



REQUEST FORMAT FOR A PRELIMINARY ASSESSMENT OF A POTENTIAL NOMINATION TO THE WORLD HERITAGE LIST

(in compliance with Paragraph 122 of the *Operational Guidelines*)

Seaweed Houses and Sea-salt Huts, Laesoe Island (Denmark)



The Seaweed House resides within me

The Seaweed House is alive

it bears names

exists before

and after me

my homeland and

the perils of the sea

it resides within me

Lotus Sidse Marie Gustafsson

1. IDENTIFICATION OF THE POTENTIAL NOMINATED PROPERTY

1.a Country (and State Party if different)

Denmark

1.b State, Province or Region

North Jutland

1.c Name of potential nominated property

Seaweed Houses and Sea-salt Huts, Laesoe Island (Denmark)

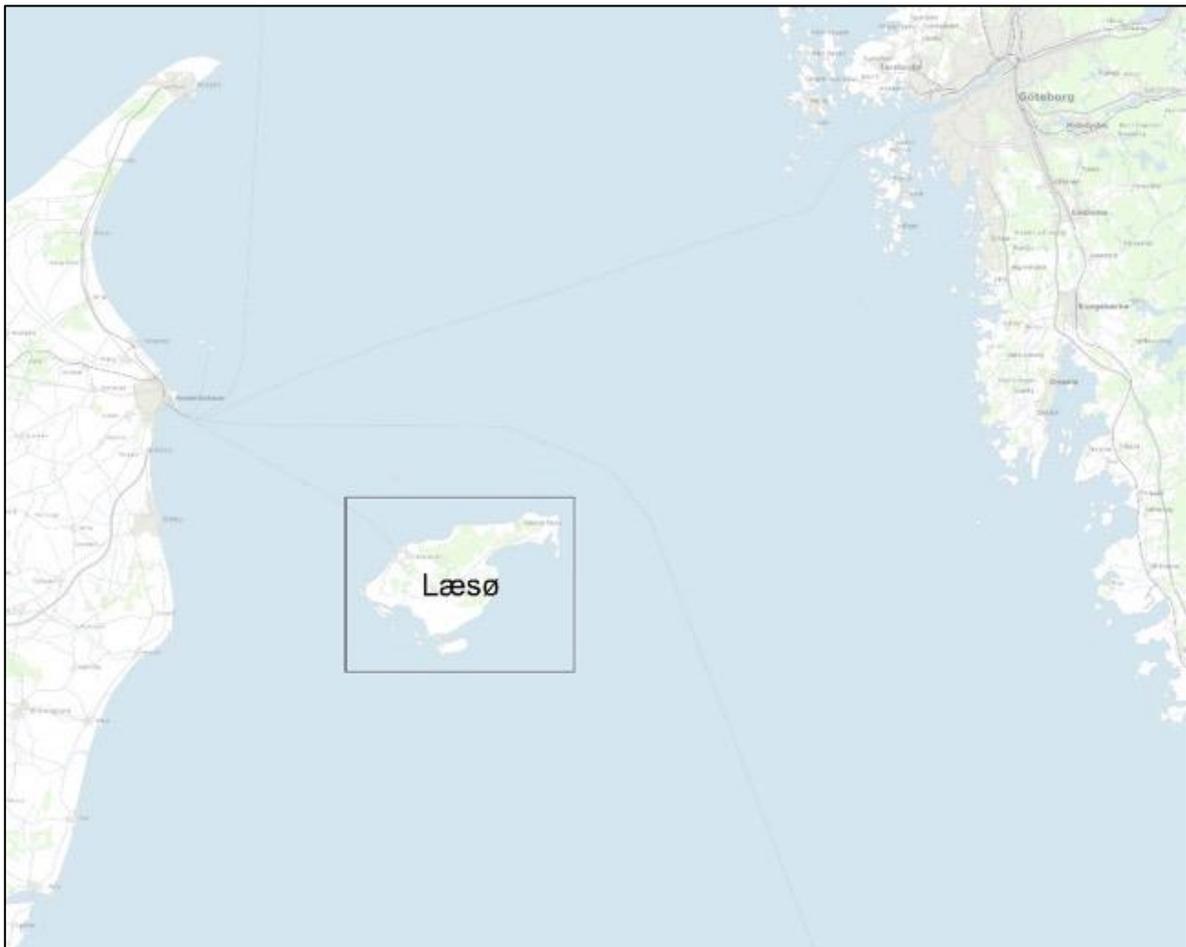


Hedvigs Hus, painted by Henrik Schultze.

1.d Latitude and Longitude coordinates

Name of Component Part	Address	Coordinates
Cultural landscapes		
1. Rønnerne		Approx. defined by the points: N 57° 14' 18" E 10° 59' 56" N 57° 12' 51" E 10° 59' 56" N 57° 13' 08" E 11° 01' 55" N 57° 10' 06" E 11° 06' 52" N 57° 14' 50" E 11° 12' 17" N 57° 16' 31" E 11° 04' 45" N 57° 15' 15" E 11° 03' 31"
2. Poverty landscape		Approx. defined by the points: N 57° 18' 22" E 10° 58' 28", N 57° 17' 56" E 10° 58' 03", N 57° 18' 57" E 11° 01' 24", N 57° 18' 13" E 11° 01' 28"
Seaweed houses		
3. Museumsgården	Museumsvej 3	N 57° 15' 47" E 11° 01' 57"
4. Hedvigs Hus	Linievejen 36	N 57° 18' 27" E 11° 07' 32"
5. Kalines Hus	Tangborgvej 4	N 57° 18' 11" E 11° 07' 59"
6. Trolles Hus	Danzigmannvej 2	N 57° 18' 31" E 11° 08' 59"
7. Uldgården	Danzigmannvej 6	N 57° 18' 34" E 11° 09' 11"
8. Andrines Hus	Alleen 1	N 57° 18' 27" E 11° 09' 00"
9. Annas Hus	Alleen 3	N 57° 18' 19" E 11° 09' 08"
10.	Alleen 5	N 57° 18' 16" E 11° 09' 19"
11. Trines Hus	Mosevej 16	N 57° 18' 59" E 11° 09' 23"
12. Sandvad	Stoklundvejen 25	N 57° 16' 10" E 11° 03' 56"
13. Lille Bovetsgård	Lille Strandgårdsvej 1	N 57° 16' 29" E 11° 04' 05"
14.	Nattergalevej 15	N 57° 17' 23" E 10° 55' 36"

1.e Map showing the features/attributes of the potential nominated property



Læsø is an island situated in northern Kattegat between Denmark and Sweden.

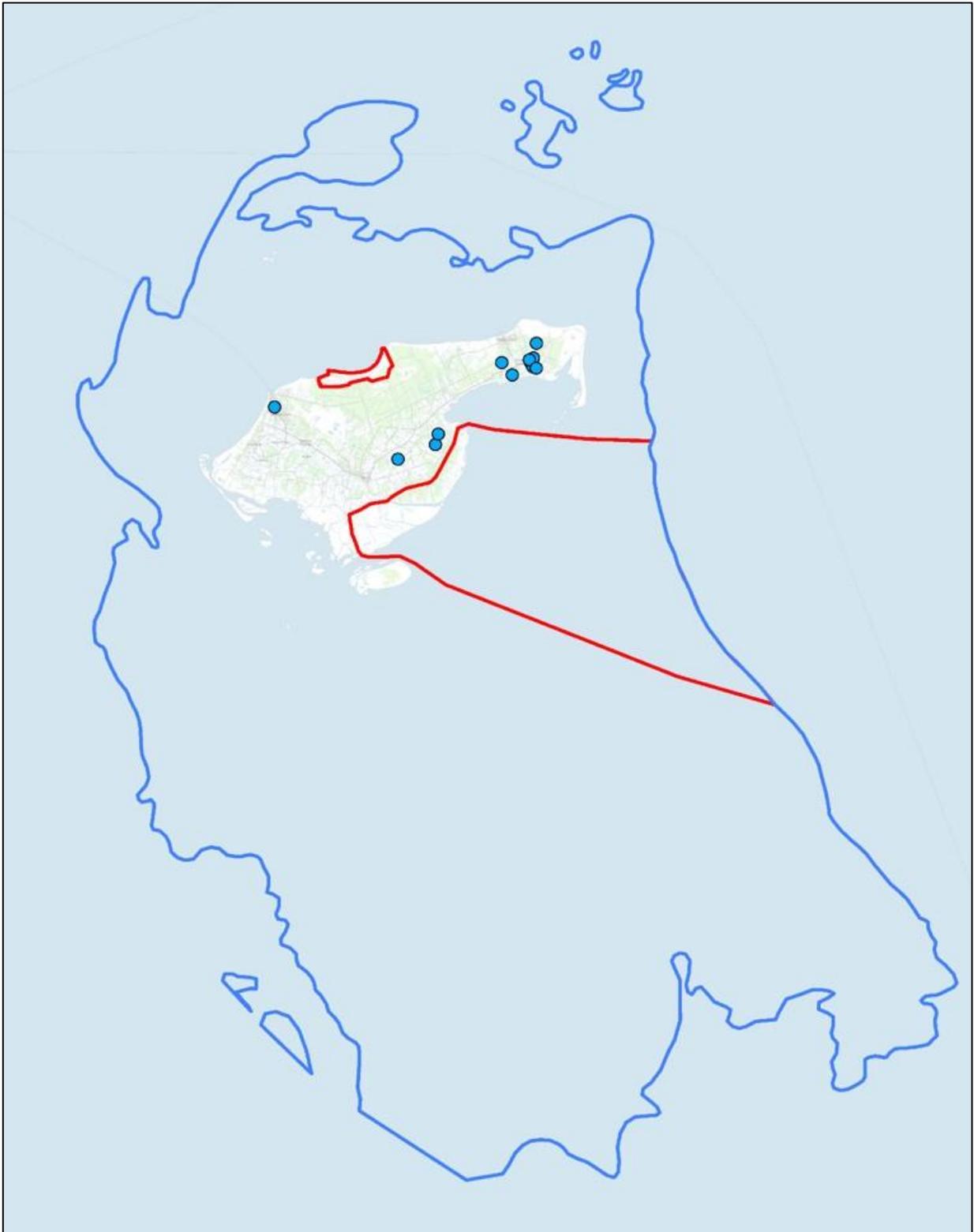


Chart of the Læsø surroundings showing the shallow waters, marked by the -10 meter line, to the south and the reefs to the north, northwest and west. Potential nominated property: two cultural landscapes: Rønnerne to the south where we find around 1700 ruderas from the salt production in the Middle Ages including the deeper sea where the eelgraas is growing, and the remaining poverty landscape to the north – a result of unsustainable use of firewood in the salt production, and twelve houses with seaweed roofs.

1.f Name and date of submission of the potential nominated property on the Tentative List of the relevant State(s) Party(ies) as registered by the Secretariat

Name: Seaweed Houses and Sea-salt Huts, Laesoe Island (Denmark)

Date: xx

1.g Has the potential nominated property received funds from the International Assistance mechanism?

No

1.h Has the potential nominated property received advice through Upstream Process mechanism?

No

1.i International designations

- Convention concerning the Protection of the World Cultural and Natural Heritage (1972)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar) (1971)
- The Habitats Directive (Council Directive 92/43/EEC), 1992
- The Birds Directive (Directive 79/409/EEC), 1979.

2. DESCRIPTION OF THE POTENTIAL NOMINATED PROPERTY

2.a Summary description and history of the potential nominated property

At 118 km², remote and surrounded by treacherous stone reefs and shallow water, Læsø is the largest island in the Kattegat, located midway between Jutland and Sweden. Today, around 1,800 permanent residents live on the island, but in the summer the number of people present at the same time rises to more than 10,000 in the island's approximately 1200 holiday homes and 7 hotels. The main industries on the island are tourism, fishing, crafts, and agriculture. Læsø is Denmark's smallest independent municipality.

POTENTIAL NOMINATED PROPERTY

The property is a proposed serial nomination demonstrating exceptional ingenuity and creativity of a small and relatively isolated island community, from the early Middle Ages to the mid-twentieth century. The unique and outstanding cultural landscape is based on the exploitation of the marine resources of salt and seaweed (\approx eelgrass, *Zostera marina*), strongly connected to geological formations and land-sea territorial changes triggered by the end of the last ice age.

The property is made up of three parts:

1. **Rønnerne** (Roennerne): A large coastal landscape of medieval sea-salt huts, and an area of sandflats and sea associated with the source of eelgrass used in roofing.



Rudera of a sea-salt hut – one of about 1,700 in component part 1.



The poverty landscape of component part 2 along the northern coast of Læsø.

2. **The poverty landscape:** A landscape comprised of heather and dunes, formed from the over-exploitation of forest and peat for fuelling salt pan production and consequent ecological collapse and sand drift formation.
3. **Seaweed houses:** Twelve farmhouses, illustrating the islanders' ingenuity, creativity, and will to survive the ecological catastrophe – using seaweed and timber salvaged from shipwrecks in house construction.



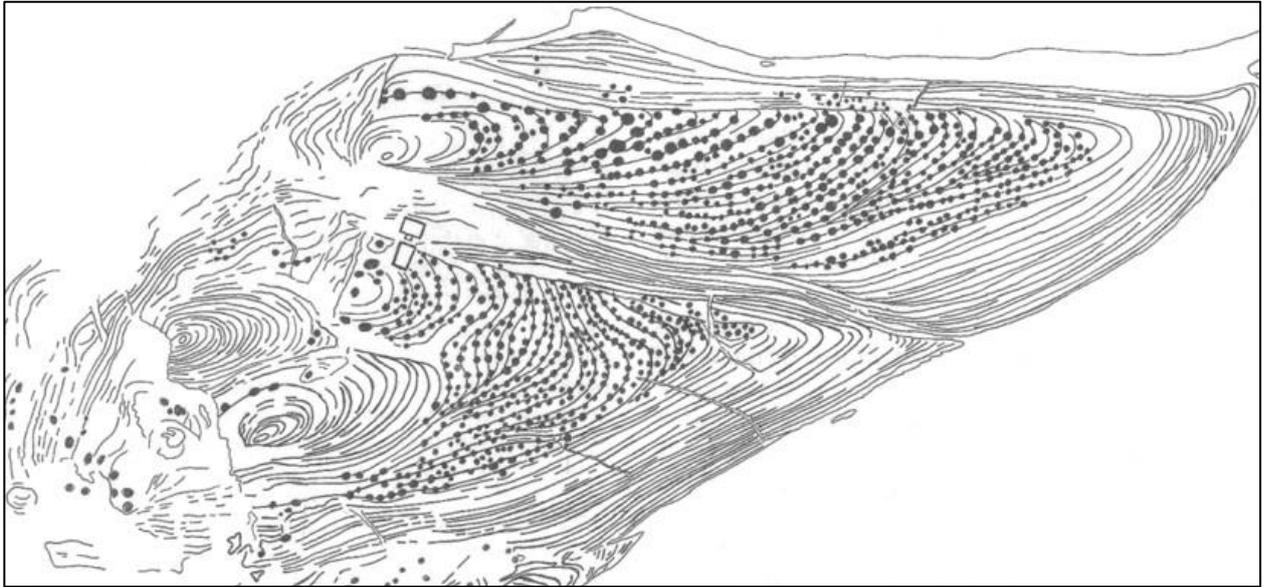
Seaweed house, Mosevej 16 – called Trine's House.

The connection between historical periods and the proposed nominated property is shown in this scheme:

PERIOD	NOMINATED PROPERTY	HISTORICAL EVENTS
→ 1100	– Rønnerne	– Geological formation of Læsø salt deposits
1100 – 1537	– Rønnerne	– Settlement – Salt production
1537 – 1652	– Poverty landscape	– Reformation, lawlessness and predation concerning the forest
1500 – 1900	– Poverty landscape	– Wasteland and drifting sand – Adaptation to the agricultural possibilities
1600 – 1950	– Poverty landscape – Seaweed houses	– Climate deterioration, deforestation, desertification, and ecological collapse – Adaptation through 'concentrated agriculture' – Use of seaweed and timber from shipwrecks in house construction

Salt production and the construction of seaweed-roofed houses reflect a sequence of geological, climatic, political, economic, and innovative events which, in both large and small ways, have set the framework for the islanders' lives and challenging conditions, for countless generations. This can be directly related to salt production, and innovative architectural style. The history of the island after settlement can be divided into general, partially overlapping, periods as shown in the table above.

Component Part 1. Rønnerne: Cultural landscape of large-scale medieval sea-salt production



Location of ancient shorelines (black lines) and ruins of salt-production huts (red dots) on Langerøn and Kringelrøn as interpreted from aerial photographs, and studies in the field. The map shows how the production huts are situated on ancient shorelines of progressively younger age towards the east and south-east. Notice the relatively sharp borderline between the production areas and the area of undisturbed, younger shorelines. This boundary — or datum line — is considered to include the 1652-shoreline, the year when salt production was abandoned. The two rectangles show the position of Dr Bister's unsuccessful enterprise and salinas from around 1700. (Jens Morten Hansen 2021)

Shallow and patchy concentrations of saline groundwater (2-17%) occurred in superficial postglacial marine sands and gravels resting on impermeable clay beneath coastal sandflats, salt marshes, and meadows in the south of Laesoe. Archaeological sites of around 1,700 sea-salt production huts are recorded, among the densest concentrations known and located at the most northerly latitude of significant medieval sea-salt production. Such archaeological sites typically comprise stone furnaces, embankments, and mounds distributed in distinctive landscape patterns that represent successive exploitation near an expanding coastline. This corresponds to successive raised and stranded paleo-shorelines that indicate the extent and direction of coastal change caused by centuries of natural marine regression related to post-glacial rebound – a phenomenon in this part of Scandinavia that is contra to climate change and sea level rise elsewhere. So many salt cotes, and in a unique arrangement, is a rare manifestation of open-pan salt production once common in medieval Europe where, and when, salt was essential for preserving food, notably fish (especially herring from the Baltic and North seas), and in other aspects of life and commerce.

Adjoining the sea-salt production landscape are huge sandflats and shallow-water seagrass habitats in the island's southeast. Women collected the 'seaweed' along the shores after winter storms. It was also women who developed the roofing and thatching technique and, in groups of forty to fifty, who



From the salt hut replica.

constructed the roofs, which can last three hundred years or more. (The men were taking hire on international sailing ships and could be away for years at a time.)

The cultural landscape and eelgrass habitat and sandflats are well inside a larger Natura2000 protected area.

Component Part 2. Poverty landscape: Deforested wasteland of windblown dunes and heathers

The heathers and inland dunes in the north are the last remains of the wasteland created by unsustainable deforestation and turf cutting due for salt production and concentration agriculture.

From around 1550 to 1900 most of the island looked like this.

Thus, the component binds the story of salt production and seaweed houses together in a compelling narrative of environmental and ecological trauma which governed the lives of

the island community.

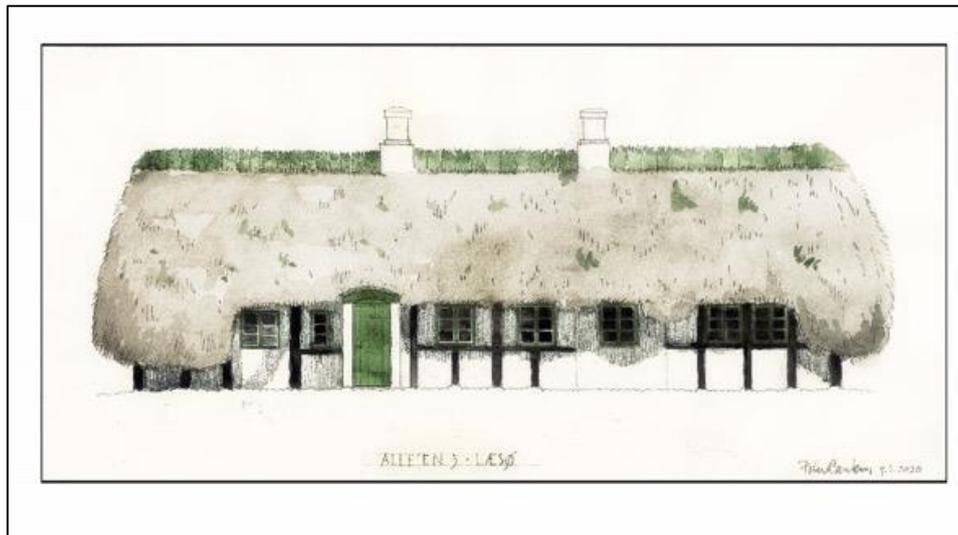
Furthermore, the wasteland warns modern-day humankind about the consequences of a self-inflicted eco-catastrophe – a catastrophe it took 300 years and the Marshall Aid to overcome.

Deforested heather and dune cultural landscapes are well inside a larger Natura2000 protected area.



Cutting turf in the poverty landscape.

Component Parts 3 to 14. ‘Seaweed’ houses



Drawing of the seaweed house on Alleen 5. (Peter Cartsens, architect.)

Twelve ‘seaweed’ houses, all with national protection, are located across the island with the main part in the northeast, representing an outstanding vernacular building typology that is globally unique in terms of architecture and construction. Moreover, this sustainable building tradition is a fundamental expression of a population group that responded to decisive conditions created by salt production, its cessation, and the ensuing ecological and economic crises. These both exhibit important interchange on human values over time and on developments in architecture. Furthermore, the seaweed houses are an outstanding example of a traditional human settlement with both land- and sea-use, and thus of human interaction with the environment when it has become vulnerable under the impact of irreversible changes.

‘Seaweed’ farmhouses, both singly and in groups in the same complex represent the contemporary settlement tradition. The houses are accompanied by shared ‘gardens’ (fenced cultivated areas), surrounding peat dikes, and uncultivated natural ‘outfields’ adjoining historic tracks/roads. The layout of individual properties is typically located on the periphery of the large, shared gardens.

Roof constructions with distinctive dominant gables are adorned with seaweed, up to two metres thick and weighing some 35-40 tonnes, that spills over walls commonly made from local rubble, clay, and shipwrecked timbers retrieved from the shores and shallow sand banks that surround Laesøe. Seaweed is a sustainable natural renewable building material that serves as a climatic screen that can withstand the heaviest rain and stormy winds while also providing natural insulation, which keeps the house warm in icy winters, and cool in summer. It is air-permeable, creating construction breathability and higher internal air quality, and has a high salt content that is pest- and rot-resistant and provides natural fireproofing.

THE HISTORY OF LÆSØ



Excavation of salt rudera, June 2024

Salt production

Only in the Middle Ages did the basis for permanent settlements emerge. The best knowledge of the extent of the early permanent settlement is known from the approximately 1,700 ruderas of salt production huts, which lie distributed over the raised medieval shorelines along the island's current south and southeast coasts. Several of them have been excavated, and information and actual dating from these have been used for typological dating.

The salt works used the hypersaline groundwater created in a narrow zone along the coastline, where seawater from occasional floods is trapped in the sand above the clay. As water evaporates the salinity grows from around 2% in the seawater to up to 16% in the groundwater. This hypersalinity rendered it suitable for salt production.

On Rønnerne, there are relict 23 shorelines from the entire period (1150-1652) when the salt production took place. It shows that the shoreline has jumped outwards on average every 19 years. This is due to a cycle in the Moon's movement pattern ('Lunar Nodal Oscillation'). This produces a long-wave tide of 7 cm, which, together with the island's land uplift and the extremely low slope of the sand flat, causes the shoreline to move 50-200 metres outwards every 19 years – an incredible natural scientific phenomenon.

People were given the status of free farmers, which meant that they could get land and sell salt themselves once the Viborg Cathedral Chapter, which owned the island, had received its share.

Estimates of the number of simultaneously active salt production huts therefore depend on how often the huts have been moved in line with the displacement of the shoreline.

The number of huts on the same shoreline grew. From approximately 25 in the 12th century to approximately 135 around 1585, interrupted only by the 'Black Death' (1350). After the Reformation (1537), in the 'lawless period', the number of huts increased dramatically.

Salt production of this magnitude was the first 'industry' in Denmark, family-based and not corporation-based.

The ecological collapse

The intensive salt production created a great need for firewood, and the forests that covered the island before the settlement were gradually cleared. Up until the Reformation, the Chapter had exercised strict supervision over the felling of the forests, payments for wood, and obligations to replant. At the Reformation, the king took over the ownership but did not replace the previous authority of the Chapter with royal authorities.



Poverty landscape with heather and overgrown dunes.

The consequence was an almost 100-year-long lawless period, during which the salt producers could risk-free acquire firewood. Therefore, the number of saltworks grew significantly and culminated in numbers around 1585 when the forest was in rapid decline.

In 1543, King Christian III ordered Læsø to limit the salt production to take care of the remaining forest and to hinder windblown sand drift from destroying the fields. But 100 years later the forest was largely gone, and the salt production ceased.

At the end of the 17th century and throughout the 18th century, the sand drift ravaged the eastern part of Læsø and laid waste most of the arable land between Klitten and Østerby. The population left the area and demolished the easternmost of the island's three medieval churches, Hals Kirke. Agriculture had to be restarted in the eastern part of the island. Materials from the church and farms were used in new locations.

In response to the ecological collapse brought about by salt production, deforestation, sand drift, and climate deterioration, however, there are some distinctive and innovative developments made by the islanders:

New social structures

After the Middle Ages, most of the island's male population supported their families by seafaring, and the island's social structures therefore changed significantly. The women took care of the farms. For this to succeed, they needed to establish themselves in social communities that were special to Læsø. The resources – or lack thereof – have thus over the centuries left their mark on both landscape and society. The population was dependent on each other when the land had to be cultivated, and when houses had to be built or rebuilt. Social structures around the individual families and the surrounding neighbours

manifest themselves both in the architecture, where farms expand in line with the needs of the families, and adaptations of the surrounding landscapes with the establishment and care of quite voluminous ‘garden dykes’, protecting the infields.

The concentration agricultural system



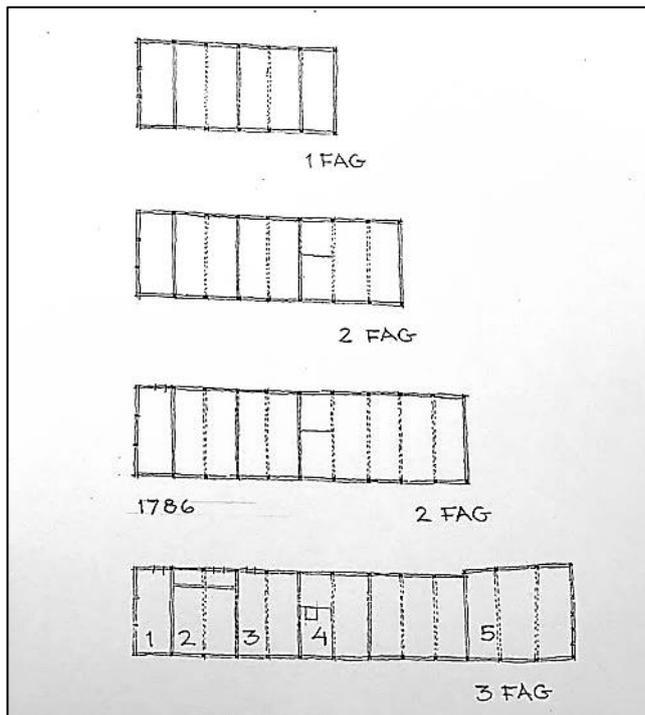
Map of 1786 showing the farms situated around the cultivated ‘gardens’ and surrounded by wasteland.

A significant response was the development of concentrated agriculture through the 17th century and beyond. Concentrated agriculture is a mix of cultivated infields and uncultivated forestless outfields, as the outfields could serve two purposes: Grazing for cows, sheep, and geese, and as places from which organic matter (bog peat, peat, and turf) could be obtained for soil improvement of the infields.

Thus, large quantities of organic matter were transported from the outfields for composting together with livestock manure in the infields every year. This form of fertilizer was still used in some places until the 1950s, when the Marshall Aid radically changed agriculture on Læsø.

As the animals roamed free in the outfields, it was necessary to fence the infields off. This was

done by building ‘garden dykes’ – i.e., high mounds of earth with a steep outer side which the cattle could not pass. A ‘garden dyke’ is a dyke up to several kilometres long that encircles several farms and infields. Each ‘garden’ (‘have’ in Danish) had a name, which is still recognizable in farm names today – for example, ‘Storhave’.



Hedvigs Hus; the four oldest stages in the expansion of the house – as timber and eelgrass were available (Hans Nielsen 2007).

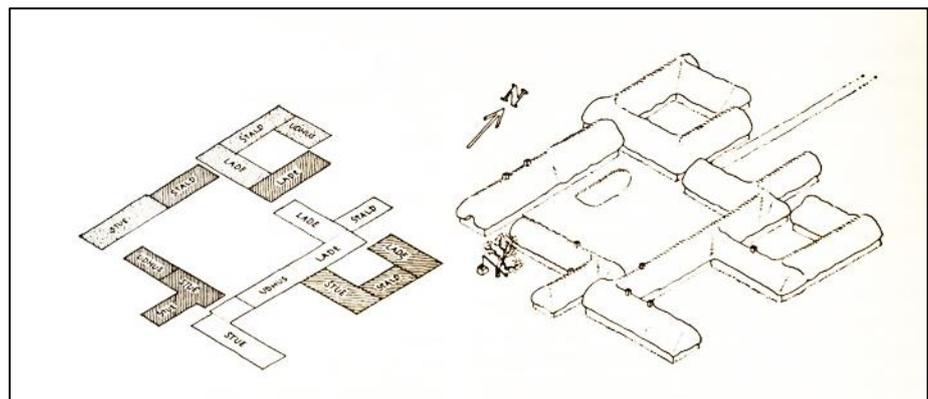
(*Phragmites*) were also available and could be harvested and used for the clay-lined walls.

The width of the houses is defined by the lengths of beams that could be procured, and during the time without forests, the houses were built quite narrow, and often with no more than three or five lengths. The poorest of the houses are quite narrow, down to approximately 3 metres, whereas simple rural construction in the same period in other regions of the country is often 1 – 1.5 metres wider. Most houses have been built section by section as it has been possible to obtain the necessary materials.

Virtually all the poor houses are characterized by extremely sparse use of timber in the half-timbered facades – and are often just sections consisting of flimsy posts without foot straps,

set directly on screeds or the ground. Loose stays and docks are used extremely sparingly or not at all, and inclined struts are also a rare sight. A larger proportion of timber is often seen on the more affluent farms, but far from the extent seen on contemporaneous half-timbered houses in other parts of the country. The larger farms testify to the development of the large families, where more and more sibling families lived together, with the need to expand with individual housing within the same farm. Bangsbogård is an example of this.

The constructions are often at the limit of what is possible – and with the knowledge of recent years, it must be concluded that collapse in the timber of the roof construction has to a greater extent been the cause of decay and

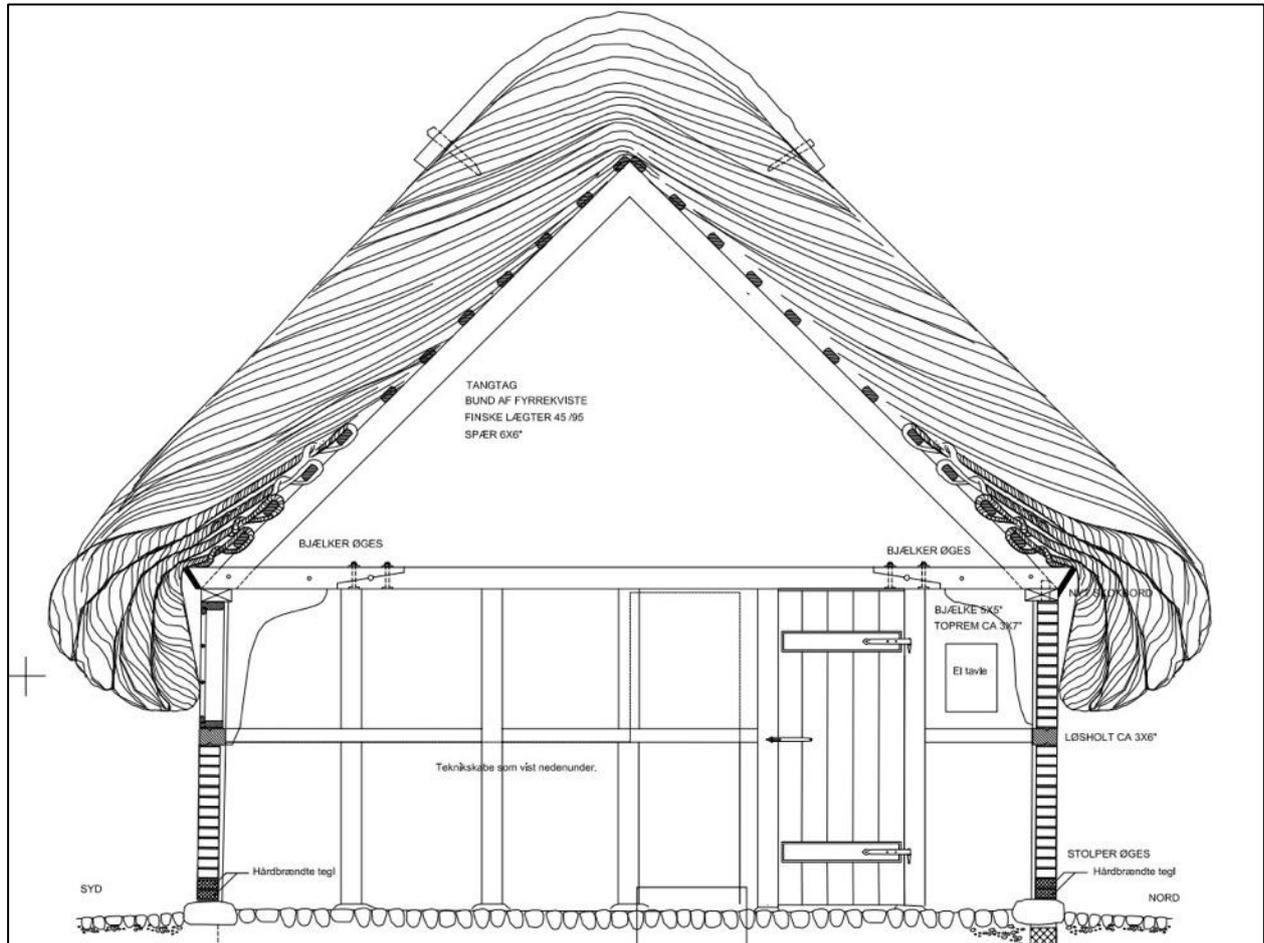


The many houses of Bangsbogårde. (Bjarne Stoklund: Læsø Land.)

collapse and to a lesser extent the lifespan of the seaweed roof itself. In a slightly caricatured way, a seaweed roof will in principle prove durable so long as the roof construction is sustainable.

Technological development can be recognized in the oldest houses and expose the buildings'

development histories, for example via traces of smoke holes and soot-blackened roof structures. Later, the smoke holes were replaced with chimneys built of dried clay bricks. For many of the houses, traces can often be read in the roof constructions e.g., timber after different construction phases – for example, internal gable remains that show extension with new sections.



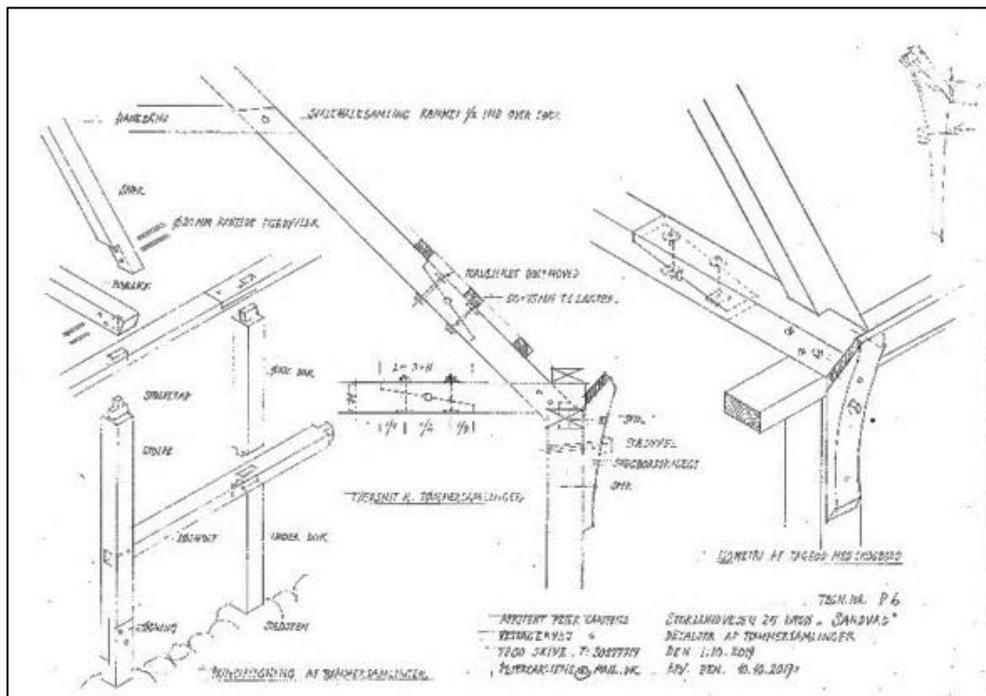
Cross-section of Andrines Hus, illustrating the thickness of the roof and the twisted 'vaskers' attached to the lower four laths. It also shows the 'knees' supporting the beam. 'Knees' are a normal part of boats, not houses, but normal on Læsø, where architecture has a close connection to the maritime world. (Peter Carstens)

Rye straw was to be used as roughage and bedding for cattle and horses. Therefore, the usual materials for roofing (rye straw and roofing pipes) were not available. Probably as early as the 16th century, the islanders therefore began to experiment with the eelgrass, which could be obtained in abundant quantities along the island's beaches.

The eelgrass roofs show an innovative development. In principle, two different ways of constructing a Læsø seaweed roof have been identified. In the case of the oldest method, at the base of the roof and possibly also on the upper side of the lower laths, branches were stuck in, almost like teeth on a rake, which could hold the loosely laid seaweed. This early technique is primarily documented by the discovery of holes after the stuck teeth.

The younger method is the one that can be seen preserved on all seaweed roofs of today. It is a method

where the eelgrass is twisted into small and large bundles – *vaskers* and *gumlings* – and tied up around the lower laths on the roof surface. In this way, a load-bearing rampart is formed – which, just like the ‘rake’ in the older method – serves to maintain a metre-thick layer of stamped eelgrass from the upper *vasker* up to and including the roof ridge, which was kept in place by long, cut turf. **The younger method is special for Læsø and is a locally developed technique that has no similar counterparts elsewhere in the world.** This method with twisted bundles and the nature of the material is the direct cause of the shape and expression of the roofs.



Construction of woodwork in the house (Peter Carstens)

The seaweed-roofed houses contain a multitude of common denominators which together are characteristic of both building custom and construction technique. Size, number of buildings, the proportion of timber, material recycling, etc. vary according to where and when the houses were built. Extensive work remains to be done to investigate, describe, and document the typologies that are represented among the preserved houses. In connection with an initial pilot projects in the years 2008 – 2012, as well as ongoing major overall conservation efforts, *the Seaweed-house Project*, initiated in 2016, a more nuanced insight into which elements characterize the different periods and typologies is gradually achieved. When this knowledge can be collected and interpreted in the coming years, it will probably be possible to explain in detail the variants that characterize both the houses and the roofs in terms of construction and scope.

Up to approximately 1950, most farms had original seaweed-roofed houses and buildings. But from approximately 1930, the eelgrass was hit by the ‘kelp plague’, and the beached eelgrass ceased. This meant that repair materials for the existing roofs could not be procured. Today eelgrass is coming back and can again be obtained.

2.b Status of the research and historical documentation related to the nominated property

Due to its isolated geography and the peculiar seaweed houses, Læsø has for a long time been of interest to all relevant types of research. See Annex 6 for references.

Geology

Now retired professor of geology, Jens-Morten Hansen, has undertaken a thorough research and description of the creation and formation of Læsø, going back to the post-iceage. The geological research, besides being of interest in itself explaining the topography of the island, explains how the hyper-saline groundwater is formed, where it is found, and why it continuously moves outwards along with the coastline.

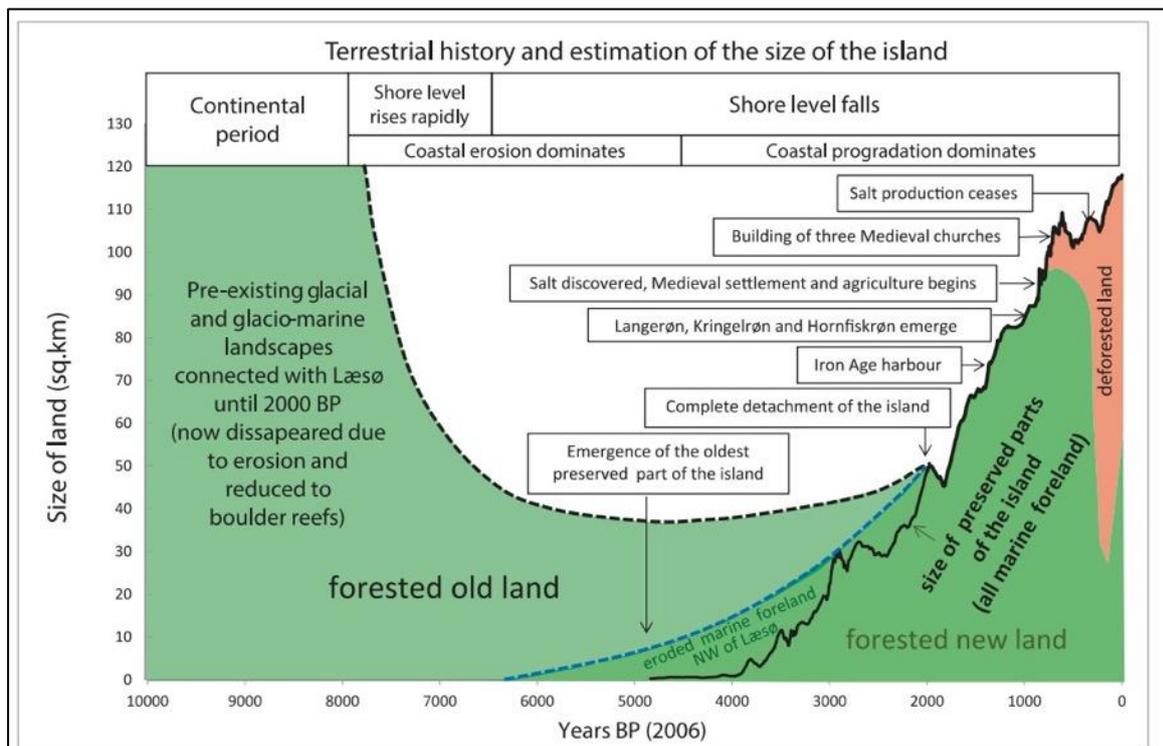
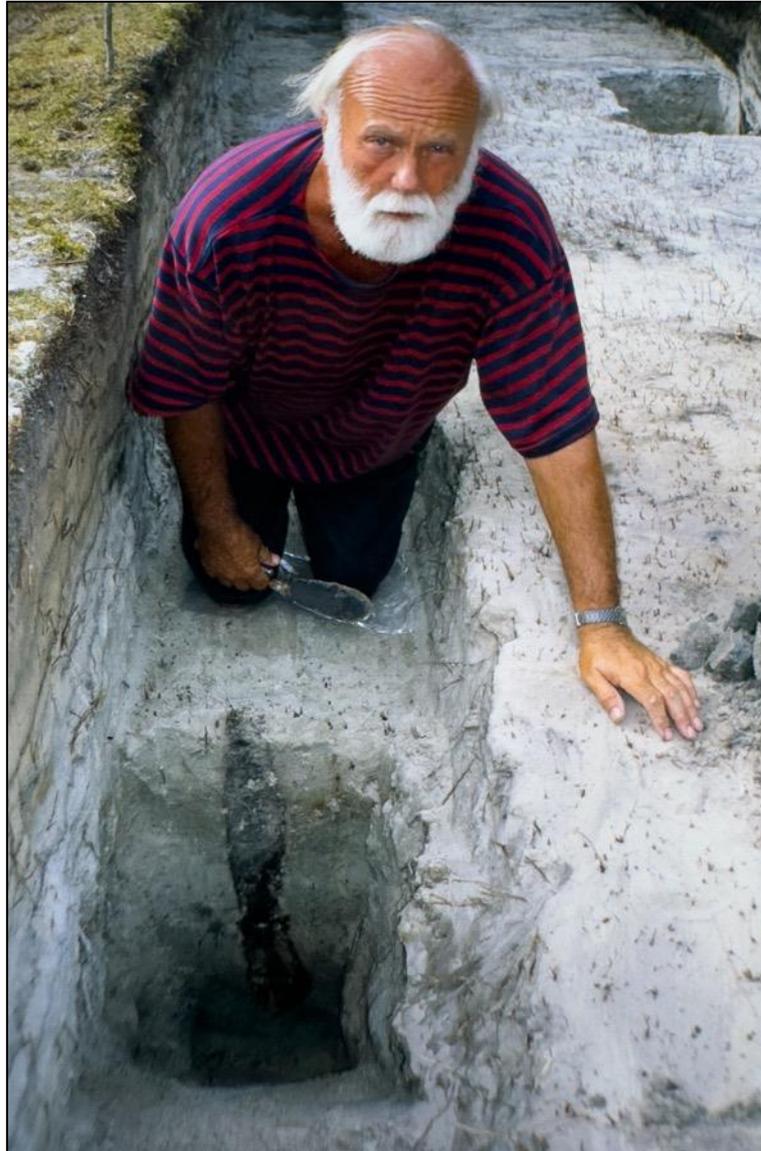


Fig. 39. Diagrammatic illustration of the coastal history and size of Læsø with indications of significant natural and cultural events. During the Boreal continental period, the Læsø-region was separated from Jutland and Sweden by large rivers to the west and east, whereas the region was attached to large landmasses between the rivers. During the maximum of the Litorina transgression (at Læsø c. 6300 years BP), all parts of present middle and northern Kattegat were flooded by the sea except for areas around the islands of Læsø and Anholt. Coloured areas: Estimated size of Læsø (before 2000 years BP, including now eroded glacio-marine landscapes and marine forelands mainly northwest of the preserved parts of the island). Solid curve: Size of preserved parts of the island; the curve is constructed by reversing the RSL curve in Fig. 38 and fitting it to the size of land areas in Fig. 36. The diagram indicates that the size of Læsø (including attached glacio-marine landscapes) was smallest in the period 6000 to 3000 years BP (around 40 km² or 30% of the present size), but large enough for survival of a stock of large herbivores (e.g. red deer) until after medieval settlements, and large enough for survival of mature, light-open forests including the Læsø pine (*Pinus silvestris* var. *laesoensis*), which became extinct elsewhere in the Baltic region. The attached glacio-marine landscapes were completely eroded to sea level or lower after 2500–2000 years BP and are now only represented by numerous boulder reefs both inside and outside of the present shoreline of Læsø.

Archaeology

Now retired professors of archaeology, Jens Vellev and Johannes Langballe, have undertaken excavations of sea-salt production huts in the field and extensive research in archives. Due to their research we have an accurate understanding of how the production worked and how many production sites were running at any given time.



Langballe at work in an excavation of a sea salt production hut. (Jens Vellev)

Seaweed houses

From historical documents we know about the seaweed houses at least back to Erik Pontoppidans *Danske Atlas* from 1761-83. Judge Lars Hess Bing's *Beskrivelse over Læsø* from 1802 and Christen Rasmussen: *Læsø, medicinsk-topographisk* from 1859 complements the historical knowledge.



Seaweed thachting day. A day of joy and a privileged to participate.



From the rooftop you could see most of the island.

The recent Seaweed Houses project, which ran from 2013 and will finish within a year or two, has generated detailed research documentation obtained from intensive practical conservation work

2.c Settings of the potential nominated property

For the seaweed houses, the proposed component parts are limited to the land register where the house is located. Buffer zones will be drawn individually according to needs and possibilities – see maps in the annex 7. The proposed nominated property boundary of the cultural landscapes are drawn 1) to protect the ruderas from salt production, and 2) to include a landscape of sufficient size to include all mapped attributes that relate to the area's contribution to proposed Outstanding Universal Value.

The size of the land registers on Rønnerne cannot be precise as there is an annual increment of the coastline of about 2-10 metres.

Property	Address	Land register	Size, ha
Seaweed houses	The twelve nominated seaweed roofed houses each tell their part of the story of human adaptability and innovation to overcome a human-inflicted ecological catastrophe more than 400 years ago. Section 4 and 5 will go into details with each house.		
3 Museumsgården	Museumsvej 3	84a Byrum By, Byrum	0,6697
4 Hedvigs Hus	Linievejen 36	49a Østerby By, Hals	3,3946
5 Kalines Hus	Tangborgvej 4	82b Østerby By, Hals	0,6829
6 Trolles Hus	Danzigmannvej 2	105a Østerby By, Hals	0,7500
7 Uldgården	Danzigmannvej 6	93a Østerby By, Hals 13a Østerby By, Hals	3,8765
8 Andrines Hus	Alleen 1	34 Østerby By, Hals	0,5272
9 Annas Hus	Alleen 3	80 Østerby By, Hals	0,375
10	Alleen 5	90c Østerby By, Hals	0,1631
11 Trines Hus	Mosevej 16	101b Østerby By, Hals	1,2041
12 Sandvad	Stoklundvejen 25	75a Den vestlige Del, Hals	10,9336
13 Lille Bovetsgård	Lille Strandgårdsvej 1	81 Den vestlige Del, Hals	3,3567
14	Nattergalevej 15	99b Vesterø By, Vesterø	0,492
Summa			26,4254
Cultural landscapes			
1 Rønnerne	Sea-salt production areas, sand flats, where the hypersaline groundwater is continuously formed, and deep sea, where eelgrass grows.		
		141g	27,794
		144l	33,119
		144m	17,1877
		144bc	8,6
		144bi	8,79
		59o	7,94

		149d	15,846
		7e	20,8426
		151a	4,775
		153a	15,1711
		39e	9,0198
		155i	17,474
		17b	36,284
		229	3,6064
		160c	5,6207
		160e	5,475
		161f	3,7672
		161k	3,7
		162c	2,4
		181q	8,804
		182a	6,6916
		183f	15,2325
		184e	7,17
		185a	6,357
		186d	8,9893
		187e	7,56
		188i	15,45
		190d	23,0121
		189a	36,7384
		171b	6,2097
		172c	6,1214
		173b	10,2560
		175d	9,055
		9g	17,22
		147f	17,277
		146x	13,39
		142b	8,4852
		2h	2,518
		163a	34,1847
		209e	2,405

		210b	4,97
		17c	52,2125
		174c	2,76
		176b	8,0512
		176e	26,349
		179e	21,59
		191c	28,351
		192b	28,232
		84h	12,138
		195b	11,93
		201h	19,1515
		198c	4,56
		201f	35,5537
		202d	5,705
		203b	2,5008
		203i	9,0075
		203k	2,881
		204l	10,031
		204c	6,8992
		205k	20,152
		206b	10,073
		207c	8,708
		208d	17,7607
		237	2,5569
		233	1,4445
Excavations 2014		146a	12,4454
		147g	14,6904
		148d	15,4
		155h	11,13
		156f	16,615
		157h	4,4975
		157i	5,612
		157n	1,3395
		160k	4,4911

		160g	4,17
		161b	2,4467
		161c	2,332
		163b	7,3
		164e	7,182
		166e	4,38
		169c	0,9712
		169l	0,956
		159c	3,3078
		158d	0,9
		158b	9,8834
		183b	99,4334
		180a	6,9307
		188g	6,803
		189d	10,6201
		191d	27,6764
		192i	3,3959
		192k	3,163
		78b	3,7246
		84f	6,945
		195d	7,5693
		196a	6,4119
		199f	12,3787
		200e	10,6114
		201e	7,2005
		202b	3,235
		205i	0,87
		203l	1,519
		203c	4,7531
		207a	10,9097
		204e	4,4891
		111g	2,52
		12g	3,8466
		75c	15,6844

		112d	8,8276
		113c	0,595
		116k	1,32
		116d	4,2369
		116c	9,8403
		115s	12,001
		9f	7,7291
		108b	11,3752
		108dx	5,7957
		108dy	7,6039
		108dp	14,328
		108ø	13,5985
		118a	35,2084
		120t	13,0999
Summa			1400,4082
2 Poverty landscape	The poverty landscape is the direct connection between the are of salt production and the concentration agriculture related to the seaweed houses.		
			?
Total			

Seaweed houses

All the twelve seaweed roofed houses have the highest preservation listing according to The Building Preservation Act.

The houses with addresses on Danzigmannvej and Alleen comprise a cluster forming an environment of seaweed houses.

Cultural landscapes

1. Rønnerne (approx. defined by the points:)
 - i. N 57° 14' 18" – E 10° 59' 56"
 - ii. N 57° 12' 51" – E 10° 59' 56"
 - iii. N 57° 13' 08" – E 11° 01' 55"
 - iv. N 57° 10' 06" – E 11° 06' 52"
 - v. N 57° 14' 50" – E 11° 12' 17"
 - vi. N 57° 16' 31" – E 11° 04' 45"

vii. N 57° 15' 15" – E 11° 03' 31"

b. Protection:

- i. National Nature Protection Act
- ii. Natura2000

2. Poverty landscape (approx. defined by the points:)

- i. N 57° 18' 22" – E 10° 58' 28"
- ii. N 57° 17' 56" E 10° 58' 03"
- iii. N 57° 18' 57" E 11° 01' 24"
- iv. N 57° 18' 13" E 11° 01' 28"

b. Protection:

- i. Natura2000
- ii. The Poverty Landscape is planned to be part of a coming, grater NaturNational Park.

Buffer zones: As both the cultural landscape properties are well within Natura2000 protected areas no further buffer zones are deemed necessary.

Potential additional seaweed houses

Besides the twelve nominated houses, all having the highest degree of protection by law, there are additional houses in the wider setting across the island that might be taken into consideration, even though they have a lower (locally administered protection) degree of protection. These houses could be:

Property	Address	Land register	Size, ha	Description
Seaweed houses				
Maries Hus	Gl. Havnevej 1	66a	1,7303	Homestead from 1750. Roof renewed in 2016.
Krogen	Østerbyvej 79	6g	0,9884	Originally a quadrilateral farm dating back to 1750, now reduced to 2½ (længer). Roof renewed with 62 tons of eelgrass in 2019.
Juelsminde	Juelsmindevej 2	14a	27,6202	One of the oldest farms on Læsø, dating back to Medieval times. The 13 parts of the half-timbered living quarters are from 1769. Its roof was renewed in 2020.



Traditionally dressed woman from Læsø, ready to dig turf. Both the dress and the spade are of locale design, adapted to the poverty landscape (P:C: Skovgaard).

3.SIGNIFICANCE OF THE POTENTIAL NOMINATED PROPERTY

3.1.a Global significance of the potential nominated property

Seaweed Houses and Sea-salt Huts, Laesoe Island comprises a series of distinctive landscapes and sites, including a shallow sea where eelgrass continues to grow. Across swathes of heather moorland and salt marsh, around 1,700 archaeological sites of medieval sea-salt production huts trace continuously formed hypersaline groundwaters and successively raised paleo-shorelines in marine regression. This landscape provides testimony to the world's northernmost industry of its kind, the fueling of which with locally cut wood led to an extended phase of self-imposed catastrophic ecological and economic collapse.

One outcome of such unsustainable exploitation and consequent collapse is a unique architectural ensemble of half-timbered farmhouses with extraordinary eelgrass roofs. These, some dozen of which represent the best examples of 30 that survive out of a total of around 300 built between 1600 and 1950, demonstrate survival and resourceful adaption to harshening living conditions through the salvaging of shipwrecked timbers from the reefs and shallows surrounding Laesoe, the exploitation of local marine clays, and the collection of eelgrass from beaches to form seaweed roofs up to 2 metres thick and many tonnes in weight.

Laesoe reveals in its special landscapes and sites a causal chronology of geological, maritime, and climatic factors, combined with political, economic, and innovative events, both internal and external. This is a nature-culture story, with multiple messages of sustainability, which set the framework for the islanders' lives and conditions in this remote community. It continues to do so.



From the salt hut replica.

3.1.b Which World Heritage criteria could be relevant to justify the potential Outstanding Universal Value of the potential nominated property?

(i)	(ii) X	(iii)	(iv)	(v) X	(vi)	(vii)	(viii)	(ix)	(x)
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Criterion (ii)

Seaweed Houses and Sea-salt Huts, Laesoe Island exhibits an important interchange of human values between 1600 and 1950, within an isolated island community, on developments in architecture and construction technology.

The exceptional human-nature story of this isolated small island community is illustrated in an integrated series of component parts, which convey the hardship caused by the catastrophic ecological consequences of unsustainable practices in natural resource exploitation (sea salt), and the ability of humans to adapt to changed living conditions through innovation in sustainable building.

Criterion (v)

Seaweed Houses and Sea-salt Huts, Laesoe Island is an outstanding example of traditional land use and sea use dating back to approximately 1150 CE, which is representative of human interaction with the environment especially when it has become vulnerable to the impact of irreversible change.

Salt production from a large area of coastal saltmarsh sustained the small community of Laesoe for centuries, yet the consequent deforesting of the island for fuel triggered an ecological crisis that prompted creative human interaction with both land and sea that enabled inhabitants to endure the hardships of the economic crisis of living that ensued.

3.2. Nomination Strategy

3.2.a Are you considering a potential serial nomination?

Yes/No

Yes.

To show the essential environmental context behind the seaweed houses and the salt production ruderas in all its stages, a serial nomination including two cultural landscapes and 12 seaweed houses are considered potential component parts.

The property is a serial nomination that demonstrates exceptional ingenuity and creativity from the early Middle Ages to the mid-twentieth century in the exploitation of the marine resources of salt and seaweed (\approx eelgrass, *Zostera marina*) by a small and relatively isolated island community. It is all based on and strongly connected to geological formations and changes since the end of the last ice age. The property is made up of three parts:

1. Rønnerne (Roennerne): A large coastal landscape of medieval sea-salt huts, and an area of sandflats and sea associated with the source of eelgrass used in roofing.
2. The poverty landscape: A landscape comprised of heather and dunes, formed because of the over-exploitation of forest and turf and the resulting ecological collapse.
3. Seaweed houses: Twelve farmhouses, illustrating the islanders' ingenuity, creativity, and will to survive the ecological catastrophe – using seaweed and timber from shipwrecks in house construction.

The connection between historical periods and the nominated properties is shown in this scheme:

PERIOD	NOMINATED PROPERTY	HISTORICAL EVENTS
→ 1100	Rønnerne	Geological formation of Læsø
1100 – 1537	Rønnerne	Settlement and recovery Salt production
1537 – 1652	Poverty landscape	Reformation, lawlessness, and predation
1500 – 1900	Poverty landscape	Wasteland and drifting sand Adaptation to the agricultural possibilities
1600 – 1950	Poverty landscape Seaweed houses	Climate deterioration, deforestation, desertification, and ecological collapse Adaptation through concentrated agriculture Use of seaweed and timber from wrecked ships in house construction

Salt production and the construction of seaweed-roofed houses reflect a sequence of climatic, political,

economic, and innovative events which, in both large and small ways, have set the framework for the islanders' lives and conditions, which can be directly related to salt production, and architectural style. The history of the island after the settlement can be divided into general, partially overlapping periods as shown in the table above.

The series of component parts captures the most significant of the geographically spaced and partially clustered individual seaweed houses, together with two substantial areas that are large enough to contain all mapped attributes that relate directly to the integrated sub-themes of proposed Outstanding Universal Value.



Scene from the sand flats.

3.2.b Are you considering a potential transboundary or transnational nomination?

No

3.2.c Are you considering nominating the area as a Cultural Landscape?

Yes

Two of the 14 component parts in the proposed serial nomination are of the scale of discrete cultural landscapes, while with the proposed addition of a number of scattered individual seaweed houses it is considered appropriate to categorise the single property as a cultural landscape.

Although the twelve seaweed houses listed are perhaps the main focus of this Preliminary Assessment, and the ruderas after the sea salt production are somewhat secondary, the full history of Læsø can only be understood when 1) a larger portion of Rønnerne, including the sand flats and the sea, 2) the poverty landscape as a result of overexploitation of the natural resources, and 3) the seaweed houses are seen together.

As such, the rationale for the serial cultural landscape is the capacity to fully illustrate the essential and distinct cultural values of Læsø.

Rønnerne

Rønnerne is a wide-open, low, and flat landscape stretching south of the main island of Læsø. They are formed as ever-growing beach meadows.

There are few trees. The main vegetation is heather with huge patches of *Limonium*, with *Artemisia maritima* at the edge towards the sand flats, and *Salicornia* as the first plants to colonize the sand flats. Beyond the sand flats, in the sea, the eelgrass is growing.

It was on Rønnerne that the main salt production took place between 1150 to 1650. The ruderas from the salt huts can still be seen in the landscape. The possibility of salt production made settlement on Læsø economically viable in the first place.

Thus, Rønnerne represents the “combined works of nature and man”; the geological formations allowing hypersaline groundwater to be formed and industrious man exploiting the resources. With successive raised paleo-shorelines in marine regression the hypersaline groundwater shifted location, and so did the salt production. Therefore around 1700 ruderas from salt huts can be found, while probably no more than

135 huts were productive at the same time.



From the sand flats. Common glasswort (Salicornia europaea) is the first plant to colonize the ever-lifting seabed.

The poverty landscape

The poverty landscape consists of 200–300-metre broad heather-covered sandy swathe stretching along the northern coastline for around 4 km. Overgrown high arcuate dunes characterise the south towards the forest. The National Nature Agency prevents the now relict landscape from being reforested to keep it as an historical reference.

The landscape is one of the last remaining poverty landscapes on Læsø illustrating the ecological catastrophe created by man's over-exploitation of the natural resources; first, the forest was cut down to provide fuel for the salt pans, then the turf was taken as part of the concentration agricultural system developed as a result of the collapse of salt production, leading to drifting sand and creation of mowing inland dunes.

Thus, the poverty landscape illustrates the evolution of human society and settlement over time, under the influence of the physical constraints and opportunities presented by their natural environment and successive social, economic, and cultural forces, both external and internal. This is an example of unsustainable land use, resulting in an organically evolved landscape based on an initial social, economic, and administrative imperative and has developed its present form by association with and in response to its natural environment. Such landscapes reflect the process of evolution in their form and component

features.

Today it is a relict (or fossil) landscape as the man-initiated processes have come to an end. Its significant distinguishing features are, however, still visible in material form.

The poverty landscape is included in the potential nomination relative to its functionality and intelligibility.

The two cultural landscapes thus represent the “combined works of nature and man”. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and opportunities presented by their natural environment and of successive social, economic, and cultural forces, both external and internal.

They are selected for their capacity to illustrate the essential and distinct cultural and culture-defined natural elements of Læsø.

They reflect specific techniques of unsustainable land use, considering the characteristics and limits of the “combined works of nature and man”.



The poverty landscape

4. INTEGRITY

4.a Inclusion of attributes in the potential nominated property

As stated above the proposed Outstanding Universal Value of the potential component parts are represented by two relevant criteria:

Criterion (ii): *Seaweed Houses and Sea-salt huts, Laesø Island* exhibits an important interchange of human values between 1600 and 1950, within an isolated island community, on developments in architecture and construction technology.

Attributes convey the entire process and environmental context of natural resource exploitation (sea salt), the physical manifestation of ecological and economic collapse, and innovation through sustainable building of the seaweed houses (including the source of materials).

Criterion (v): *Seaweed Houses and Sea-salt huts, Laesø Island* is an outstanding example of traditional land use and sea use dating back to 1150, which is representative of human interaction with the environment especially when it has become vulnerable to the impact of irreversible change.

The large area of coastal saltmarsh, sandflats and open water, the deforested poverty landscape, and the twelve seaweed roofed houses, contribute in their own specific and essential way to the proposed Outstanding Universal Value of Læsø.

Detail of the attributes included is listed here:

Property	Address	Description
Seaweed houses		<p>The twelve seaweed houses gives a first overall impression of the architecture forced upon the islanders due to lack of timber and straw.</p> <p>Individually the houses tell stories of wealth and poverty, of fertile land and sandblown fields and of shifts in housebuilding techniques over time and due to geography, even on a small island.</p> <p>Out of about originally 300 seaweed roofed houses on Læsø only between 30 and 35 are left, and only twelve have the highest degree of protection – the twelve potential nominated houses.</p>

Museumsgården	Museumsvej 3	 <p>The quadrilateral farm dates back at least to 1631. The interior is original and dates back at least to the middle of the 19th century. All roofs are covered with seaweed. It was inhabited until 1949 and is now a museum.</p> <p>Thus, the Farm Museum illustrates the era from the end of salt production, with concentrated agriculture, seaweed roofing, the men away sailing the seven seas, and the women doing all the farm work.</p> <p>Situated just east of Byrum, the farm was not hit too hard by the sand.</p>
Hedvigs Hus	Linievejen 36	 <p>A poor family's house.</p> <p>The poles of the half-timber are from wrecked ships.</p> <p>The seaweed roof from 1850 and partly renewed in 2024.</p>
Kalines Hus	Tangborgvej 4	 <p>The house is from 1869.</p> <p>The house is an example of the relocation of people to the sandblown Østerby.</p>

		<p>Renovated inside and with a new seaweed-roof in 2012.</p> <p>Realdania Byg (2012): <i>Kalines tanghus på Læsø.</i></p>
Trolles Hus	Danzigmannvej 2	 <p>A 'poor man's' house from 1753 built of timber from shipwrecks and thus from the early period of resettlement in Østerby.</p> <p>A typical house with a barn and stable to the east and living quarters to the west.</p> <p>Renewed in 2017-18 with 35 tonnes of eelgrass</p>
Uldgården	Danzigmannvej 6	 <p>A quadrilateral farm dating back to the 16th century and thus from before the sand destroyed most of eastern Læsø.</p> <p>The walls and roof were renewed in 2016, the roof with 95 tonnes of eelgrass.</p>
Andrines Hus	Alleen 1	 <p>A house from 1780 and thus from the early period of resettlement in Østerby.</p> <p>Renovated 2011 with 35 tonnes of eelgrass. The first house in 140 years to get a completely new seaweed roof.</p>

Annas Hus	Alleen 3	 <p>A homestead dating back to 1870, and thus from the resettlement period.</p> <p>A typical house with barn and stable to the east and living quarters to the west. Surrounded with an old orchard.</p> <p>The roof was renewed in 2016 with 30 tonnes of eelgrass.</p>
	Alleen 5	 <p>A 65 m² house from 1877, and thus a house from the late resettlement period.</p> <p>Renewed in 2017 with 25 tonnes of eelgrass.</p>
Trines Hus	Mosevej 16	 <p>A house from 1827, located alone northeast of Østerby.</p> <p>Renewed in 2019 with 35 tonnes of eelgrass.</p>

Sandvad	Stoklundvejen 25	 <p>A house from 1720. Like Museumsgården and Lille Bovetsgård Sandvad is situated on relatively fertile soil east of Byrum.</p> <p>One of the first building where the ‘vasker’-technique was used – together with the former ‘rake’-technique.</p> <p>Roof renewed in 2020 with 50 tonnes of eelgrass.</p>
Lille Bovetsgård	Lille Strandgårdsvej 1	 <p>A farm from around 1700.</p> <p>Renewed roof in 2022.</p>
	Nattergalevej 15	 <p>The only seaweed house in Vesterø.</p>
Cultural landscapes		

Rønnerne		<p>Sea-salt production areas, sand flats, where the hypersaline groundwater is continuously formed, and deep sea, where eelgrass grows.</p> <p>Eelgrass is especially mentioned in the EU Commission's suggested Nature Restoration Law as it contributes very effectively to holding back CO₂.</p>	 
Poverty landscape		 <p>The heather and inland dunes along the north coast of Læsø is the last of the poverty landscape that covered most of the island after all forests were cut down and used under the salt pans.</p>	

The twelve seaweed-roofed houses contribute in different ways to the nomination:

1. Geography

- a. The houses at the east end of the island form a cluster.
- b. The houses in the middle of the island are spatially spread out on relatively good farmland.
- c. The house in Vesterø is the only remaining house at the western end of the island.

2. Socially

- a. The houses represent the whole scale of incomes and social standards reflected in size, materials used, and inside décor.

3. Thatching techniques

- a. Even though they might look alike, there is a historical development to be found in the

houses as to their age and geographical situation.

The two landscapes contribute to the potential Outstanding Universal Value:

1. Rønnerne due to ruderas of the many (1700) salt production huts dating from 1150 to 1600.
2. The poverty landscape represents the consequences of salt production and the ecological collapse, and therefore the landscape out of which the inhabitants on the island had to carve a living from 1600 to 1950 – the period where thatching with seaweed was perfected.



Eelgrass (Zostera marina) (Anne-Mette Aaen)

4.b Conservation status of the attributes, and factors affecting the potential nominated property

Property	Conservation status
Seaweed houses	<ul style="list-style-type: none"> • Protected according to the Danish 'Buildings Protection Act' • Conservation by the Seaweed House Project which renovated the roofs between 2016 and now
Rønnerne	<ul style="list-style-type: none"> • Protected according to the Danish 'Nature Protection Act' • Protected according to the International RAMSAR convention/Natura 2000
Poverty landscape	<ul style="list-style-type: none"> • Protected according to the Danish 'Nature Protection Act' • Protected according to the International RAMSAR convention/Natura 2000 • Planned part of a future Nature National Park.

See the ANNEX for extracts of The Buildings Protection Act, Maintenance manual, and The Nature Protection Act.

5. AUTHENTICITY

5.a Attributes and Information sources

The authenticity of attributes is consistently good to high. Information sources are combined from practical archaeological and conservation work and extensive archival research.

COMPONENT PART	AUTHENTICITY AND INFORMATION
Seaweed houses	List of documents for all houses, see Annex 4
Museumsgården	<p>The quadrilateral farm dates back at least to 1631. The interior is original and dates back at least to the middle of the 19th century. All roofs are covered with seaweed. It was inhabited until 1949 and is now a museum.</p> <p>It is not easy to date the buildings precisely, but in the construction of the seaweed roof, there is evidence of pine twigs dating back to the original pine forest on the island, from before 1680. As the farm grew over the years new walls are built from reused medieval large bricks from Hals' Church which was abandoned around 1730, due to a devastating sand drift.</p> <p>Thus, the Farm Museum illustrates the era from the end of salt production, with concentrated agriculture, seaweed roofing, the men away sailing the seven seas, and the women doing all the farm work.</p> <p>Situated just east of Byrum, the farm was not hit too hard by the sand.</p> <p>Seaweed roof partly renewed in 2023.</p>
Hedvigs Hus	<p>Bought in 1994 by Læsø Museum to preserve this poor family's house.</p> <p>The poles of the half-timber are from wrecked ships. The seaweed roof from 1850 and partly renewed in 2024.</p>
Kalines Hus	<p>The house is from 1869. Renovated inside and with a new seaweed-roof in 2012.</p> <p>The house is an example of the relocation of people to the sandblown Østerby.</p>
Trolles Hus	<p>A 'poor man's' house from 1753 and thus from the early period of resettlement in Østerby.</p> <p>Built of timber from shipwrecks.</p> <p>Renewed in 2017-18 with 35 tonnes of eelgrass. A typical house with a barn and stable to the east and living quarters to the west.</p>
Uldgården	<p>A quadrilateral farm dating back to the 16th century and thus from before the sand destroyed most of eastern Læsø.</p> <p>The walls and roof were renewed in 2016, the roof with 95 tonnes of eelgrass. Part of the roof is thatched with straw and partly with seaweed; the straw to be substituted with eelgrass when due for replacement. Thus Uldgården express the difficulties for the seaweed houses in the 20th century, were the thaching-skills nearly died and the seaweed got sick.</p>
Andrines Hus	<p>A house from 1780 and thus from the early period of resettlement in Østerby.</p> <p>Bought in very poor condition by the Danish Agency for Culture and Palaces in 2011 and renovated with 35 tonnes of eelgrass. The first house in 140 years to get a completely new seaweed roof.</p>

Annas Hus	<p>A homestead dating back to 1870, and thus from late in the resettlement period. A typical house with barn and stable to the east and living quarters to the west. Surrounded with an old orchard.</p> <p>The roof was renewed in 2016 with 30 tonnes of eelgrass.</p>
Alleen 5	<p>A 65 m² house from 1877, and thus a house from the late resettlement period.</p> <p>Renewed in 2017 with 25 tonnes of eelgrass.</p>
Trines Hus	<p>A house from 1827, located alone northeast of Østerby.</p> <p>Renewed in 2019 with 35 tonnes of eelgrass.</p>
Sandvad	<p>A house from 1720. Like Museumsgården and Lille Bovetsgård, Sandvad is situated on relatively fertile soil east of Byrum.</p> <p>One of the first building where the ‘vasker’-technique was used – together with the former ‘rake’-technique.</p> <p>Roof renewed in 2020 with 50 tonnes of eelgrass.</p>
Lille Bovetsgård	<p>A three-winged farm from around 1700. Seaweed roof on one the wings, while the other two are thatched with straw.</p> <p>Renewed roof in 2022.</p>
Nattergalevej 15	<p>The only seaweed house in Vesterø.</p>
Cultural landscapes	<p>List of documents for both cultural landscapes, see Annex 4</p>
Rønnerne	<p>Sea-salt production areas, sand flats, where the hypersaline groundwater is continuously formed, and deep sea, where eelgrass grows.</p> <p>Eelgrass is especially mentioned in the EU Commission’s suggested Nature Restoration Law as it might contribute to holding back CO₂.</p>
Poverty landscape	<p>The heather and inland dunes along the north coast of Læsø is the last of the poverty landscape that covered most of the island after all forests were cut down and used under the salt pans.</p> <p>The poverty landscape is the direct connection between the are of salt production and the concentration agriculture related to the seaweed houses.</p>

5.b Changes to the relevant attributes

COMPONENT PART	CHANGES
Seaweed houses	<p>Seaweed (eelgrass) is a natural resource with a limited lifespan of up to 300 years. As the eelgrass around Læsø got sick about 100 years ago, the art of thatching with eelgrass was almost forgotten and many houses suffered, due to their old and deteriorating roofs.</p> <p>Fortunately the thatching technique was safeguarded and eelgrass can be bought from other places in Denmark pending regrowth around Læsø.</p> <p>The last 12-15 years an effort to replace old roofs and safeguard the old houses have been made thanks to grants from the Danish Agency for Culture and Palaces and from Maersk Foundation.</p>
Museumsgården	<p>Both outside and inside there have been no or very few changes since the farm became a museum in 1939.</p> <p>In a small portion of the barn/staple a secured room is established where valuable paintings and traditional silverware is on display.</p> <p>Electricity is added, and AC to regulate temperature and humidity. The house is not lived in.</p> <p>2023: partly renewed roof.</p>
Hedvigs Hus	<p>Both outside and inside there have been no or very few changes since the farm became a museum in 1939.</p> <p>Electricity is added, and AC to regulate temperature and humidity. The house is not lived in.</p> <p>2024: renewed roof</p>
Kalines Hus	<p>Outside the house appear in its original form and expression.</p> <p>The inside is gently renovated in 2012 with running water, toilet, bath and electricity.</p> <p>2012: renewed roof</p>
Trolles Hus	<p>Outside the house appear in its original form and expression.</p> <p>2017-18: renewed roof</p>
Uldgården	<p>The outside of the farm appears as a mix, as part of the roof is thatched with straw and partly with seaweed. Thus Uldgården express the difficulties for the seaweed houses in the 20th century, were the thaching-skills nearly died and the seaweed got sick.</p> <p>2016: renewed roof</p>
Andrines Hus	<p>Outside the house appear in its original form and expression.</p> <p>2011: renewed roof</p>
Annas Hus	<p>Outside the house appear in its original form and expression.</p> <p>2016: renewed roof</p>
Alleen 5	<p>Outside the house appear in its original form and expression.</p> <p>2017: renewed roof</p>
Trines Hus	<p>Outside the house appear in its original form and expression.</p> <p>2019: renewed roof</p>
Sandvad	<p>Outside the house appear in its original form and expression.</p> <p>2020: renewed roof</p>
Lille Bovetsgård	<p>A three-winged farm with seaweed roof on one wing, and straw on the other two.</p> <p>Outside the seaweed roofed wing appear in its original form and expression.</p>

	2020: renewed roof
Nattergalevej 15	Outside the house appear in its original form and expression. 2018: renewed roof
Cultural landscapes	There is, for both landscapes, a potential threat of reforestation that would change the landscape dramatically. This is controlled accordingly by the respective management authorities.
Rønnerne	Trees are cut down according to a management plan due to the Nature Conservation Act and cows a grassing the area to effectively counteract deforestation. Invasive flora like beach rose (<i>Rugosa rose</i>), cordgrass (<i>Spartina anglica</i>) and purple moor-grass (<i>Molinia caerulea</i>) are actively combatted.
Poverty landscape	There is a potential threat of reforestation, that would change the landscape dramatically. Trees are cut down according to a management plan and cows are grazed on the wetland area to effectively counteract deforestation. According to The Agency for Nature a Nature National Park will be established on Læsø, and the Poverty Landscape will be part of it. The policies of the NNP are to maintain the deforested area in its current state.

6. FRAMEWORK FOR COMPARATIVE ANALYSIS

6.a Approach proposed to comparative analysis

Seaweed-houses

- Materials
 - Eelgrass on the roof.
 - Timber from shipwrecks in the walls.
- Methods
 - ‘Vaskers’ with loose eelgrass on top.
- Construction
 - House dimensions relative to available shipwrecked timber.
 - House enlargements according to available shipwrecked timber.
 - Period of construction 1550-1900
- Culture
 - Roofs mainly made by women.
 - The setting in a manmade, degraded landscape.

Sea-salt production huts

- Materials
 - Hypersaline groundwater.
- Methods
 - Evaporation creating salt-crystals.
- Construction
 - Moveable constructions as the hypersaline groundwater moved along with the expanding shoreline.
 - Period of construction 1150-1650
- Culture
 - Family-based enterprises.

Geological and ecological context

- Post-glacial uplift and type of salt deposit
- Sandblown ecological disaster
- Eelgrass habitat

6.b Comparison with other similar properties or sites

Country	Property	Incomparable	Partly comparable	Closely comparable	Summary
Sweden	Ag-roofs, Gotland (not WH-site)		X		<p>Farm buildings from the 1600s, traditionally built in are from the Middle Ages. The material used for roofing is <i>Cladium mariscus mariscus</i> and not eelgrass. The walls are constructed with tarred post-and-plank walls, and not half-timber with clay.</p> <p>Comments: As materials, both on the roofs and in the walls, differ, the houses on Gotland are only partly comparable to the houses on Læsø although they might look alike.</p>
China	Roofs partly made of eelgrass, Rongcheng District, east of Beijing (not WH-site)			X	<p>Roofs where eelgrass is combined with straw and clay are included, below, on the edges, and on the top of the roof.</p> <p>Comments: Both the houses in Rongcheng and on Læsø use eelgrass as roofing material. This makes the two sites closely comparable. But at the same time techniques and materials differ between the two places, and the wider context as a cultural landscape only applies to Læsø.</p>
France	Salins-les-Bains (WH-Listed)		X		<p>Salins-les-Bains have exploited the brine extracted from the considerable underground deposits since the Middle Ages. It is one of the rarer testimonies to the production of open-pan salt (crystallization by heating).</p> <p>Comments: Similarities between Salins-les-Bains and Læsø is the production by actively heating saline water to the point where salt crystals are formed. The two productions are also established at the same time. In 1775 the French production site had to be moved due to a lack of firewood, like what happened on Læsø 150 years earlier. But the source of salt in Salins-les-Bains is a spring where the salinity is washed out from the underground, contrary to Læsø, where the hypersaline groundwater is constantly renewed by the sea and the subsequent evaporation from the surface of the sand flats. The production in Salins-les-Bains and Arc-et-Senans was organized in one huge industrial process, where the production on Læsø was organized by individual households under instruction from the monks or <i>procurators laesoeviae</i> from Viborg. Even though Salins-Les-Bains and Arc-et-Senans are the two World Heritage sites that in function and product are closest to Læsø, the differences are so significant i.e., fundamentally different natural resources and approaches to salt production. Salins-Les-Bains and Arc-et-Senans on the one side and</p>

					Læsø on the other can't be mutually exclusive.
France	Salt marshes of Guérande (WH-site)		X		The salt marshes of Guérande constitutes a unique heritage. Comments: The salt marshes are man-made in what must be a coordinated industrial effort as the landscape of Rønnerne is only modified by man, leaving it almost without trees and with lines of ruderas from salt production huts. The evaporation technique also differs, as it is based on the sun in France and on burning wood on Læsø. This makes Læsø and the salt marshes of Guérande only partly comparable
Cabo Verde	Saltworks (WH-Tentative Listed site)		X		The peculiarity of the site is its formation in the crater of an extinct volcano at 39 meters above sea level and 1500 meters from a protected bay. In the past, the crater was in contact with the sea on the north side by natural channels allowing water infiltration. Due to the evaporation of this water, a deposit of rock salt estimated at more than fifty million tons was formed. Comments: The formation of rock salt is all done by nature, and the extraction is done by industrial methods. The only similarity is that both on Sal and Læsø seawater play a major role. This makes Læsø and Sal only partly comparable.
Republic of Korea	Salterns (WH-sites)		X		Salterns located at Sinan-gun and Yeonggwang-gun in Jeollanam-do, is where sea salt is produced with the use of natural evaporation on mudflats. Comments: The resulting product – salt – is like the salt produced on Læsø. But as salinity is naturally formed on Læsø it is man-made in Korea. And as evaporation is done man-made on Læsø, it is done naturally in Korea. This makes Læsø and Korea only partly comparable.
Japan	Historic Villages of Shirakawa-go and Gokayama (WH-site)		X		Rare examples of Gassho-style houses, a unique farmhouse style that makes use of highly rational structural systems evolved to adapt to the natural environment and site-specific social and economic circumstances in particular the cultivation of mulberry trees and the rearing of silkworms. The large houses have steeply-pitched thatched roofs and have been preserved in groups, many with their original outbuildings which permit the associated landscapes to remain intact. Comments: The similarities to the seaweed houses on Læsø are based on the combination of adaption to the natural environment and specific social and economic structures related to the buildings. But materials used in the construction of houses, the underlying industrial and economic structure as well as the specific social order related to the houses are so different, that the two sites are not mutually exclusive in the context of World Heritage.

6.c Selection of component parts for potential serial nominated properties

The selection of component parts is undertaken by 'attribute mapping' under three discrete heritage categories that represent the principal contributions to proposed Outstanding Universal Value: 1. Salt production landscape (Rønnerne); 2. 'Poverty' landscape; and 3. Seaweed houses.

1. Rønnerne is the salt production landscape in its entirety. No other areas on the island had these deposits and consequent history. The generous boundary extends well beyond the historic salt production area, to include additional heath and wetland to the north, east and west. It terminates at logical boundaries that are readable on the ground to serve management purposes. The boundary is also large enough to include the context of sand flats and shallow water in the south that is also the main eel grass habitat on Laesoe. Territory beyond this extent continues to be protected under natural laws, rendering a buffer zone unnecessary.

2. The boundary of the Poverty landscape component part contains the last remaining intact 'landscape' of this scale on Laesoe. It is also the area with designated protection and with the future prospect of a National Nature Park.

3. The selection of Seaweed Houses requires a sophisticated approach based on the potential that each house might make to the series. Out of a total of 30 houses on the Island, 12 have national monument protection. Following discussions with owners, these 12 were automatically selected. To collate the necessary research for a detailed description of the 12 selected houses in a future Nomination Dossier, and to determine the explicit individual contributions that each makes to the series, the nomination team awaits the conclusion of a decade-long project of research and conservation of multiple seaweed roofs on x farms. The comprehensive data will allow a clear determination of the contribution each house makes, and whether there are any further houses beyond the current selection that have potential qualities to be considered for the series. From this data, the selection criteria will be confirmed and will likely expand on geographical distribution, chronology, clustering and interrelationships, form, materials, and architectural specificities.

COMPONENT PART	APPROACH USED TO SELECT	RATIONALE FOR THE SELECTION
Seaweed houses		
Museumsgården	The seaweed houses are one of the main representatives of the history of Læsø. All houses are protected according to the Danish 'Buildings Protection Act'. They represent different aspects of historical and locale (within the island) techniques and developments. They represent a social differentiation, seen in size, materials, and indoor décor.	The building is a museum and therefore open to the public. An example of a wealthy farm on some of the best soil on Læsø.
Hedvigs Hus		The building is a museum and therefore open to the public. An example of a poor family's house, situated relatively isolated. An example of a house enlarged in stages, as materials have been available.
Kalines Hus		
Trolles Hus		

Uldgården		
Andrines Hus		
Annas Hus		
Alleen 5		
Trines Hus		
Sandvad		
Lille Bovetsgård		
Nattergalevej 15		
Cultural landscapes		
Rønnerne	The landscape of Rønnerne is where the salt production took place between 1150 and 1550, and as such the other main representative of the history of Læsø. The area of mapped sea-salt huts is fully included in the nproposed component part.	Rønnerne are protected according to Natura2000. Rønnerne are open to the public.
Poverty landscape	The poverty landscape illustrates the consequences of the mismanagement of natural resources during the last 100 years of salt production, and as such it connects the salt production to the seaweed houses. The component part comprises the largest such landscape on the island.	The poverty landscape is protected according to Natura2000 The poverty landscape is owned by the state and open to the public



Under the seaweed roof.

6.d Gaps and underrepresented heritage on the World Heritage List

The potential nominated serial properties represent a unique combination of geological circumstances, man's use and successively misuse of natural resources, and adaptation to the resulting poverty landscape. This combination of circumstances is not found anywhere else, be it World Heritage listed or not.

Læsø as such is a showcase of how inadequate natural resource management has led to poverty and hardship for the isolated island community over several hundred years.

The history goes as this:

- The use of the hypersaline groundwater created due to special geological circumstances.
- The northernmost heated, open-pan sea salt production in the world.
- Salt production organized on a family basis.
- Greed leading to deforestation.
- Use of turf opening up the sand and creating a sand blown landscape.
- A unique house construction adapting to the self-imposed ecological disaster, using eelgrass and timber from wrecked ships.
- The houses also illustrate the so-called concentration agricultural system locally developed to carve out a living in the poverty landscape.

No thematic UNESCO-studies are found to deal with the specific issues concerning the history of Læsø.

7. PROTECTION AND MANAGEMENT

7.a Protection status

The Seaweed Houses

All twelve seaweed houses are protected on the national level, according to *The Act on Building Protection and Conservation of Buildings and Urban Environments*. See Annex 1 for an extract of the law.

In addition to the National Building Protection Act covering the houses, some of the properties apply to rules concerning the surrounding areas and the heights of plants to keep the area open due to the *Planning Act* and Municipality Plans and Local Plans.

The association of seaweed house owners has made a *manual for the maintenance of the houses*. See the Annex 2.

NAME	ADDRESS	BUILDING CONSERVATION	LOCAL PLANS	ADDITIONAL RULES
Museumsgården	Museumsvej 3	Yes		Restrictions on the heights of planting.
Hedvigs Hus	Linievejen 36	Yes		
Kalines Hus	Tangborgvej 4	Yes		
Trolles Hus	Danzigmannvej 2	Yes		Surroundings Visibility
Uldgården	Danzigmannvej 6	Yes	Yes	Surroundings Visibility
Andrines Hus	Alleen 1	Yes		
Annas Hus	Alleen 3	Yes		Surroundings and visibility (apparently not made legally binding yet)
	Alleen 5	Yes		Surroundings and visibility (apparently not made legally binding yet)
Trines Hus	Mosevej 16	Yes	Yes	Surroundings and visibility
Sandvad	Stoklundvejen 25	Yes	Yes	Surroundings Restrictions on the

				heights of planting Visibility
Lille Bovetsgård	Lille Strandgårdsvej 1	Yes		Visibility
	Nattergalevej 15	Yes		Local plan

The cultural landscapes

Rønnerne is protected according the *Nature Protection Act* (Annex 3). Both cultural landscapes are defined within Natura2000 protected areas. No further protection should apply.

The Poverty Landscape will be part of a coming Natural National Park in line with the *Nature Protection Act* (Annex 3).



Galloways are used to keep the Poverty Landscape from being reforested.

7.b Management status

Seaweed Houses and Sea-salt Huts, Laesoe Island (Denmark) will follow the conventional management system for World Heritage sites in Denmark, including management coordinated by a single Property Management Plan. This general management tool will be employed by the administrative authorities to ensure that the nominated property is preserved, protected, conserved and sustainably used. The future management structure for the proposed World Heritage Site is as shown here:

Coordination structure		
UNESCO/ICOMOS		
Danish Agency for Culture and Palaces		
<i>Seaweed Houses and Sea-salt Huts, Laesoe Island (Denmark)</i> Management Board		
Daily manager, office at the museum	Research Coordinating, gathering and archiving	
	Dissemination, tourism, and marketing	
	Management	
Seaweed houses	Rønnerne	Poverty landscape

The management board will be composed of:

- The mayor, head of board
- A politician, appointed by the Municipality Council
- The manager of the museum
- Danish Agency for Culture and Palaces
- Representatives of the landowners
 - Seaweed houses
 - Rønnerne
 - Poverty landscape
- Representative of professions related to the nominated properties:
 - Seaweed houses
 - Rønnerne
 - Poverty landscape

It is suggested that the daily manager will be placed at the museum, as most of the duties assigned to the job will be related to activities and facilities already in place there.

Depending on the situation it might even be that the manager of the museum and of *Seaweed Houses and Sea-salt Huts, Laesoe Island (Denmark)* could be one and the same person.



Close-up of a seaweed roof. The stones around the house are used to lead water away from the walls.

7.c Engagement of indigenous peoples and local communities

‘Indigenous people’ are not an issue.

Communication with landowners

Ten of the twelve seaweed houses are privately owned. The owners have been contacted by phone, email, or mail and asked to agree to have their houses listed for possible nomination. One owner (Annas Hus, Alleen 3) is in the process of selling the house, and will leave it to a new owner to agree with the potential nomination. See the Annex 5 for the Memorandum of Understanding’ and an example of an agreement with them.

The remaining two houses are owned by the museum.

The organization behind the restoration of the seaweed roofs plan to put up a discrete signage at all houses with a short description of the house and a QR-code linking to more information. In due time *Seaweed Houses and Sea-salt Huts, Laesoe Island (Denmark)* will be able to add a World Heritage logo to the signage.

The heather and dunes – the poverty landscape – are all owned by the state and run by the Nature Agency. Contact to the local Nature Agency...

Rønnerne are owned primarily by local farmers...

Events

Date	Event
June 2023	Presentation for municipality directors from North Jutland
September 2023	Public presentation during the event ‘Day of the Salt’
September – October 2023	Exhibition at Museumshuset
February 2024	Article in the tourist newsletter for 2024
March 2024 →	Exhibition at Museumsgården

April 2024	A leaflet to be distributed at the ferry, at the museum and elsewhere.
Summer of 2024	Personal communication with each seaweed house landowner individually. <ul style="list-style-type: none">• 240625: Trines Hus• 240704: Annas Hus
	Information letter sent to landowner of the Rønnerne cultural landscape.



From the underside of a seaweed roof. The 'vaskers' are bound to the lower laths.

7.d Additional key questions and issues

Potential additional seaweed houses

Besides the twelve nominated houses, all having the highest degree of protection by law, there are additional houses that might be taken into consideration, even though they have a lower (locally administered protection) degree of protection. These houses could be:

Property	Address	Land register	Size, ha	Description
Maries Hus	Gl. Havnevej 1	66a	1,7303	Homestead from 1750. Roof renewed in 2016.
Krogen	Østerbyvej 79	6g	0,9884	Originally a quadrilateral farm dating back to 1750, now reduced to 2½ (længer). Roof renewed with 62 tons of eelgrass in 2019.
Juelsminde	Juelsmindevej 2	14a	27,6202	One of the oldest farms on Læsø, dating back to Medieval times. The 13 parts of the half-timbered living quarters are from 1769. Juelsminde is the longest seaweed house on Læsø. Its roof was renewed in 2020.



Maries Hus

8. CONTACT INFORMATION OF RESPONSIBLE AUTHORITIES

8. Name and contact information of official local institution/agency/organization

Institution/Agency/Organization: Læsø Verdensarv Aps
Address: Byrum Hovedgade 68
Tel: +45 44103062
E-mail: tyd@worldheritagelaesoe.dk
Web address:

9. SIGNATURE

9. Signature on behalf of the State Party

The Preliminary Assessment request should conclude with the signature of the official empowered to sign it on behalf of the State Party.

ANNEXES

1. Building Preservation Act
2. Maintenance manual
3. Nature Protection Act
4. Documents related to the individual component parts
 - a. Museumsgården
 - b. Hedvigs Hus
 - c. Kalines Hus
 - d. Trolles Hus
 - e. Uldgården
 - f. Andrines Hus
 - g. Annas Hus
 - h. Alleen 5
 - i. Trines Hus
 - j. Sandvad
 - k. Lille Bovetsgård
 - l. Nattergalevej 15
 - m. Rønnerne
 - n. Poverty landscape
5. Memorandum of Understanding
6. Annotated research texts

ANNEX 1

The Building Protection Act

Purpose

§ 1. The purpose of the Act is to protect the country's older buildings of architectural, cultural-historical, or environmental value, including buildings that shed light on living, working, and production conditions and other significant features of societal development.

PCS. 2. In the administration of the Act, emphasis must be placed on ensuring that the protected buildings have an appropriate function that, considering the special nature of the buildings, serves to maintain them in the long term.

PCS. 3. To promote the purpose of the Act, the Minister of Culture guides to ensure that building preservation and conservation interests are taken care of in the administration of the Planning Act, the Urban Renewal Act, and corresponding legislation. To promote the purpose of the Act, the Minister of Culture must also communicate the built cultural heritage.

PCS. 4. The public is involved as much as possible in the conservation and preservation work.

§ 2. What is determined in this Act about buildings also applies to buildings, building parts, and the like, as well as those in § 3, subsection 2, mentioned building surroundings.

Preservation

§ 3. The Minister of Culture can preserve buildings and independent landscape architectural works of significant architectural or cultural-historical value that are over 50 years old. However, regardless of their age, buildings and independent works of landscape architecture can be protected when it is justified by their outstanding value or in other special circumstances.

PCS. 2. To the extent that the immediate surroundings of a building or an independent landscape architectural work in the form of courtyards, squares, pavements, gardens, parks, and the like are part of the overall whole worthy of protection, the protection may include such surroundings.

The legal effects of the settlement

§ 9. A listed building must be kept in a proper condition by the owner or user, including watertight roof

and partitions.

§ 10. All building work relating to a listed building requires permission from the Minister of Culture if the work goes beyond ordinary maintenance, cf. however subsection 5 and 6. The same applies to setting up light installations, antennas, parabolic antennas, and the like as well as signage on facades including roof surfaces.

Support for listed and conservation-worthy buildings

§16. The Minister of Culture can grant support to:

- 1) Construction work on listed buildings, where permission is required according to section 10, subsection 1.
- 2) Expert assistance and project development as well as the preparation of plans for the renovation and future use of buildings that have been recommended for preservation by the Special Building Inspectorate, cf. § 23, subsection 1.
- 3) Securing inventory in listed buildings, where the inventory is not covered by the preservation under § 3 as well as inventory in buildings worthy of preservation if the inventory is of importance to the cultural-historical whole or has a special connection to the building in question.
- 4) Nationwide and local associations and the like with building cultural purposes.
- 5) Institutions and the like, whose purpose is to preserve the traditional building trades and to inform and guide about building cultural issues, etc.
- 6) Construction work on buildings that the minister deems worthy of preservation, cf. § 19.
- 7) Local conservation councils or similar that can provide support for buildings worthy of conservation, cf. § 17 and § 19.

PCS. 2. Support can be provided in the form of loans, grants, expert assistance, project preparation, or materials. The support can be made conditional.

Section 32 a. The Minister of Culture ensures compliance with this Act and with the rules laid down based on the Act, as well as with conservation decisions and special conservation provisions.

PCS. 2. The Minister of Culture ensures that orders and prohibitions under this Act are complied with and that conditions laid down in permits are complied with.

PCS. 3. The municipal council must make a report to the Minister of Culture when the municipal council becomes aware of an illegal relationship.

PCS. 4. If the Minister of Culture becomes aware of an illegal relationship, the Minister must apply for

the legalization of the relationship, unless it is a matter of quite minor importance.

§ 33. It is the responsibility of the owner or user of a listed building at all times to correct conditions that conflict with this Act or the permits or special conservation provisions issued following the Act.

PCS. 2. If the owner or user does not comply with an order issued by the Minister of Culture to rectify an illegal situation, he can be ordered by a judgment to rectify the situation within a set period under the compulsion of consecutive fines.

PCS. 3. When an injunction issued by judgment to rectify an illegal situation is not complied with on time and recovery of compulsory fines cannot be assumed to lead to the injunction being complied with, the Minister of Culture can take the necessary measures to rectify the situation at the owner's or user's expense.

PCS. 4. When an order issued by the Minister of Culture to remedy deficiencies that present a danger to the maintenance of the building is not complied with within a deadline set by the Minister, the Minister may, regardless of the rules in subsections 2 and 3 immediately have the works in question carried out at the owner's expense. The police provide the necessary assistance for this according to rules that are set after negotiations between the Minister of Culture and the Minister of Justice.

PCS. 5. The Minister of Culture can, at the owner's expense, register an order to rectify an illegal situation on the property. When the relationship has been rectified, the Minister of Culture must have the order canceled from the land register.

ANNEX 2

Seaweed houses, maintenance manual

This user manual includes ongoing maintenance of a seaweed house on the roof and facades. It applies to seaweed houses, which have obtained support from project Læsø Tangtage A/S for replacing seaweed roofs.

The guide also deals with ongoing operations where special conditions apply to a seaweed house.

Houseowners must follow the instructions to document that the house is continuously maintained in case of any damages. Work carried out must, therefore, be noted on the maintenance form.

Facades:

Chalkboard (Da.: tavl):

The board is inspected every spring for missing or loose plaster. Plaster repair with mortar Kkh 35/65/500. Available as dry mortar at the timber trade.

The blackboard is surface-treated with lime. When liming on new plaster, liming with one limewater, three times milk of lime, and finish with one serving of lime water. See the instructions from Kulekalk: <https://kalk.dk/guides/kalkning/kalkning-saadan-goer-du>

All limed surfaces must be treated yearly or as needed with one application of lime milk and then with one application of lime water. It extends the durability of the surface. Lime water and milk lime must be applied with a lime brush on a damp surface. Swiping vertically.

Ready-mixed lime water and lime milk can be bought online and from Nordisk Kulekalk at the timber trade. Liming is best and most durable in spring and autumn and never in direct sunlight. The lime should harden, not dry. READ the instructions for use on Kulekalk.

Trusswork:

The visible half-timbering must be treated with black linoleum paint or black/brown linoleum tar. Larger cracks and holes must be filled with tarred work and minor cracks with linoleum putty before painting. Timber is processed regularly so that the tree is always covered.

See guidance from the Danish Palaces and Culture Agency regarding timber frame:

https://slks.dk/fileadmin/user_upload/kulturarv/publikationer/emneopdelt/bygniger/Bygningsbevaring/3.4_Reparation_of_bindingsverk.pdf

If the posts are damaged, they must be repaired quickly, as a significant weight from the roof rests on

them. The lower part of the posts is inspected annually.

Windows and doors:

Surfaces must be painted with linoleum paint. Most people know Læsøgreen on the outside and white on the inside. Color Windows painted with linseed oil are refreshed every spring by applying a thin layer of linseed oil (for external use with fungicide) with a brush or cloth.

If maintenance is required for re-treatment with paint, the surfaces must be cleaned with a loose paint scraper. The windows must be cleaned and easily sanded. Small holes and transitions are filled with linoleum putty. A kit surrounds the windows to be repaired, and linoleum putty (not thermal putty) is putty where missing.

New putty and exposed wood must be painted with linoleum paint twice before the entire window is painted one time.

Hinges should be greased continuously as needed. When replacing Glass, it must be "game" glass—not float glass. Glass can be recycled, drawn, or blown.

The spikes:

The ground around the house is paved with spikes. The stones must distribute rain so that it does not splash up on the wall, and rain and roof water must be directed away from the house. Therefore, it is important that the coating does not fall from the house.

The pavement must be kept clear of grass and weeds to ensure drainage. The stones must be visible and higher than the sand fill, and the fall must be maintained so that the house is optimally protected. If needed, the gap between the spikes shall continuously be filled with sand.

Seaweed roof:

The roof is made of dried eelgrass. It is a living roof that works. However, it settles over time, and storms, rain, and vegetation can damage it.

The roof should be visually checked regularly for larger fouling and large gaps. Plant growth with taproots and larger plants must be removed, as they can damage the roof and leave voids for rainwater to be channeled down the roof. Smaller growths are cozy and can grow but must not take over. The seaweed roof must be visible so that the sun can dry out the eelgrass and keep the roof dry.

The roof must be inspected annually to ensure that the peat is lying correctly on the ridge. If the roof has gaps, the space must be checked for possible damage to the roof structure, and the seaweed roof must not be damp on the underside.

The roof must be checked on the roof surface. A layman cannot repair the roof; a plumber should do it.

Note that there is sufficient heat in the housing to keep the inner seaweed dry.

Treatment of fouling on the roof:

The eelgrass can contain seeds on the new roofs, quickly developing into plants. It is, therefore, important that these are removed when they appear. Foulings in seaweed roofs can look beautiful but destructive to the roof. Especially plants with an extensive and deep root network, cause holes in the roof when they die and rot away. The problem is expected to diminish, but ongoing monitoring remains essential.

Therefore, harmful growths must be regularly removed, let's say once or twice a year. This may be done where the plants are small by lifting them up while holding the tongs around the stem in place. Any holes that appear after pulling up must be filled with eelgrass. Larger growths are cut/sawed down. Plants with deep roots should be cut and not uprooted.

If large quantities of insects, such as bench-biters and centipedes, are detected in the seaweed roof, it is essential to treat the roof so that they do not cause damage. Birds eat the insects and root in the seaweed roof, so their holes come. It must be avoided. Ensure you have a tall ladder to check the roof and quickly repair minor damage continuously.

Aftermath of the roof construction in the attic:

The roof structure in the attic should be inspected once a year for damage, such as breakage, worm infestation, or mold. Moisture must also be checked, particularly in critical areas at shoe tracks and immediately above the top strap.

Newly laid roofs will temporarily conduct moisture all the way to the underside. In heat and high humidity, mold and pest infestation can occur. It is, therefore, important that the indoor climate in the attic is monitored and regulated ventilation and heating of the seaweed house so that the humidity is kept below 70% all year round.

The roof space must be inspected twice yearly to check for mold, typically with a white plaque on the underside of woodwork or seaweed. Any high humidity can also promote worm infestation of the woodwork. In connection with the construction phase, all the woodwork is treated with fungal protection and protection against borers (Boricol or Protox), which probably keeps worm attacks away in the first years. The effect diminishes with age. Therefore, you must monitor whether small piles on the floor, called "sawdust," are caused by worm infestation.

If worm infestation or fungus is detected, contact an adviser immediately. An important way to help with climate control in the attic is to hold a minimum temperature on the ground floor of 10 – 12 degrees and ensure continuous ventilation in the roof space either through natural leaks at the top strap and gable, by opening the roof hatch, or by mechanical ventilation.

Trimming around doors and windows:

When establishing the gable roof, doors and windows are cut several times until the roof settles in the first few years. Subsequently, further pruning may be needed, and such pruning is done with scissors.

Attic insulation:

In connection with the work on establishing a new tin roof, the ceiling is delivered uninsulated. Understandably, you want to keep warm. The tang roof in itself insulates very well, but if you want additional insulation, it would be natural to use eel grass as insulation material in loose form laid out on the ceiling boards. Alternatively, paper wool can be laid out.

Mineral wool in thicker layers than 100 mm is not recommended, as this requires implementing a dense vapor barrier, which must be impossible to establish. The insulation must be inspected yearly in connection with the roof space inspection. Dead animals are removed.

Treatment of chimney pipes:

The chimney pipes are treated with the brand Keim facade paint or silicate paint; some are also whitewashed. The pipes are painted approx. once every 3 - 4 years, when they are no longer entirely white. They are inspected for cracks and leaks and whether the joints are intact. Damage must be repaired as soon as possible, as it can develop otherwise.

Ventilation in the attic:

In some houses, natural ventilation is carried out in the attic by drafts via hatches in the gable. The opening must be kept clear so that there is free passage. In other houses, there is no windproofing along the top strap, so there will be natural ventilation. The owner must adjust the ventilation according to need during the year.

Heating the house:

Keeping a minimum temperature in the house all year round of 12 degrees is recommended. Such heating can be suitably carried out when installing a heat pump. The temperature should be able to be controlled around 12 degrees and not below 10 degrees. WIFI can control wall models; a built-in solution informs Østerby El. (Price DKK 2000 for WIFI module for others).

As described in the local plan, it is not permitted to mount a heat pump on the facade. If you want to set up an air-air or air-water heat pump, it must be mounted 3 meters from the house. The setup may be carried out in a shed or behind a discreet screen, e.g., wooden slats with suitable openings to secure air supply. Low bushes can be planted around the heat pump. If air-based heat pumps are to work efficiently, intake and exhaust mustn't be "short-circuited."

Maintenance plan

The described maintenance tasks are carried out at intervals as indicated. It is recommended that the homeowner notes the date and "performed by" as documentation. Make a copy of this sheet, record

observations and work done each year, and keep it for at least 20 years from restoration time.

A new form is completed in connection with the review every year and saved for 20 years after the restoration:

Date and year		Done by:	
Maintenance plan	Task	Interval	Receipt/carried out by
Inspection of façade and repair of damage in masonry and tavl	Inspection and repair	1/year - Every spring	
Whitening of the facade	Whitening with milk of lime and water of lime	Every 1-3 years depending on need	
Windows and doors	Inspection. Clean frames and frames, lubricate hinges.	Every spring	
	Check wood for damage. Switch damaged tree.	Every spring	
	Linseed oil treatment – thin layer	Every spring	
	Linseed oil paint approx. every five years. Scrape off loose paint. Paint with linseed oil thin layers as needed.	Approx. every five years Every or every 2. year	
Inspection roof and removal of unwanted vegetation. (Owner assumes responsibility after two years)	Cut windows free of seaweed as needed with scissors.	In the first five years.	
	Remove with scissors and saw, cut at roof surface – do not move up: Spray for weeds in case of special need in first year after closure. Possibly service agreement with the thatcher.	1-2 times a year	
Inspection of attic	Inspect for lunker, adjust, and fulfill as required. Performed by roofer/expert.	Two times a year	
	Check for moisture, borers, fungus, damage and damp wood. Inspection of insulation	Spring and late autumn.	
Chimney	Moisture meters are checked, max 70% RH. (Læsø Tangtage measures the first five years + downloads data loggers) – copy to owner.	Data loggers are tapped for data. Replace battery /2 years	
	Inspection for damage and bird nests	Once a year, spring/summer	
Ventilation	Painting of Chimney Pipe	Approx. every 3-4 years.	
	Ventilation openings inspection. Control of humidity max 70%	Spring and late autumn	

Heating	Control of temperature min. 12 degrees. Data loggers are set up in the attic in start-up period	Two times a year.	
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ANNEX 3

The Nature Conservation Act

Purpose

§ 1. The Act is intended to help protect the country's nature and environment so that social development can take place on a sustainable basis in respect for human living conditions and for the preservation of animal and plant life.

Part 2. In particular, the Act aims to:

- 1) to protect nature with its wildlife population, their habitats and landscape, cultural-historical, scientific and educational values;
- 2) to improve, restore or provide areas of importance for wild fauna and flora and for landscape and cultural and historical interests; and
- 3) to give the population access to move and reside in nature and to improve opportunities for outdoor life.

Part 3. In administering the Act, emphasis must be placed on the importance which an area may have to the public because of its location.

Public access to nature

Beaches

§ 22. Beach shores and other stretches of coastline are open for walking, short stays, and bathing in areas between the daily low-water line and the continuous land vegetation that is not dominated by salt-tolerant plants or other shoreline vegetation. Access is at your own risk. It is allowed to have a boat without a motor lying on the shore for a short time. In the period 1 April to 30. September, dogs must be led on a leash. Dogs must always be kept on a leash where there are grazing livestock. From 1 September to 31 September. May horse riding is allowed on the uncultivated shore and directly down there if there is legal access to the beach.

Part 2. The rule in paragraph 1 shall not apply to land which, before 1 January 1916, was zoned as a garden or included in the business of a commercial activity carried on the property. The same applies to defence installations and port installations.

Part 3. Public access must not be hindered or impeded by public access.

Uncultivated land

§ 24. Uncultivated land is open for walking and residence, if legally accessible. Access is at your own risk. Dogs must be kept on a leash.

Part 2. The owner may prohibit entry on hunting days or in areas where intensive agricultural work is taking place.

Part 3. Privately owned, uncultivated land is only allowed from 6 am until sunset.

Conservation provisions

§ 38. A conservation order must contain a provision on the purpose of the conservation.

Part 2. In protected areas within international nature protection areas, the purpose must be that the conservation must contribute to ensuring a favourable conservation status for the species and habitats for which the areas have been designated.

Part 3. Conservation may consist of maintaining the present state or providing a specific condition which must then be preserved, and it may regulate public movement in the area.

Part 4. A conservation order may contain such provisions, including the injunctions and prohibitions concerning the use of the land, which are deemed necessary to achieve the purpose of conservation.

Part 5. A conservation order may stipulate that a real estate or part of a real estate must be ceded to the public.

Part 6. In a conservation order, it may be stipulated that the prohibitions in section 3 and sections 15-19 shall not apply to the extent that the relationship is regulated by the conservation.

Part 7. A conservation order must specify to what extent it replaces a permit, etc. according to the rules of this Act or according to rules in other legislation.

§ 38 a. A conservation project involving the implementation of a nature restoration project can only be carried out if the authorities responsible for carrying out the project and bearing the costs associated with it can recommend the conservation.

Natural National Parks

§ 61 a. A natural national park may be established on a larger state-owned area with permission from the Minister for the Environment. Permission is granted on the basis of an application pursuant to section 61 c.

Part 2. A natural national park must be managed with nature and biodiversity as the main considerations, with a view to ensuring that nature in the area can develop on its own terms as far as possible. The natural national park must be exempt from forest and agricultural production, except for special management measures for the sake of nature and biodiversity. However, agricultural production under an existing agreement may continue during the notice period or, in the event of non-terminability, until the expiry of the agreement.

Part 3. The management of a natural national park, which includes areas within international nature conservation areas, must contribute to the implementation of the Natura 2000 plan's objectives for the state of nature.

Part 4. Notwithstanding § 22(3) and § 23(2) pursuant to subsection (1), the Minister for the Environment may permit a natural national park or an area therein to be wholly or partly fenced off for year-round grazing. However, public access to and from the natural national park must not be prevented or unnecessarily impeded. The free movement of game must also be maintained to the greatest extent possible.

Part 5. The Minister for the Environment shall publish permits pursuant to subsection (1). Publication can be done digitally only.

§ 61 b. In a natural national park, the quality of the watercourse must reflect pristine conditions with natural runoff and dynamics, cf. however, subsection (2).

Part 2. In exercising powers under the Watercourses Act, the watercourse authority may deviate from the requirement under subsection (1) for the quality of the watercourse if there are other important considerations.

§ 61 c. An application for the establishment of a natural national park is prepared by the state landowner after the involvement of the public and the authorities concerned. If there are several state landowners, the application is prepared by the owners jointly.

Part 2. An application pursuant to subsection (1) must contain a project description for the establishment of the natural national park and a management plan for the area, cf. §§ 61 d and 61 e.

§ 61 d. A project description for the establishment of a natural national park must contain an indication of the geographical delimitation of the area and information, including the following:

- 1) The current status and use of the area, including natural basis, protected nature, landscape conditions, roads, paths and other facilities and protected cultural and world heritage as well as outdoor recreation.
- 2) Whether the establishment of the natural national park and the implementation of the management plan are dependent on permits, approvals or exemptions under this Act or other legislation.
- 3) The relationship to planning, etc. for the area.

- 4) Planned measures and facilities in connection with the establishment of the area, including the establishment of fences, roads and paths, the release of large herbivores, traffic safety measures and outdoor and tourism facilities.
- 5) Nature restoration initiatives in the area, including planned measures to restore natural hydrology in the area, and the expected consequences thereof.
- 6) An estimated assessment of the expected climate effect of the establishment of the natural national park and the implementation of the management plan.
- 7) Involvement of the affected public, affected authorities and affected landowners in the further process, including after the establishment of the natural national park.
- 8) Other measures.

§ 61 e. A management plan for a natural national park must include development goals and principles for the management and operation of the area, including in relation to the following:

- 1) Ecosystems, habitats and species.
- 2) The vulnerable animals.
- 3) Outdoor recreation and tourism.
- 4) Aquatic environment.
- 5) Protected or protected cultural and world heritage.
- 6) Road safety.
- 7) Preventive measures.
- 8) Nature restoration measures in the area.
- 9) Monitoring of the development of the natural national park.

ANNEX 4

Documents related to the individual component parts

Museumsgården

- Museumsgården Land register
- Tax registration, 1811
- Owners and residents
- Flora on the roof
- Roof repair, 1992
- Roof repair, 2018

Hedvigs Hus

- Hedvigs Hus Land Register
- Hedvigs Hus Protection

Kalines Hus

- Kalines Hus Land Register
- Realdania Byg (2012): *Kalines tanghus på Læsø*.

Trolles Hus

- Trolles Hus Land Register
- National Castle and Culture Agency: Building permit
- All paperwork concerning the renovation of the roof dating from 2017 to 2019

Uldgården

- Uldgården Land Register 1
- Uldgården Land Register 2
- Uldgården Land Register with ortophoto
- Uldgården Lokalplan 5.02

- Uldgården Municipality Plan
- Uldgården Plantning
- Uldgården Protection 1
- Uldgården Protection 2
- Uldgården Protection 3

Andrines Hus

- Andrines Hus Land Register 1
- Andrines Hus Land Register 2
- Andrines Hus Land Register 3
- Andrines Hus Land Register 4
- Andrines Hus Protection 1
- Andrines Hus Protection 2
- Some of the paperwork concerning the renovation of the roof dating from 2004 to 2015

Annas Hus

- Annas Hus Land Register
- Læsø Tangprojekt, Erfaringsopsamling for 2016-2017 (Gathering experience) [Covers both *Annas Hus* and *Alleen 5*]
- All paperwork concerning the renovation of the roof dating from 2016 to 2023

Alleen 5

- Alleen 5 Land Register 1
- Alleen 5 Land Register 2
- Alleen 5 The Old Roof
- All paperwork concerning the renovation of the roof dating from 2017 to 2020

Trines Hus

- Trines Hus Land Register 1
- Trines Hus Land Register 2
- Trines Hus Land Register 3
- Trines Hus Land Register 4

- Trines Hus Lokalplan 5.08
- Trines Hus Ortophoto
- Declaration of Visibility
- All paperwork concerning the renovation of the roof dating from 2018 to 2019

Sandvad

- Sandvad Decl. of Visibility 1
- Sandvad Decl. of Visibility 2
- Sandvad Land Register
- Sandvad Ortophoto 1
- Sandvad Ortophoto 2
- All paperwork concerning the renovation of the roof dating from 2018 to 2023

Lille Bovetsgård

- Lille Bovetsgård Land Register 1
- Lille Bovetsgård Land Register 2
- Lille Bovetsgård Land Register 3

Nattergalevej 15

- Nattergalevej 15 Land Register 1
- Nattergalevej 15 Land Register 2
- Nattergalevej 15 Lokalplan 3.16
- Nattergalevej 15 Protection
- Some of the paperwork concerning the renovation of the roof dating from 2018

Rønnerne

- Rønnerne Nature Protection, incl. decisions taken based on the Nature Protection Law
- Natura 2000 Baseline analyzis, 2014
- Natura 2000 Strategic Environmental Evaluation, 2014
- Natura 2000 Plan 2016-2021, 2016
- Natura 2000 Nature care plan, 2017
- Rudera coordinates

Poverty landscape

- Natura 200 Plan 2010-2015
- Nature-Nationalpark, background
- Nature-Nationalpark, fact-sheet
- Nature Conservation Act, chapter on Nature-Nationalparks

ANNEX 5

Memorandum of Understanding

Background for Memorandum of Understanding Between owners of protected seaweed houses and Læsø Verdensarv ApS

Læsø Verdensarv ApS is in the process of getting 'Salt and Seaweed' on UNESCO's World Heritage List. Inclusion on the World Heritage List recognizes the irreplaceable value of places, buildings, and natural areas for humanity—places with so-called Outstanding Universal Value.

The seaweed roofs on Læsø live up to the criterion of Outstanding Universal Value - they are not found anywhere else in the world, and they illustrate an important aspect of Læsø's history and man's ability to adapt to the given conditions.

To tell the overall story from Læsø's formation up to the present day, we must identify some specific places and areas that each refer to parts of the story:

- An area of the Rønnerne with old salt hut plots and beyond the spring to the deeper sea where the eelgrass grows.
- Højsande and other inland dunes in Plantagen and the heaths along the Storedal coast.
- Several protected seaweed houses.

Of course, Museumsgården and Hedvig's House are on our list of seaweed houses. They are important because tourists can get very close and enter the houses.

But Museumsgården and Hedvig's House are not enough. To succeed with the UNESCO application—with the subsequent financial gain for the island in the form of more tourists and also for the private landowners in relation to seeking funds for the maintenance of the houses—we need the goodwill of the owners of protected seaweed houses in relation to the project.

Regarding legislation, inclusion on the World Heritage List changes nothing for the lot owners. It will continue to be the national Danish conservation regulations, municipal protection regulations, and local plans that apply.

Of course, more tourists to the island must be expected, and thus, more tourists who want to look at the seaweed houses. But it will be under the same conditions as now: out of the way.

With each lot owner joining the application, we would like to agree on discreet signage with a QR code that refers to a website about this particular house.

In the application, we will include an annual evaluation of possible nuisances caused by approaching tourists so that we can jointly regulate any inappropriate traffic. We will also explain very clearly in our future information material the expectations of 'good behaviour' around privately owned houses. And we will primarily refer to Museumsgården and Hedvig's House.

Memorandum of Understanding
between
XX
and
Læsø Verdensarv ApS

Inclusion on the list of buildings in the application for nomination to World Heritage

Memorandum of Understanding between XX and Læsø Verdensarv ApS, which gives Læsø Verdensarv ApS access to list house YY in the application for nomination to World Heritage, cf. attached 'Background for Understanding between seaweed house owners and Læsø Verdensarv ApS.'

The memorandum of understanding also gives Læsø Verdensarv ApS access to mention, describe, depict, etc., the house in the application and in future information material about Læsø Verdensarv.

Læsø Verdensarv ApS undertakes, according to 'Background...', an annual meeting with the owner of the plot at any given time.

Date:

Signature house owner

Signature Læsø Verdensarv ApS

ANNEX 6

Annotated research texts

Geology

- Hansen, Jens Morten (1995): *En ø's opståen, kystdannelse og vegetationsudvikling: Naturlige og menneskeskabte landskaber på Læsø*. Geologisk Tidsskrift 2
- Hansen, Jens Morten (2010): *The Salt Industry on the Danish Kattegat Island of Læsø (1150 – 1652): Hypersaline source, climatic dependence, and environmental impact*. Danish Journal of Geography 110
- Hansen, Jens Morten (2017): *Opståen, kysttilvækst, klima, vegetation og saltindustri*. Geoviden #2
- Hansen, Jens Morten (2018): *LÆSØ – øen med vokseværk*. Privat udgivelse
- Hansen, Jens Morten m.fl. (2016): *Continuous record of Holocene sealevel changes and coastal development of the Kattegat island Læsø (4900 years BP to present)*. IN Bulletin of Geological Society of Denmark 64

Jens Morten Hansen is professor emeritus in geology. It is due to his research, we have a good idea about the geology of Læsø and the basis for the formation of the hypersaline groundwater – the resource for the salt production.

Salt production and salt huts

- Bak, Frede (2002): *Intet regnskab med Saltet*. IN Museumsforeningen for Læsø og Læsø Museum, Årsskrift
- Dahl, Kurt (2010) *Schäffer og saltværket*. IN Museumsforeningen for Læsø og Læsø Museum, Årsskrift
- Hansen, Jens Morten (2016): *Saltforekomster og Saltproduktion på Læsø (1150-1810)*. IN Museumsforeningen for Læsø og Læsø Museum, Årsskrift
- Havemann, Kent (1991): *Dendrokronologisk datering af saltsyderi på Læsø med et kort rids af udviklingstendenser inden for dendrokronologien*. IN hikuin 18, Højbjerg
- Havemann, Kent (1991): *Saltsydehytten i Bangsbo*. IN Museumsforeningen for Læsø og Læsø Museum, Årsskrift
- Holten, Lars (1991): *Og dermed skal saltkedlen afskaffes*. IN Museumsforeningen for Læsø og Læsø Museum, Årsskrift
- Kjærgaard, Thorkild (1996): *Den Danske Revolution, 1500-1800. En økohistorisk tolkning*. Gyldendal.

- Madsen, Ole (1991): *Konservering af "skraberens" fra Langerøn, Læsø*. IN hikuin 18, Højbjerg
- Malmros, Claus (1991): *Fyr under kedlerne. Trækulanalyse af saltsyderier på Læsø*. IN hikuin 18, Højbjerg
- Olesen, Claus Rohden (2001): *Saltsyderierne ved Bangsbo og Stoklund*. IN Museumsforeningen for Læsø og Læsø Museum, Årsskrift
- Steffensen, Orla (1997): *Saltets vej*. IN Museumsforeningen for Læsø og Læsø Museum, Årsskrift
- Vellev, Jens (1989): Viborgs første læger – og deres gravsten. *Kirkehistoriske Samlinger*. S. 123-156. – S. 132 om Viborg ærkedegnedømmes indtægt på 12 tønner salt fra Læsø.
- Vellev, Jens (1990): Saltproduktionen i Danmark – især på Læsø. *Museumsforeningen for Læsø – Læsø Museum*. S. 25-42.
- Vellev, Jens (1991): Die Salzproduktion in Dänemark – besonders auf der Insel Læsø. *Das Salz in der Rechts- und Handelsgeschichte. Internationaler Salzgeschichtekongress 26. September bis 1. Oktober 1990 Hall in Tirol* (herausgegeben von Jean-Claude Hocquet und Rudolf Palme), Schwaz, Österreich, S. 413-438.
- Vellev, Jens (1991): Saltproduktion på Læsø, i Danmark og i Europa. *Hikuin 18*. S. 7-108.
- Vellev, Jens (1991): Saltproduktionen på Læsø – den danske industris vugge. *Humaniora 1991* nr. 2. S. 25-27.
- Vellev, Jens (1991): Træsnittene med saltproduktion i "De re metallica" (1556). *Hikuin 18*. S. 109-114.
- Vellev, Jens (1993): Saltproduktion på Læsø – dansk industris vugge. *Kort – og råstofstudier omkring Limfjorden. Limfjordprojektet. Rapport nr. 6*. S. 151-159.
- Vellev, Jens (1993): *Saltproduktionen på Læsø, i Danmark og i Europa*. Højbjerg.
- Vellev, Jens (1995): Jern og Salt i Halland. *Medeltida dansk järn. Forskning i Halmstad 1*. Halmstad. S. 64-78. – Side 71-74 drejer sig om en jernpande der fra en smed i Halland i Sverige kom til en saltsydehytte på Læsø.
- Vellev, Jens (1996): Die Salzproduktion auf Læsø in Dänemark, archäologische Untersuchung und Rekonstruktion. *Das Leben in der Saline – Arbeiter und Unternehmer* (Red. Rüdiger Just & Uwe Meisner) Halle/Sahle. S. 151-176.
- Vellev, Jens (1996): *Saltproduktion på Læsø, i Danmark og i Europa*. 2. oplag af bogen fra 1995. Højbjerg.
- Vellev, Jens (1997): Saltets Vej. Om „Acta Itineris” og Viborg Domkapitels forhandlinger på Læsø i sommeren 1597. *Saltets Vej. En teater- og kulturbegivenhed på 200 km fra Viborg, gennem Nibe til Læsø. D. 21. juni - d. 6 juli 1997* (red. Jens Vellev). Højbjerg. S. 7-12.
- Vellev, Jens (1998): Saltet på Læsø, *Spejderjul 1998*. S. 16-17.
- Vellev, Jens (1999): Indtægt af Læsø. *Zise. Told- og Skatthehistorisk Tidsskrift 1999* nr. 2. S. 67-70.
- Vellev, Jens (1999): Jernfremstilling, Bronzestøbning, Saltudvinding. *Dagligliv i Danmarks middelalder* (red. Else Roesdahl). S. 221-237.
- Vellev, Jens (2000): Indtægt fra Læsø: 660,48 kr. 900 år. *Viborg Katedralskoles Jubilæumsskrift*. S. 25-33.

- Vellev, Jens (2000): *Saltproduktion på Læsø, i Danmark og i Europa*. Forlaget Hikuin, Højbjerg
- Vellev, Jens (2001): On salt and school fees. Income from Laesoe: 660.48 kroner. *Journal of Salt-History / Annales d'Histoire du Sel / Jahrbuch für Saltzgeschichte* volumes 8/9. Berenkamp, Hall in Tirol 2000/2001. S. 45-54.
- Vellev, Jens (2001): Salt på Læsø. *Læsø Salt – i Røg og Damp*. Læsø Produktionsskole og Saltsyderi. Læsø. S. 31-52.
- Vellev, Jens (2002): Salt and the Island of Læsø in Denmark. Archaeological explorations from 1990 to 2000. *Investitionen im Salinenwesen und Salzbergbau. Globale Rahmenbedingungen, regionale Auswirkungen, verbliebene Monumente. Internationale Tagung am Lehrstuhl für Bauaufnahme und Baudenkmalpflege*. Weimar. S. 118-135.
- Vellev, Jens (2004): Om „Sorø Klosters Gavebog“ – og om produktionen af jern og salt i Halland. *Hikuin* 31. S. 37-66. – Kapitel 3: ”Saltkedlerne på Læsø og retssagen i Halland” (side 53-57) handler om 5 diplomer om jernkedler sendt fra Halland til Læsø. – *Hikuin* 31 er også udkommet med titlen *Järnmöllan i Halland* som nr. 43 i Jernkontorets Berghistoriska Skriftserie.
- Vellev, Jens (Senere): En længe planlagt sammenfattende monografi om saltproduktionen på Læsø venter på færdiggørelse. Den vil indeholde dels en gennemgang af de forskelligartede skriftlige kilder dels en redegørelse for forfatterens mange arkæologiske undersøgelser af saltsyderierne på Læsø.

Jens Vellev, professor emeritus in archeology, has excavated several salt huts. Due to his work, we have a pretty good idea about the form and function of the huts. His work is also the basis for the reconstructed salt huts at Læsø Salt – the biggest tourist attraction on Læsø.

Vellev where the first person to formulate the idea that Læsø Salt and Seaweed should apply for a place on UNESCO's World Heritage List.

Historical descriptions

Lars Hess Bing (1802): *Beskrivelse over Læsø, 1802*

Bing is a judge on Læsø.

Bing describes the collection and drying of eelgrass. He also describes tying with *vaskers* and loose eelgrass and the gendered division of labor between *vasker* girls and thatcher men. He also describes half-timbering the load-bearing roof structure and the origin of wood as stranded goods.

He also describes the interior of the houses with panels and decoration.

Bing regrets that the residents of Læsø have not yet realized the value of fire insurance for the houses.

Bing also has chapters on farming, fishing, and lifestyle.

Christen Rasmussen (1859): *Læsø, medicinsk-topographisk*

Rasmussen is a doctor. His manuscript is part of the emerging health science, where descriptions of disease and hygiene conditions are used in general and national health promotion.

Rasmussen describes the houses and their interior design but does not write specifically about confinement.

His interest is, with his task in mind, the habitation's effect on health; i.e., there is a focus on ventilation (a term clearly referring to modern health science), personal hygiene (or lack thereof), and toilet conditions (provided everywhere in the open).

Living conditions

Kirsten Stoklund Johansen (1985): *Levevilkår på Læsø i 1700-årene set ud fra gården Stoklund og dens beboere.*

Johansen's writing background is unknown, but for a period, she wrote many articles for publications such as *The Museum Association's Yearbook*.

Johansen writes based on archival studies about property conditions, contents, and equipment on the farm Stoklund, supplemented with general information from, among other things, Bjarne Stoklund's ethnographic works.

Bjarne Stoklund (2018): *Læsø Land. Økologi og kultur i et øsamfund, 1550-1900. Bind 1: Kvinden og jorden.*

Stoklund was a professor of European ethnology at the University of Copenhagen.

The *Woman and the Land* is the basic book for understanding living conditions on Læsø from the first settlement in the Middle Ages until the last century. The book reviews the history, the habitation pattern, the houses and seaweed-thatched roofs, the farming, and the diet.

Seaweed houses, technical description

Hans Henrik Engqvist (1944): *Læsø byggeskik.*

Engqvist was a restoration architect employed at the School of Architecture in Copenhagen. In the summer of 1942, he, along with several students, investigated older Læsø buildings, focusing on the construction of the seaweed roofs. *Læsø Byggeskik* is published in the National Museum's Arbejdsmark.

Engqvist describes the development of the farms from small one-length buildings that are gradually expanded and built together into farm complexes, which may then have been divided into twin farms.

The building's interior is mainly described, focusing on the 'lyre' (opening in the roof where the smoke can escape), used before the chimney was added.

The thatching with *vaskere* and loose eelgrass is also described, just as the woodwork is treated.

Engqvist's text is thus the first and basic architectural description of the seaweed houses.

Nationalmuseets Etnologiske Undersøgelser vedr. Tængning, 1949-50.

A study that consists of a series of interviews with older Læsø residents and focuses on experiences with thatching. The interviews thus provide a non-academic first-hand impression of how the thatching works.

Niels Søren Høegh (1975): *Tængningsmetoder med tang og deres udvikling på Læsø.*

Høegh was employed at the School of Architecture in Aarhus

A study of seaweed techniques on many houses distributed across the island shows individual differences and variations.

The report is part of the basis for describing the individual nominated properties in Læsø's application to World Heritage.

Teisen, Michael (1988): *Lynggården.* IN Læsø Hjemstavnsmuseum 1938 – 1988. Læsø Museum

Teisen, Michael (1988): *Gårdens bygninger.* IN Læsø Hjemstavnsmuseum 1938 – 1988. Læsø Museum

Nielsen, Hans (2007): *Tangtage. Småhuse. Hedvigs His. Fredede huse. Papers.*

Marcel Meier (2009): *Tanggårdene på Læsø – en unik kulturarv uden bevaringsstrategi.*

Meier is an architect. Her thesis takes Bing's, Engqvist's, and Stoklund's work as a point of departure and focuses on the state of disrepair of the remaining seaweed roofed farms.

The text focuses on establishing a conservation strategy for saving the roofs. For this, she uses the conceptual apparatus from the World Heritage Convention.

Thus, Meier's work became the basis for applying Seaweed Houses and Sea-salt Huts on Laesoe Island (Denmark) on the World Heritage List.

Alberte Klysner Steffensen & Frida Nielsine Bommenskjold Thomsen (2022): *Bangsbogaard og den læsøske byggeskik. Bygningsarkæologisk rapport.*

Steffensen and Thomsen are architecture students.

The report describes the seaweed roofs and technique and the houses' other structural details. It also includes extensive photographic material documenting the houses' materiality, such as windows, doors, and gates.

Registreringer af tanggårde

Niels Søren Høegh (1975): *Forslag til overlevelsesmuligheder for tangtage.*

A registration of existing seaweed houses with a brief technical description of building parts.

Erik Einar Holm (1987): *Tanggårde på Læsø.*

Holm and assistant Peter Carstens are architects.

Registration of seaweed-roofed buildings on Læsø made for the Planning Agency's 11th office.

A registration of existing seaweed houses with a brief technical description of building parts.

Erik Einar Holm (1988): *Tangtækte bygninger på Læsø*

An abridged version of *Tanggårde på Læsø*.

Erik Einar Holm (2008): *Læsø tanggårde.*

Updated version of the registrations from 1987 and 1988.

Anne Lindegaard, Hans Jørgen Hansen, Troels Østergaard-Jørgensen, Arne Høi (red) (2012-13): *Tængede tage på Læsø. Fredede og bevaringsværdige bygninger. Bevaringsvurderinger, handlingsplaner, og prisestimer.*

Report prepared for the Danish Agency for Culture by the Center for Building Conservation, Raadvad, in dialogue with Læsø Municipality, Læsø Museum, thatcher Henning Johansen and the Danish Agency for Culture.

It contains, among other things, SAVE assessments of the non-protected buildings. SAVE (Survey of Architectural Values in the Environment) is a method for mapping, registering, and assessing conservation values in urban environments and buildings.

The report formed the basis for the seaweed house project, where the houses in need were given new roofs.