homes and other small buildings were initially

situated at the base of the dyke's protected side, but, after additional dykeworks, this area expanded – for the most part in the 20th century – up to the top of what had now become a second-line dyke and road embankment while a small community with a church developed after 1896 around the Ditzumverlaat.

As in prehistoric times, the Ems embankment also offered a favourable place for settlement in the Middle Ages. Like pearls on a string, numerous villages built around churches on mounds stretch one alongside the other from Kirchborgum to the north of Weener to Pogum in the northwest. They are very small and their layout varies from circular (Critzum) through almost rectangular (Hatzum) to irregularly shaped (Nendorp). Farmworkers' houses and other small dwellings are predominantly grouped around a small, modest church. There are few farmhouses on the edges of these villages; most of these are situated between the villages as isolated homesteads or in small groups in the river marshes, where in some cases they make use of geest knolls as a favourable location. Of these, only Holtgaste has been able to develop itself into an independent village with its own church.

Jemgum and Ditzum, whose role in trade and fishing led to a more differentiated and closer pattern of building activity, differ in size and structure from these villages. That this occurred a long time ago is shown by the larger churches, stately parsonages from the 16th and 17th centuries, the purpose-built buildings (sluice operator's houses, the weighbridge in Jemgum, windmills), and isolated buildings featuring an urban style, led by the so-called Albahaus in Jemgum dating from 1562/1812. In Ditzum the harbor itself, with its banked-up canal opening into the Ems and an arched aqueduct dating from 1891, has survived in particularly attractive form even after the dyke and the sluice crown were raised.

A peculiarity of the Rheiderland region are the brickworks situated on the outer side of the dykes and connected with the Ems by tiny harbors (kleine „Muhde“-Häfen). Structural remains of these have survived outside Jemgum and Midlum.

The newest form of settlement, even if they had already begun in the Bunderneuland by 1605, are the polder settlements. Usually, a traffic axis running through the centre of the newly enclosed land parallel to the dyke connects the farmsteads, which are organized into a system of linear plots at right angles to the road – in Bunderneuland these still have varying distances

from each other and to the road, in the Landschaftspolder and the Kanalpolder the system is almost perfectly regular. Where, as in the other polders and especially impressive in the Heinitzpolder, the distances have become larger and the plots more block-like, the picture is more that of individual farmsteads.

In any case, the gulf houses on the farms, whose construction goes back in some cases to the particular establishment phase, although most were rebuilt in the 19th century, are of impressive size and imposing form. Here (as also in Bunderhee or in the river marshes) remains of park-like gardens, that make calling their owners „polder princes“ completely understandable, are also to be found.

A substantial loss of archaeological objects in the Rheiderland region has been caused by the extensive digging up of Ems clay for the manufacture of bricks. As a result, countless stretches of land behind the Ems Dyke have had their surface lowered by approximately one meter over whole areas. Above all in the 19th and 20th centuries, the brick industry was an important economic factor in the region. Deep ploughing in the bog and isolated areas of sand has had a similar effect.

On the whole, however, the outsider status of the Rheiderland region in the state of Hannover, the loosening of the formerly close ties with the Netherlands after 1871, and the economic stagnation in the 20th century have led to a relatively strong preservation of the historical structures of landscape, water and land transport networks, and even settlements. However, an incisive measure in the true sense of the word is the building of freeways. The notorious single family housing developments during the period after the Second World War have in most of the cases been limited to the principal towns of Weener and Bunde and a diffuse settlement of the geest ridge lying between them. On the embankment they have also attached themselves only to a modest degree to the larger or more conveniently located towns of Bingum, Jemgum and Ditzum. In the meantime, however, wind farms are disfiguring the landscape.

Above all in the case of the smaller houses of the mound villages or along the old Dollard Dyke, in contrast to the landscape, buildings have changed markedly – a development that many gulf houses, even when they no longer satisfy the strict criteria of the heritage listing, have so far been able to avoid. As a result, impressive landscape and habitation patterns have been

preserved, especially in the large-scale farming areas of Bunderhee and in the polders. However, in recent times structural changes in agriculture have begun to lead to an increasing number of gulf barns standing empty, without new uses for commercial purposes or tourism being found to the same extent as in other parts of East Frisia. This brought about a situation where achieving acceptable cultural/ecological development in the future will depend less on isolated measures and more on planning provisions.

#### 4.4.2.11 Overledingen

The area along the right bank of the Ems, which lies south of the Leda and Jümme rivers, is known as Overledingerland. As is the case in the Moormerland and the Rheiderland, the marsh villages here are situated on the Ems embankment wall. To the east lies a geest area, covered with moors at the edges, where, amongst others, the old villages of Ihrhove, Backemoor, Collinghorst, Holte and Rhaude are located. On its western boundary an ancient overland thoroughfare, the „Lüde weg“, ran along the Ems. To the north the geest drops off to the course of the Leda and Jümme. A mighty peat bog grew in the ancient riverbed, which has been covered by flood sediments at the banks of the river. Despite some straightening of the river courses and changes due to land reallocation the „twin-river“

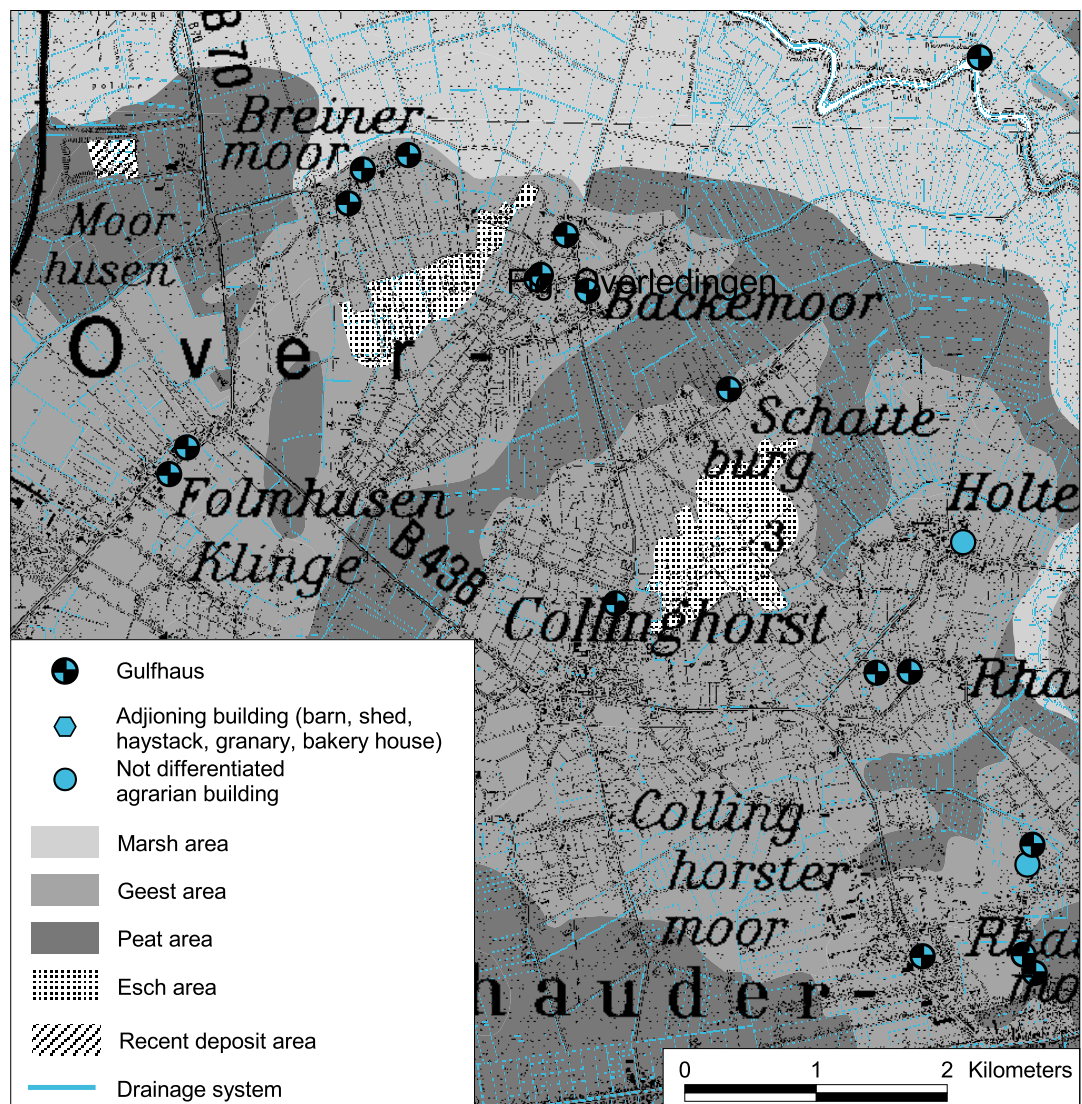


Fig. 4.70:  
The agrarian settlements,  
the drainage system and  
the areas of hedgerows  
in the region around  
Collinghorst  
Source: LGN

landscape between the rivers, the Jümmiger Hammrich, a low-lying marsh area, can still be experienced in its original scenic character. To the south-east of Overledingerland the Langholter Tief, also known as „Rote Riede“, runs from south to north, today largely through a high moor area, which has been almost completely stripped of peat. Besides the Ems, this watercourse was also an important route for trade and transport, offering a large number of favourable places for settlement on its meandering banks.

Prehistoric and early historical settlement of the geest in the Overledingerland is basically comparable to the Moormerland settlement. In Collinghorst, Backemoor and Schatteburg some Neolithic burial sites from the Single Grave and Bell Beaker cultures have been excavated. Bronze Age graves, partially surrounded by circular trenches, bear witness to an unbroken prehistoric period of settlement at these locations. Late Bronze Age and Early Iron Age urn burial sites surrounded by keyhole-shaped trenches were first found in East Frisia at Holte. In contrast to that, uncertainty still reigns over the remaining course of settlement in the pre-Roman Iron Age. Sites of finds – which are still few and far between and date from the ensuing Roman Imperial period – lie close to the rivers. Only very recently, a rectangular longhouse with two wells encircled by fencing on the geest in Backemoor was documented and dated as coming from the 2nd to the 4th centuries. Today, primarily surface sites containing shards attest to settlement during the Middle Ages. Among these types of settlement are several expanded settlements from the Late Middle Ages situated on the sandy knolls rising from the moor. Examples are Bitzbarg in the Holter Hammrich, a low-lying marsh area, and dwelling sites in the Jümmiger Hammrich, which were grouped around the manmade hill with a church. Settlement here ended in the Late Middle Ages after severe floods – identifiable by alluvial deposits – inundated the land and made it unusable. However, the old towns on the geest still have their roots in the Early Middle Ages at the latest, so that this development can also be compared to that of the Moormerland.

The character of the Overledigerland – which likewise can be said of the Moormerland – is essentially determined by the river marsh at the Lower Ems as well as by geest and moor. The pattern of fields and settlements typical to this landscape with their distinctive network of roads

and drainage systems have remained features of the area to this day. The widespread areas of hedgerows on the geest, the canals and linear settlements in the fens are living witnesses to the efforts of human beings to colonize the land. Even here, however, the landscape is endangered by uncontrolled settlement, and the old town structures are threatened by featureless commercial and residential development.

#### 4.4.2.12 East Frisian islands as exemplified by Spiekeroog and Norderney

Scarcely any other inhabited stretch of land has changed its shape and size so frequently as the drift sand and dune islands opposite the East Frisian peninsula.

According to documents from the period towards the end of the 14th century, the East Frisian islands have been permanently settled since the beginning of the modern era. At the mercy of the rigours of nature, the modest living conditions could only be secured by going to sea or engaging in fishing. On various occasions island villages had to be abandoned due to a loss of land in the west and north (Spiekeroog around 1700, Langeoog 1701, Juist 1717, Wangerooge 1854/55).

Because of the constant alterations to the pattern of islands, historical landscapes can only be found to a limited extent and only from recent times. Furthermore, these differ significantly from the well-known types of landscape on the mainland, and are thus in need of special attention.

The oldest surviving structure on the group of islands is the „Old Light Tower“ on the island Borkum which was built in 1576 for the city of Emden as a navigational aid to increase the safety of shipping on the Ems. A similar navigational aid was built by the people of Oldenburg in 1597 on the island of Wangerooge, which was supposed to mark the entrance into the mouth of the Weser for shipping. This so-called „West Tower“ was blown up for military reasons in 1914. There are only isolated examples of historical islanders' houses and old village churches to be found at the present time. In addition, as a rule they are no longer set within their authentic surroundings. The modern picture of the islands is to a great degree determined by the spa and bathing facilities that developed in the 19th century. In the course of a single century the historical picture of the islands has been transformed into localities with hotels, boarding

houses, businesses and restaurants, with numerous consumer and transport-related businesses.

Spiekeroog (Wittmund district), which is also known as the „green island“, with a number of older buildings and a luxuriant stand of trees in the interior of the village, offers a closed island world. In its proportions the place gives an impression of what an island village looked like in the 19th century.

The historical center of the village was first recorded in detail on a map by the engineer Horst, who made it at the request of the last East Frisian prince in 1738. Individual island houses can be recognized on this map: For example, the structural style of the building, Süderloog no. 4, a house of double-joisted frame construction with two vertical walls under the sloping roof

and striking plank gables, survives until today. The two streets Norderloog and Süderloog can already be identified. Moreover, it can be seen that the little village was surrounded by an earth wall, which was still clearly visible in photos of the northern section taken at the beginning of the 19th century and the remains of which still exist even today. This wall, which was approximately one meter high, did not only serve as a high water protection against tidal floods but also protected the small vegetable gardens against blowing sand. Apart from the south side facing the mainland in the salt marsh area, the place was surrounded by dunes, with the largest group of dunes being found in the north-west. According to Horst's map, the island was treeless.

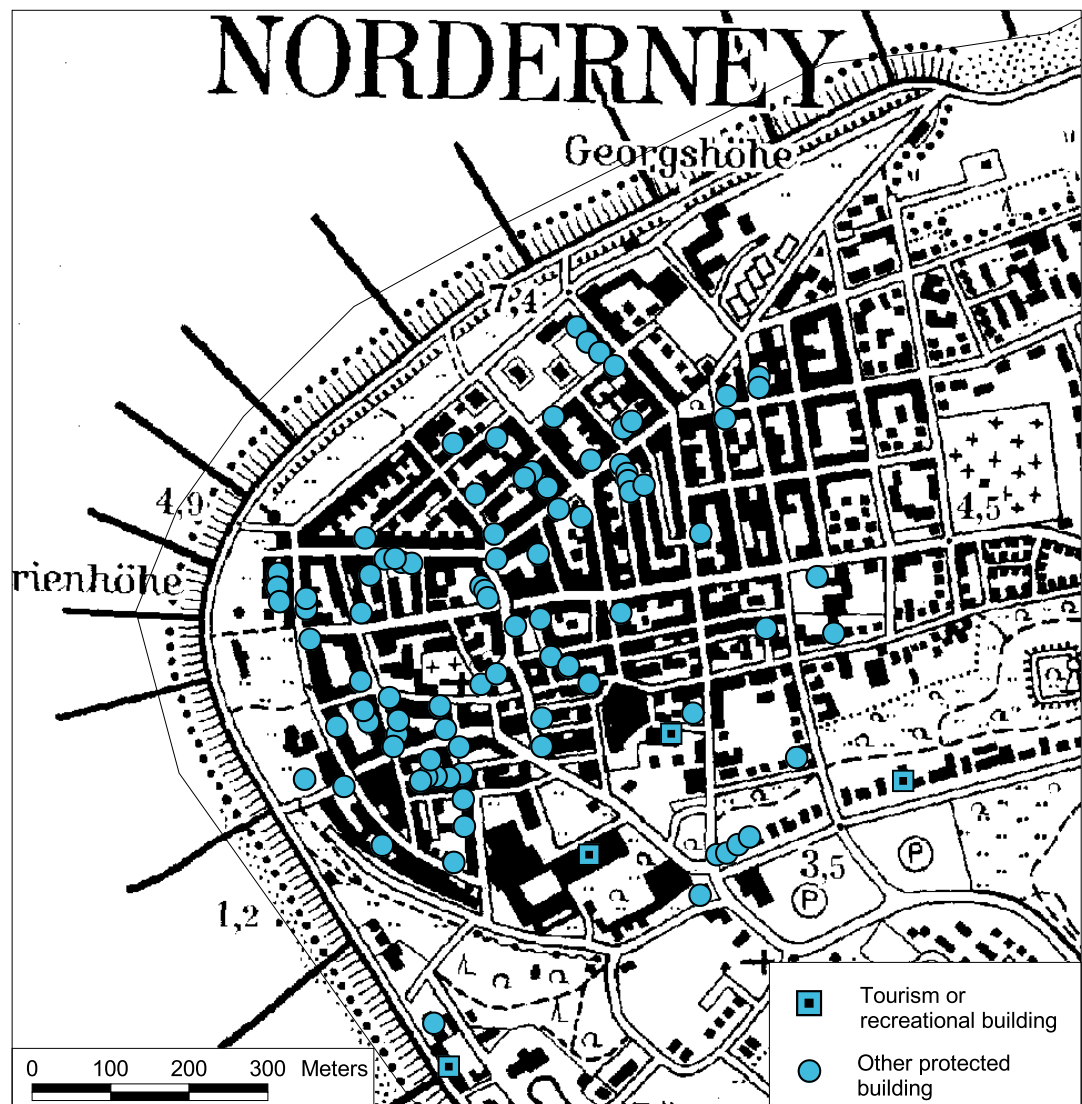


Fig. 4.71:  
The historical city of  
Norderney  
Source: LGN

The strongly vegetated island, as it exists today, is the result of cultivation activities that stretched over generations. It was already forbidden in the 17th century to mow beach grass that covered the dunes with a thin layer of vegetation and thus restricted sand erosion. The first actual sowing of beach grass occurred in the years 1706 to 1711. In the 19th century all islanders were required to plant seedlings. They also protected the dunes with fences against cattle grazing on the salt marshes and in 1860 began the systematic planting of small forests of pines, birches, alders and oaks.

As early as 1900, larger trees had established themselves in the town centre, and they have a lasting positive influence on its appearance today. On the whole, the securing and planting of the dunes has led to a considerable increase in the variety of fauna and flora, a picture which would scarcely have been imaginable on Spiekeroog a hundred years ago.

The oldest building on Spiekeroog is the old island church, a half-timbered building dating from 1696. Parts of the fittings such as altar pictures and sections of the pulpit are said to come from a Spanish ship that was stranded in 1588. In the cemetery, gravestones from the 18th century with ships carved on them are to be found.

The nucleus of three houses (Süderloog nos. 4, 6 and 21, and a fireplace with the date 1763) is said to date from the 18th century. As a group these are referred to as „floating roof houses“. In terms of the history of construction methods they involve what is actually a common form of half-timbered construction, in which the beam heads project over the half timbering and are decorated with curved forms in the Baroque style. Similar constructions are also found on the mainland opposite the island (Neuharlingersiel, Am Hafen West nos. 11/13 and 15).

Around 1860 a period of brisk building activity set in. A good dozen buildings have survived from this period. In contrast to the buildings from the 18th century they have no wooden framework and no plank gable, but are of solid brick construction. Around the turn of the century pensioners' houses were built with their characteristic verandas on the street side, that imbue the local scene with unique flair.

Norderney (Aurich district) experienced its first boom in 1797 when the East Frisian landed gentry followed the advice of the district medical officer Dr. von Halem and decided to build the first German sea baths on the North Sea coast. The seaside spa thus sprang from modest

beginnings. At the time of the French occupation between 1806 and 1815 the baths fell out of favour, but a fresh start was possible through the vigorous support of the new government of the Kingdom of Hannover.

In this way, in 1819 out of the fishing village grew a Hannoverian royal baths. In several phases up to 1861 the original wooden Assembly Rooms (Konversationshaus) developed into the centrepiece of Norderney's spa resort facilities. The extensive plastered building has an arcade in the centre with eight Doric columns. The building is crowned with an octagonal turret.

The second significant building is the grand lodging house, built in the years 1837/38 for the royal family of Hannover, probably with the participation of Laves. However, its architectural qualities have unfortunately been marred by numerous alterations and additions.

Additional buildings of the spa resort include the bazaar building, standing to the northwest and built in 1858 (Blohm/Laves), as well as a spa building standing alongside the lodging house and connected to it, which was initially built in 1854 and then extended and altered from 1884 to 1889. Particularly striking is the filigreed cast iron veranda railing.

Together with the Hannoverian royal family that often visited Norderney in the summer, other famous spa guests also came to Norderney, people such as Wilhelm von Humboldt, Heinrich Heine, Theodor Fontane and the princes von Bismarck and von Bülow.

Under the Prussian regime from 1866 the spa resort grew to become the leading seaside resort of the German Empire. Numerous lodging houses in the urban style of the time were built and one after the other new church buildings were constructed (in 1873 the synagogue of Oppler, in 1879 a new protestant church and in 1884 the catholic church), as well as the telephone exchange in 1887 and the theatre in 1890. Due to an initiative of the doctor, Beneke, the biggest German children's hospital was founded in 1884, the „Seehospitz Kaiserin Friedrich“. From the year 1882, the three-storey façades of large hotels and lodging houses that still set the tone of the island emerged along Kaiserstraße and Viktoria-straße – on the seaward side of the island.

Between the world wars Norderney once again experienced a brief blossoming. The new cultural trends of the twenties made themselves felt. The catholic church „Stella Maris“, a simple cubical building designed by B. Böhm and dating

from the years 1930/31 documents this architectural period.

Building activity in the second half of the 20th century has significantly altered and destroyed the uniformly consistent picture of the resort's architecture as it once existed in the 19th century. Tearing down buildings such as the „Bremer Häuser“ on Kaiserstraße and the „Kaiserhof“, alterations and extensions (spa's Assembly Rooms, spa hotel, „Seehospitz“), but in particular new buildings (multi-storey buildings „North Sea View“, hotel Friese, new hotel buildings on Kaiserstraße) have until now resulted in a disjointed cityscape. Only in the last two decades have there been efforts to preserve the building heritage to a greater degree. In the heritage building register of the city of Norderney, which was published in 1987, 122 individual buildings and groups of buildings are listed.

Unfortunately, even some houses from this group of the most valuable buildings have been replaced by new structures. The loss that is inflicted on the stock of old buildings as a result of changes of use and extensive modernization is difficult to estimate. However, this creeping process of change may well have destroyed more historical substance than the radical tearing down of old houses.

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