NORTH LINCOLNSHIRE LANDSCAPE CHARACTER ASSESSMENT

North
Lincolnshire
Council

4. Trent Levels Landscape Character Area

The Trent Levels Landscape Character Area (LCAR) covers the western extent of North Lincolnshire. Defined by the county's administrative boundary to the west, and south, and to the east by the spring line at the foot of the scarp slope that forms the Lincolnshire Edge and neighbouring LCAR. Notable features are the estuarine mudflats and seasonally flooding meadows on the southern bank of the Humber Estuary, and the mouth of the River Trent which marks the northern extent of this LCAR.

The character area continues west to the edge of the raised mires and heathland associated with Thorne and Goole along the western edge of the administrative boundary between North Lincolnshire and Doncaster.

Most of the landscape character area comprises the low-lying floodplain areas around the River Trent, which extends south to north through this area to the Humber Estuary. There are two areas of elevated ground in this otherwise flat landscape, the larger of which is wholly within the Isle of Axholme Historic Landscape Character area, locally designated as an Area of Special Historic Landscape Interest.

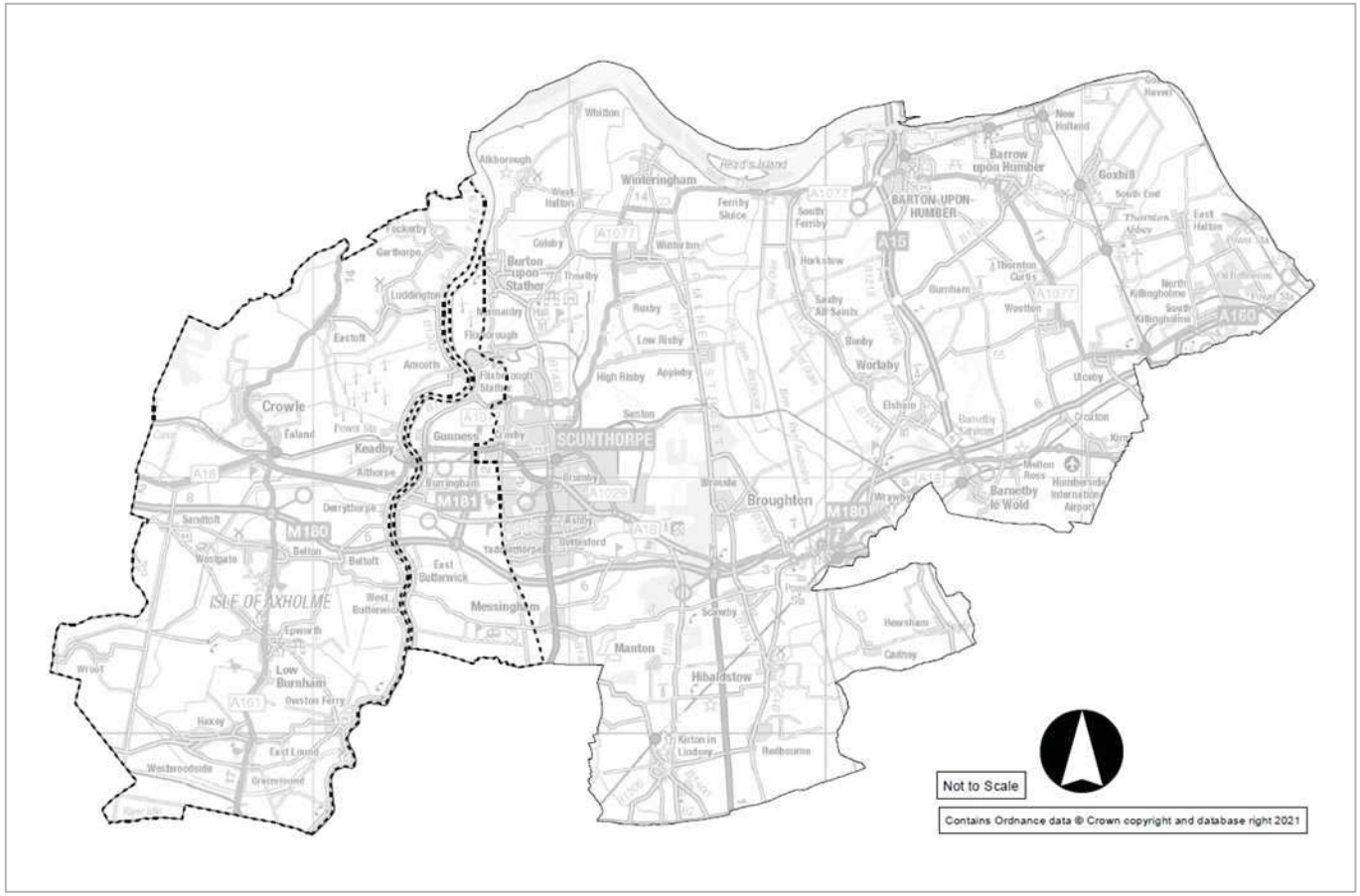

Figure 3 – Trent Levels

4.1 Key characteristics:

The Trent Levels LCAR consists of 7 individual Landscape Character Types (LCTs) over 10 separate geographical areas which gives an indication of the change across this predominantly low-lying landscape, some of which can appear abrupt and others more subtle and diffused. The key characteristics of note are:

- In the main, the Landscape is only 1 or 2m AOD and offers expansive views, although woodland blocks, rising ground, infrastructure and settlements create distant enclosure.
- Significant areas of arable land are graded as 'Very High' and 'High' in Natural England's Agricultural Land Classification system; the highest and second to highest grade. The remainder of the land is graded as, 'Good to Moderate'.
- Contains internationally and nationally important designated areas of ecological conservation.
- Contains the Isle of Axholme Historic Landscape Character area, a locally designated Area of Special Historic Landscape Interest. Three LCTs are partially within this designation, Flat Drained Farmland, Flat Drained Treed Farmland and Flat Wooded Farmland. A fourth LCT, Open Island Farmland, is wholly within this designation.
- A large open arable field structure defined by well-maintained drainage ditches. Hedgerow planting helps to define boundary areas in places; however, hedges are generally badly maintained and contain gaps.
- Farming intensification has led to the loss of hedgerows in places and the consequential breakdown of field structure.
- Open arable areas are occasionally punctured by small woodland copses, farmsteads, shelterbelts, overhead electricity pylons, wind turbines and well-treed settlements.
- Linear features dominate the area with long narrow local roads flanked by drainage ditches, rectilinear field patterns, shelterbelts, and field drainage systems.
- Major infrastructure features include overhead electricity pylons, Wind turbines and primary transport corridors including the M180 and A18 which provide vehicle access over the River Trent.
- Industrial features along the river create a chaotic landscape, especially when in close proximity.
- The River Trent is the major river within the LCAR (and the county) but there are several other waterways which cut through the area, including the Stainforth and Keadby Canal, River Torne and South Engine Drain.
- Larger settlements are found on higher ground or adjacent to the banks of the River Trent. The open floodplains are generally unpopulated with only small farmsteads and associated barns/sheds.
- The open floodplain areas illustrate the typical character of this landscape character area with tendencies for a more intimate landscape and enclosure to occur around settlements.
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4.2 Physical Influences:

The low-lying, mainly flat topography of the Trent Levels is the result of the glacially impounded Lake Humber, of the late Quaternary era. The water body deposited an even layer of sediment, in this case laminated clays, often reaching a depth of 20 metres over the underlying Triassic mudstone and sandstone.

The occasional, isolated areas of elevated ground have been formed by exposed areas of blown sand and Mercia Mudstone, the most distinct being the gently rising Isle of Axholme in the west of the area and a smaller area around the village of Crowle. The looser sandy soils common to the elevated ground have tendencies to support birch and oak woodland due to their lower fertility levels.

4.3 Historic and Cultural Influences:

There is evidence from beneath the peat of Thorne and Hatfield Moors to suggest the existence of a pre-Bronze Age forest, which was later replaced by raised mire as wetter conditions developed. It was because this landscape was so difficult to cultivate or inhabit that early settlement concentrated in the more elevated areas. By medieval times, the landscape structure was one of settlement and strip farming on the raised ground of the isles and river levees of the Trent and Ouse, with pasture on seasonally flooded areas and raised mires left permanently wetted.

Attempts to drain the land date back to Roman times. The main period of drainage came in the early 17th century when Dutch engineers demonstrated new techniques practiced in their homeland. Major river diversions and intricate drainage systems have given rise to the open, geometric field structure of today's floodplain landscape. The fertility of the land has also been dramatically improved by the practice of 'warping', where fields were seasonally flooded with tidal waters, depositing rich alluvial silt over the land. These practices have created areas of intensively farmed, high grade (Grades 1 and 2) agricultural land.

The modification of farming systems during the 20th century has seen the breakdown of some of the field structure in the area, giving rise to larger, more expansive fields. However, the medieval pattern of land use is still traceable in the grain of the present-day landscape despite large scale changes in the last 300 years. Areas of relict medieval open field are distinguishable from areas of land enclosed from the open fields in a piecemeal fashion (Early Enclosed Land) and common pastures which have been drained and subject to parliamentary enclosure (Recently Enclosed Land), with relict areas of raised mire and turbary.

The Isle of Axholme is an area of raised ground in this otherwise flat landscape and its attributes of medieval open strip fields, turburies together with enclosed land and the overall settlement pattern of the area make it unique within the country.

The area is known as the Isle of Axholme as it was originally bordered by four rivers and due to regular flooding was largely accessible only by boat. The area was subject to extensive draining in the 1620's (Miller 1997, 28) and modern farming practices introduced, however, many farmers on the Isle of Axholme itself, disregarded these modern developments and continued farming communally in strips (Miller 1997, 30). This led to a unique landscape which was largely devoid of the boundaries and enclosures seen in most of the country. Combined with the nature of the area as raised ground, the open landscape contrasts starkly with the surrounding areas of early and modern enclosed fields.

The area has been of importance for its well-preserved historic landscape and was noted as having one of the largest areas of preserved medieval strip fields in the UK (Miller 1997, 1), however the pressure of modern farming practices and development may have significantly altered this.

JBA Consulting's Archaeology and Heritage team has recently undertaken work to complete a high-level review of the Isle of Axholme Historic Landscape Character (HLC) study (Miller 1997) and the Lincolnshire HLC study (LCC 2011). The purpose this review is to assess the continuing validity of the HLC character areas and types, highlight areas of change within the council's Local Plan and to determine whether the documents should remain part of the Local Plan evidence base. At the time of writing the work is ongoing.

Older roads follow more winding routes across the area, following dry paths used in medieval times, whilst newer road networks take straighter more direct routes, either utilising slightly raised drainage lines lowering the risk of flooding, or following

rectilinear field boundaries. In many cases, the roads are characteristically flanked by well-maintained drainage ditches.

Major transport corridors, the M180, A18 and railways, have a distinct impact on this flat, open landscape. In many areas, their routes can be identified by large embankments and thick, linear tree and shrub planting.

The raised flood defence embankments along the banks of the River Trent and slightly elevated man-made water courses such as the Stainforth and Keadby Canal interrupt the views.

Overhead high voltage electricity transmission lines, towers and wind turbines, create significant vertical intrusion and visually dominate the floodplain areas adjacent to the river, their presence having the most impact in the areas surrounding Flixborough Stather, Gunness and Althorpe, where both settlements and industry hug the riverbanks.

Wind turbines are also influencing the views around the north west of the LCAR, although these are primarily from wind farms which are just outside of North Lincolnshire's administrative boundary.

4.4 Settlements and Buildings:

The pattern of rural settlements has been strongly influenced by the historic development of the landscape. Rural settlements are few, tending to crowd the elevated land in the west and the banks of the River Trent.

The open floodplain areas are host to occasional farmsteads with associated barns, usually of a modern vernacular, and scattered well-treed settlements, both puncturing the expansive views and adding variety to the landscape. On the raised landform, windmills, water towers and churches can be quite prominent landscape features especially when viewed from the flat open surrounding areas.

The local vernacular combines the use of red brick with either slate or clay pantile roof tiles. Modern developments have grown around the historic core areas, in places adopting the traditional building materials, however there is evidence of large agro-industrial buildings made from modern prefabricated materials associated with rural farmsteads. There are historic farmsteads scattered across this landscape with a number in their extant condition or with minimal alteration. Crowle and Epworth are the only settlements within the LCAR which have a designated Conservation Area.

Detached and semi-detached housing dominates many settlements; in areas such as Crowle bungalows have been a popular choice, reducing visual impact on the surrounding landscape. To the south of Crowle, is the hamlet of Tetley, where the extraction of clay for a Brick and Tile Works has created 7 individual lakes. The lakes are now part of the 7 Lakes Country Park site, a 120-acre seasonal and permanent holiday destination containing large static caravans and lakes for fishing and water sports. The site was established and developed at the start of the 2000s.

There is a trend throughout the area for smaller field sizes in the peripheral areas of settlements, resulting in the development of a more enclosed, and intimate landscape. Field trees, hedgerows and fragmented woodland have a greater presence giving settlements a visual dominance when viewed from the open arable areas.

4.5 Landcover and Wildlife:

Hedges were not a feature of the medieval open field system, and where these landscapes survive intact, hedgerows continue to be absent. In areas that were subject to enclosure, hedgerows were more common, but in many areas, they have since been removed as part of a process of field amalgamation, aiding the development of a large open field structure. Where they occur, hedges are either over clipped and gapped forming a loose boundary, or unmanaged with intermittent tree cover. A few small wooded copses occur in areas adjacent to farmsteads, along with characteristic shelterbelts of both deciduous and evergreen species. Important farmland bird communities have been recorded in the Isle of Axholme.

Tree cover increases in areas surrounding farmsteads and settlements, amplifying their presence compared to the more open surrounding landscape. Also, the subsequent establishment of motorway embankment planting also provides wildlife refuge and habitat.

There are few large-scale woodland blocks within the LCAR with the most noticeable extending along either side of the M180 to the north east of Belton. There are also areas of woodland around the parkland of Hirst Priory to the south of the A18 and along North Lincolnshire's administrative boundary to the west which create a sense of distant enclosure.

Crowle Waste or Moors is part of 'Thorne, Crowle and Goole Moors' a designated Site of Special Scientific Interest (SSSI) which is a national designation in England. Hatfield Moors is a separate SSSI, however both SSSIs are considered as one National Nature Reserve, by their title 'Humberhead Peatlands'. An NNR is a statutory nature reserve designated by Natural England, the National Trust or RSPB (in the case of England). Both sites are also designated as Special Area for Conservation (SAC) and Special Protection Area (SPA).

There are several SSSIs within the Trent Levels including Crowle Borrow Pits, Epworth and Haxey Carr turbaries, and the Hatfield Chase Ditches which includes Folly Drain and South Engine Drain. Many of the other drains, canals and the three rivers in the LCAR have a rich aquatic flora and qualify as Local Wildlife Sites.

The internationally designated SAC and Ramsar site of the Humber Estuary extends as far down the River Trent as Keadby Bridge at Gunness. This same extent is also a designated SSSI.

4.6 Connectivity:

There is a well-established network of Public Rights of Way (PROW) across this LCAR, with a greater number of routes in the area south of the M180. The Peatlands Way, a promoted long-distance footpath, is a looped route which is well connected to the PROW network to the north and south of the M180.

The Peatlands Way passes through several villages within this LCAR, including Epworth and Crowle, as well as the Humberhead Peatlands National Nature Reserves, as the route passes between North Lincolnshire and the neighbouring administrative area of Doncaster. It also passes through Isle of Axholme Area of Special Historic Landscape Interest.

There are currently no designated National Cycle Networks within this LCAR though local cycle routes have become established along the disused Isle of Axholme Light Railway and along the Stainforth and Keadby Canal.

4.7 Landscape Strategy:

The overall strategy for the Trent Levels is one of enhancement to repair and restore features that have become lost to agricultural intensification as well as limiting the expansion of the industrial areas, associated energy transmission network and the further proliferation of wind turbines. In addition to the above, the following should also be considered:

- The transport corridor across the centre of the Trent Levels remains an intrusive feature but in the intervening decades has become more accepted as a feature within the landscape. In the case of the M180, its raised embankments provide valuable habitat in addition to that of the wider character area. Biodiversity enhancement should be encouraged through initiatives across the area, including on features such as the M180 embankments and former quarry sites.
- Ecological designations should be regularly monitored to ensure that they are not being affected or eroded by development or other activities within or near to these valuable habitats. North Lincolnshire Council maintains a network of Local Wildlife Sites (LWS), selected in accordance with objective criteria. The LWS network should be resurveyed and reviewed every 5-10 years, with any newly discovered qualifying sites being added at that stage.
- Tree planting around new developments, for screening or shelterbelt, should be from native species of local origin with a proportion of species from more southerly zones to provide adaptation to predicted climate change. Any plantings should be supported by a robust management and maintenance scheme to ensure that full establishment is achieved. Where existing tree planting is not of local provenance then a programme of gradual replacement should be encouraged.
- Consideration should be given to strengthening the existing footpath network, for example using technology and downloadable maps and information onto mobile devices. These maps can highlight the existing historical and ecological assets and features of interest within the Trent Levels which would raise awareness of their value and perhaps promote a sense of ownership and safeguarding within the local community.

12. Lincolnshire Edge Landscape Character Area

The Lincolnshire Edge Landscape Character Area (LCAR) is an elevated area of predominantly arable farmland orientated north south and sandwiched between the lower lying Trent Levels and Ancholme Valley, to the west and east respectively.

Extending from North Lincolnshire's southern administrative boundary, near Kirton in Lindsey, the LCAR wraps around Scunthorpe's eastern boundary, and continues north to Whitton at the Humber Estuary.

Within this area we find scarp slopes, woodland blocks, urbanisation and post industrial landscape combining with arable farmland to create a complex and varied landscape. Although Scunthorpe itself is not included within the Landscape Character Assessment document, the iron and steel infrastructure along its eastern edge have influenced the landscape character found in this zone.

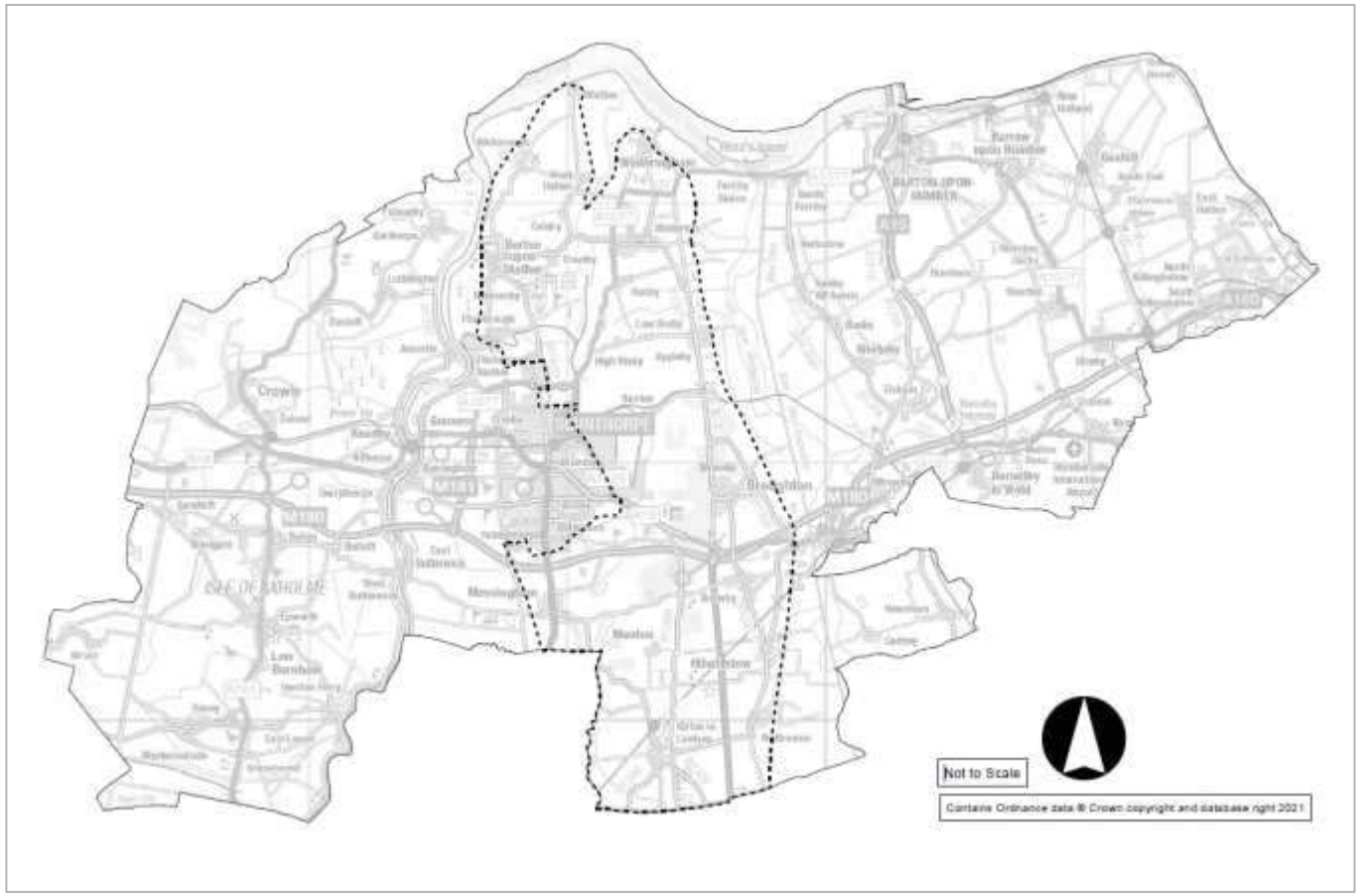

Figure 18 – Lincolnshire Edge

12.1 Key characteristics:

The Lincolnshire Edge LCAR consists of 11 individual Landscape Character Types (LCTs) over 15 separate geographical areas, which gives a further indication of the complex and varied land use across this landscape, some of which is reflected by the range of LCT sizes. The key characteristics of note are:

- A mainly arable elevated landscape with two locally distinctive scarp slopes orientated north south, with the smaller one on the north-east edge. The larger is more centrally located, originating in the south of the LCAR and passing Scunthorpe to the east.
- The elevation of the landscape ranges from 20m in the south east to 60m AOD on the north-west shoulder of the LCAR, with the latter offering expansive views to the west.
- Scunthorpe and the iron and steel infrastructure on the north east of the town contribute a strong industrial influence when in the immediate surroundings and further afield when visible.
- Active and inactive ironstone quarries and gullets, associated with the iron and steel industry, also contribute to the industrial influence. To the north of Kirton in Lindsey there is active quarrying for limestone and around Messingham and Cleatham for sand and clay extraction.
- Large areas of elevated open farmland along the eastern edge offer expansive views over the Humber Estuary, Humber Bridge and Ancholme Valley.
- Overall, it is a complex, diverse and elevated landscape which in addition to the open views and industrial influence contains large areas of deciduous woodland, plantation woodland, scarp slopes and historic villages born of the region's agricultural revolution.
- Significant areas of arable land are graded as 'High' in Natural England's Agricultural Land Classification (ALC) system; the second to highest grade. Much of the remaining land is graded as, 'Good to Moderate'.
- Farmland characterised by open, rectilinear fields and few boundaries. Where enclosure is still present, a mixture of discontinuous hedgerows, shelter belts and trees.
- Nationally and regionally important designated areas of ecological conservation value, including the coversands area of heath, blown sand habitats and conifer woods.
- Contains one of the largest, almost uninterrupted, blocks of woodland in the ceremonial county of Lincolnshire forming a notional green spine in the centre of North Lincolnshire. A sizable amount of this woodland is designated as Ancient Woodland.
- Major infrastructure features include overhead electricity pylons, wind turbines and primary transport corridors including the M180 and A18, and railway lines.
- On the eastern edge is the historically significant Roman road, Ermine Street, orientated on a north-south route.
- Nationally and regionally important designated areas of heritage conservation importance including several close to Ermine Street and the deserted medieval villages at Gainsthorpe and Sawcliffe, which are Scheduled Monuments.

"Overall, it is a complex, diverse and elevated landscape which in addition to the open views and industrial influence contains large areas of deciduous woodland, plantation woodland, scarp slopes and historic villages born of the region's agricultural revolution."

12.2 Physical Influences:

The entire area is underlain at depth by the Triassic mudstones, which continue westwards under the Trent and Ouse lowlands. However, the first, western escarpment rising out of the Trent floodplain is formed of Scunthorpe Mudstones containing some ironstone and limestones. The second escarpment, further east, is formed of Lias Group mudstones with the economically important Pecten ironstones, the exploitation of which led to the expansion of Scunthorpe during the latter part of the Industrial Revolution. This distinctive topographical feature is known as the Lincoln Edge, with its western secondary scarp slope known locally as 'The Cliff'. These Jurassic mudstones and limestones tend to be only lightly covered by glacial and fluvio-glacially derived superficial deposits and generally give rise to fertile (ALC, High) brown earth soils which lend themselves to arable cropping, although pockets of poorer clay drift and blown sand support only pasture.

Important elements of the superficial geology are the coversands, i.e. blown sands. These occur in various small pockets throughout but are most marked east of Scunthorpe. The free- draining nature of the sandy brown earths derived from these sands render repeated arable cropping difficult without high inputs of fertiliser. As a result, there has been extensive planting with Scots pine. This has allowed natural regeneration of birch and subsequently oak to occur in some heathland areas. In certain areas heathy vegetation persists, particularly at Risby Warren and Manton and Twigmoor Warrens.

12.3 Historic and Cultural Influences:

The Lincolnshire Edge has seen recurrent patterns of settlement since prehistory. However, the Romans were the first civilisation to make a very visible impact on the landscape. The Humber Estuary was a northern frontier of the Roman Empire for some 20 years (AD 50 to 70), before a northward push was made. This led to the development of Ermine Street (now the B1207) which carried trade to the ferry at Winteringham. This ferry point on the Humber Estuary has been an important crossing since pre-Roman times and indeed the discovery of a number of craft, many still in good condition, mostly at North Ferriby, has resulted in a re- interpretation of the area's pre-history. The 'Ferriby Crafts' have an international significance and provide further evidence as to the historical importance of the Lincoln Edge as a vital north-south route way.

The next visible impact came with medieval farming and expansion of villages on the Edge. The practice of warrening, an old form of rabbit farming for meat and skins, was established in late medieval times on the sandy soils, e.g. at Broughton and Risby Warren. The principal period of enclosure came in the mid to late 18th century which resulted in extensive planting of the thorn hedgerows that are present throughout the Edge landscape today, although there has been much loss and neglect of hedgerows in areas of open and elevated farmland.

The most significant landscape change came with the Industrial Revolution and the economic need for ironstone. This was extensively quarried north of Scunthorpe, and the town rapidly expanded with the growth of the Ironworks and the amalgamation of its five constituent villages. Scunthorpe thus became the centre of the transport and power generation infrastructure which today is evident principally as a west-east transport corridor following the A18/M180, the parallel railway corridor to the north, and the electricity transmission pylons extending eastwards from the Keadby Power Station.

With the gradual demise of the iron and steel industry came a period of extensive dereliction, the scars of which are still evident today, particularly north of Scunthorpe. The local economy was regenerated at the end of the 20th century, through use of simplified planning controls and industrial zoning, but this has not been without impact on the landscape, in the form of large structures with little relationship to the wider rural landscape.

As well as the physical impact of the ironstone quarries (or gullets), other minerals have been extracted, e.g. sands and gravels, from fluvio-glacial deposits, local pockets of alluvium, blown sand and limestone from deeper quarries. On previously developed land around quarries and former steelworks, important open mosaic habitats have developed supporting a wide diversity of plants and invertebrates.

Away from Scunthorpe itself, rural influences are quickly re-asserted, with most farmland found on

the elevated easterly dip slopes of the Jurassic limestones and to the south of Scunthorpe and the M180.

An equally visible human influence was the establishment, largely post-war, of coniferous plantations on the blown sand deposits. This probably reduced the extent of heathland in these areas to below ecologically viable limits, although some heathy fauna persists on remnant heaths and along road verges, and birch and oak are regenerating naturally.

12.4 Settlements and Buildings:

Despite its exclusion from the Landscape Character Assessment, Scunthorpe has a strong influence on the Lincolnshire Edge LCAR due to its hard edge of built form, with few mitigating features, in a region with a strong rural influence. Scunthorpe's hinterland to the east and north is particularly intrusive through industrial activity and to the south through light industrial, commercial and residential development.

Beyond Scunthorpe's urban centre, the pattern of settlements is more traditional and relates to the agricultural evolution of the region. Larger villages such as Burton upon Stather, Messingham and Kirton in Lindsey are nucleated in arrangement and have a strong local character. Parish churches, usually with a tower, many of which are listed buildings, combine with soft red brick and pantile roof tiles on traditional housing and cottages and intimate street arrangements to create attractive village centres, some of which are designated as a conservation area.

Much of the attraction of established rural villages derives from the mix of architectural styles they demonstrate, where styles, sizes, arrangements, and details vary. Traditional building materials include limestone with red brick detailing which pre-dates the extensive use of red Barton clay for bricks. However, from the mid-19th century red brick and pantiles became dominant. Village expansion around Scunthorpe continued through the 20th century using a variety of styles, including the continued use of the red brick and pantile vernacular.

12.5 Landcover and Wildlife:

In the south of the Lincolnshire Edge Landscape Character Area, the traditional and well-hedged landscape remains relatively unaltered by agricultural intensification. However, across the remaining rural areas, hedgerow enclosure has been extensively lost through agricultural intensification and, where present, hedges are often discontinuous, poorly managed and include few trees.

Much of Scunthorpe's eastern and northern edge is blighted by current and former industrial activity with several active quarries. Where previously exploited, the former rural landscape structure has been lost and left a degraded and unattractive appearance, although the designation of quarry SSSIs and several Local Nature Reserves around the northern edge is testament to how these areas can recover with time and the appropriate conservation management. Pressures on the landscape do remain, including the installation of wind turbines and construction of large-scale poultry farming sheds within this area.

Just to the north of these more recent additions is Normanby Hall Country Park, built in 1825, and set amongst 300 acres of parkland, woodland, duck ponds, deer park and a municipal golf course.

Risby Warren contains an exceptional inland dune system and is one of the largest land based designated SSSIs (Site of Special Scientific Importance) in Lincolnshire. There are acidic and calcareous grassland, heath, scrub and planted conifers occurring across these dunes with richer, deeper soils dominated by bracken and occasional blowouts of exposed sand. The overall effect is of a mosaic of vegetation with characteristic species including sand sedge (*Carex arenaria*) and buck's thorn plantain (*Plantago coronopus*) on the exposed sand, with heather (*Calluna vulgaris*), bent (*Agrostis capillaris*) and sheep's fescue (*Festuca ovina*) where it grades into acidic grassland / heath. The coversands heaths represent one of the most important areas in Greater Lincolnshire for heathland, acid grassland and associated species. The Coversands Heath Project, which ran from 2003 to 2008 secured the recreation and restoration of such habitats in this area but management of these habitats remains difficult due to the pressures of habitat succession and competing land uses. On the exposed limestone bedrock are species-rich calcareous grassland communities e.g. tor-grass (*Brachypodium pinnatum*) and carline thistle (*Carlina vulgaris*). This calcareous mix is found both extensively in heathy woodland and more localised in other landscape character types such as the elevated and open farmland, where underlying

bedrock Jurassic limestone is exposed, e.g. in quarries. Where flushes have occurred around base-rich openings on the escarpment, a rich flora has developed on the wooded escarpment north of Scunthorpe.

Secondary scrub has invaded various landscape types mostly on abandoned or unmanaged land. On the blown sands of the heathy woodland, the scrub is birch-dominated (*Betula pubescens*) with some sycamore, oak and hawthorn. On the exposed and abandoned substrates of the ironstone workings, a similar scrub has developed but with a higher proportion of willows (*Salix caprea* and *Salix cinerea*) and silver birch (*Betula pendula*).

Woodland blocks remain locally prominent landscape elements and nationally important habitats with the largest tract of continuous woodland in North Lincolnshire, covering approximately 550 hectares, located to the south, west and north of Broughton. These blocks are further complemented by other smaller areas of woodland within the LCAR including on Broughton Common, Risby Warren, Appleby Carrs and north of Appleby.

Within the woodland around Broughton are several areas of designated Ancient Woodland with additional designations at Burton Wood, on the Lincolnshire Edge north-west scarp, as well as Brumby Wood on the west of Scunthorpe. This LCAR is effectively a stronghold of ancient woodland within North Lincolnshire with just one additional small area in the county, some way to the east in the Lincolnshire Wolds LCAR.

The importance of this woodland is further emphasised by several SSSI designations, including Broughton Far Wood where small pockets of oak and alder woodland persist in undrained flushes and seepage and Manton and Twigmoor SSSIs which exhibit some of the finest wet heathland in the area. On clay overlying limestone, dominant tree species reflect the higher base content of soils, e.g. ash, sycamore, field maple and wych elm. These species are found in longer-standing hedgerows over most of the elevated and open farmlands.

Some of the more important species of fauna associated with the area are nightjars, woodlarks and some rare invertebrates, generally restricted to heathy woodland situations and woodland flowers and buzzards and nuthatch in the rustic wooded areas of Broughton and Appleby.

12.6 Connectivity:

The Lincolnshire Edge LCAR has a well-established network of Public Rights of Way (PROW) throughout including those around the Humber Estuary and within the woodland around Broughton. Further access through this woodland and that south of the M180 is enabled through permissive paths and in the case of Risby Warren and Greetwell by the open access land in place.

Sustrans' National Cycle Network Route 169 runs through the western side of Scunthorpe, from Manor Park in the south through to Normanby Hall in the north and is locally known as The Ridgeway.

This route was designed to link communities together, providing better access for everyday journeys to schools, local shops and workplaces.

Sustrans' website indicates that there are plans to link the Ridgeway from Normanby Hall through to Winterton to the north west.

There is also a range of self-guided walks and cycling routes are promoted regionally through the Council's website.

12.7 Landscape Strategy:

The strategy for the Lincolnshire Edge is to retain the woodland blocks and ensure that they are not lost or encroached upon through development. Ancient Woodland should be sensitively managed and wherever possible, plantations on ancient woodland sites (PAWS) should be restored to semi-natural woodland. The restoration of former industrial land should prioritise the establishment of open mosaic habitats and woodland to connect into the outlying areas, strengthen North Lincolnshire's green core and soften the current degraded hard edge.

There will undoubtedly also be pressure to prioritise this land for housing, commercial and agricultural development to meet the area's growth and demands. In these circumstances, effective green buffers and wildlife corridors should be integral to proposed developments and be masterplan led. In addition to the above, the following should also be considered:

- Large agro-barn and commercial units should be sensitively sited and screened to prevent the replacement of existing incongruous structures being replaced with similarly incongruous development.
- Appropriately sized and specimen tree planting around new developments, for purposes of screening or shelterbelt, should be from native species of local origin and supported by a robust management and maintenance scheme to ensure that full establishment is achieved. Where existing tree planting is not of native species of local origin then a programme of gradual replacement should be encouraged.
- The demand for the extraction of various natural resources, through quarrying and drilling is likely to continue and sites should be carefully selected following full feasibility and capacity studies. This approach should also be applied for the expansion of industrial areas, associated energy transmission networks and installation of wind turbines. In particular, wind turbines should only be considered in the areas proposed in the Local Plan. In the more rural areas, agricultural intensification and amalgamation of fields should be limited and restoration of former field hedgerow boundaries encouraged.
- The M180 corridor across the centre of the Lincolnshire Edge LCAR remains as an intrusive feature but benefits from enhanced screening to that of the neighbouring LCARs through the woodland to the north and south of the motorway. Either side of this, the motorway's treed embankments should be monitored and managed to continue providing valuable habitat through the clearance and replacement of species, where necessary, to establish diversity in age structure and species. Additional biodiversity enhancements should be considered and encouraged, through initiatives across the area, including on former quarry sites and areas highlighted in the Biodiversity Opportunity Map.
- Ecological designations should be regularly monitored to ensure that they are not being affected or eroded by development or other activities within or near to these valuable habitats. Opportunities for creating new designations at a local level should be considered and explored.
- The Statements of Environmental Opportunity (SEO) 2, referenced in National Character Area profile 45, refer to protecting the Coversands, its sandy soil, distinctive dune formations and expand, buffer and connect the key habitats, providing access and interpretation where possible, and addressing climate regulation, soil erosion and water availability. Opportunities include *Maintaining and expanding mosaics of heathland with pockets of mire and wet heath, dry acid grassland and oak/birch woodland and introducing management where necessary to improve their biodiversity and their resilience to climate change, while also improving infiltration of rainwater* and *Seeking opportunities to remove conifer plantations from areas where heathland or dry acid grassland could be restored, finding suitable compensation planting sites elsewhere*.

- Consideration should be given to supporting the existing footpath network, for example using technology with interactive maps and accessing waymarking and information through mobile devices. These maps can highlight the existing historical and ecological assets and features of interest within the Lincolnshire Edge which would raise awareness of their value and promote a sense of ownership and surveillance within the local community.
- The proposed cycle link through to Winterton should be further explored and developed. In the case of pedestrian and cyclist access over the M180, links between New Forest Plantation to the north and High Wood to the south, using safer, motorised vehicle free, route should be evaluated and developed.

24. Vale of Ancholme Landscape Character Area

The Vale of Ancholme Landscape Character Area (LCAR) is predominantly low lying, drained arable land with scattered areas of Carr woodland which gives way to an area of coniferous woodland on the rising land around Elsham to the east and an area of open undulating farmland around Brigg, Wrawby and Cadney to the east and south east.

The northern edge of the LCAR extends to the southern edge of the village of South Ferriby, and 2.7km inland from the Humber Estuary, from where it extends for some 23km to the southern edge of North Lincolnshire's administrative boundary. It is contained to the east by the steeply rising ground of the Lincolnshire Wolds' escarpment and to the west by the more gently rising ground of the Lincolnshire Edge dip slope.

In parts, at its widest point the LCAR is 6km wide, however, south west of Brigg, such is the alignment of the administrative boundary it squeezes the width to just 0.8km wide. The boundary widens again around Cadney and Howsham before briefly narrowing as it reaches the southern edge of the administrative boundary.

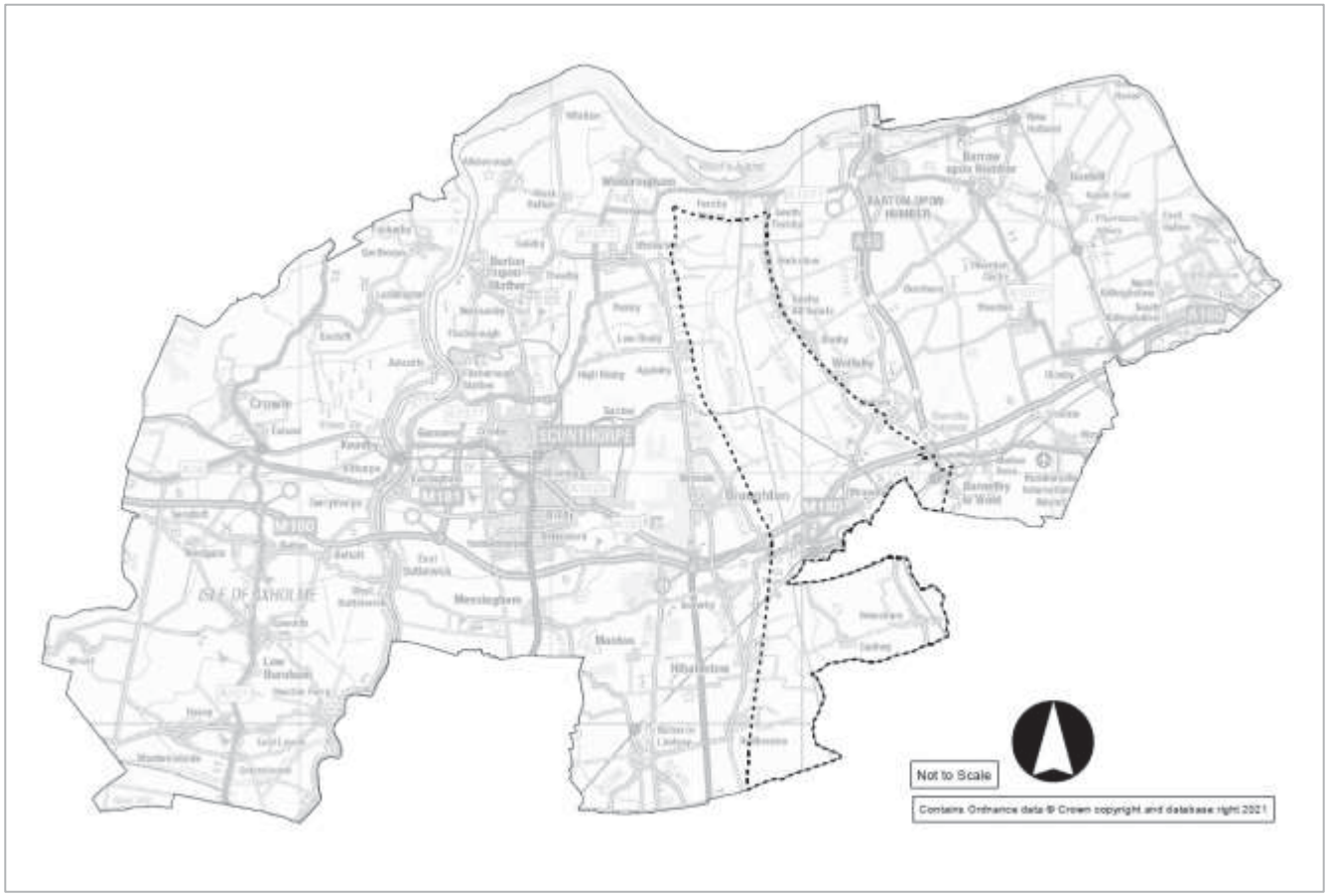

Figure 41 – Vale of Ancholme

The larger areas of urban settlement are located around Brigg and Wrawby, with much smaller settlement at Cadney and Howsham. Settlement across the rest of the LCAR is scattered and remote.

24.1 Key characteristics:

The Vale of Ancholme LCAR consists of 3 individual Landscape Character Types (LCTs) with the Flat Valley Bottom Farmland LCT covering 80% of the area. The key characteristics of note are:

- Broad, low-lying arable vale, contained by rising ground of the Lincolnshire Wolds scarp slope and less distinctively to the west by the dip slope of the Lincolnshire Edge.
- In the south eastern edge of the LCAR the landform rises to 50 m AOD in some parts.
- A strong sense of tranquillity due to the mixture of wide-open spaces across the low-lying land, surrounding enclosure, lack of settlement and woodland blocks.
- The canalised, north-south orientated channel of the New River Ancholme is a central feature within the landscape, with the meandering route of the Old River Ancholme still present.
- Long recorded history of human settlement and interaction to adapt the old river and land for livestock and cultivation.
- Areas of Carr woodland are located across the low-lying arable land with mixed plantations and lowland heathland on the 'blown drift' coversands on the rising landform towards Elsham.
- The predominant land use is agricultural with intensive large arable fields. Remnant hedgerows and artificially drained soils are typical on the lower lying land with retained and well managed hedgerows on the undulating farmland.
- Much of the land around both rivers is low lying at 1m above sea level, and has a propensity to flood, which explains the lack of significant habitation within the valley.
- The town of Brigg is the largest area of settlement and is located on localised higher ground and outside of the floodplain.
- The local road network is restricted to the periphery with only local access routes leading to the river. Vehicular crossings of the Ancholme are not possible despite the number of original bridges which continue to span the river.
- Six of the bridges are listed structures and significantly contribute to the heritage of the LCAR.
- Scheduled Monuments, Historic Farmsteads and the Conservation Area in Brigg further contribute to the Cultural Heritage of the LCAR.
- The arable land is graded as 'Good to Moderate' in Natural England's Agricultural Land Classification (ALC) system.
- Contribution to a significant natural heritage habitat through the presence of deciduous woodland, mixed woodland, lowland heathland, areas of coastal and floodplain grazing marsh, rivers, and drainage channels.
- In the summer, the area supports good breeding populations of protected and priority wetland and farmland birds. The area also provides refuge and food in the winter for many species of birds.
- Water Voles and Otter are amongst the mammals which have a strong presence in the area.
- Wrawby Moor SSSI is a nationally and regionally important designated area of ecological conservation importance, containing coversands creating an area of heath, blown sand habitats and silver birch woodland.
- The New River Ancholme provides wildlife and amenity value, for both land and water-based activities.
- The river provides a strong linear route for both pedestrians and cyclists and is currently undergoing development to create The Ancholme Valley Way.
- Major infrastructure features include overhead electricity pylons, the M180 and railway lines.

"Long recorded history of human settlement and interaction to adapt the old river and land for livestock and cultivation."

24.2 Physical Influences:

The Ancholme Valley, also known as the Lincoln Clay Vale or Mid Clay Valley, has evolved from erosion of the soft upper Jurassic clays and is heavily mantled by Quaternary superficial deposits, occasional glacial till and more extensive estuarine alluvium. The latter were mostly deposited during the sea level transgressions in the immediate post-glacial period. The estuarine alluvium, together with pockets of boulder clay, created the generally flat topography of the valley.

The superficial deposits gave rise to heavy gleyed clay and were extensively modified by artificial drainage from the mid 18th century onwards, when the New River Ancholme and many of its tributaries were canalised and a series of rectilinear drainage ditches were constructed. This increased the fertility of the land, to what is defined by today's standards as Grade 3 'Good to Moderate' and is predominantly used for arable crops and some pasture. The practice of `warping', which was extensively carried out in the Trent and Ouse lowlands, to the west, is notably absent from this area.

An important element of the superficial drift geology is the coversands i.e. deposits of blown sands. Extensive tracts of these occur along the eastern edge of the valley abutting the escarpment slope of the Lincolnshire Wolds. The free-draining nature of the sandy brown earths derived from the blown sands, render repeated arable cropping difficult without high inputs of fertiliser. As a result, there has now been extensive planting of the area with Scots pine, which has allowed natural regeneration of birch and subsequently oak to occur in unplanted or failed woodland glades.

24.3 Historic and Cultural Influences:

The River Ancholme has been used by humans since at least 800 BC, confirmed by the discovery of a Bronze Age Sewn Plank Boat at Brigg, in 1888 which was subsequently re-excavated in 1974. The 3,000-year-old relic is more commonly known as the "Brigg Raft" and is only one of two on display in the country at Brigg Heritage Centre. Prior to human intervention, the river would have meandered through a flat-bottomed landscape with Carr woodland. The word Carr is derived from the Old Norse 'kjarr' meaning a swamp, although the underlying landscape would more typically have been Fen. Subsequent livestock management during the early periods of settlement would have adapted some of the area into floodplain grazing marsh.

Rivers offered well-defined and attractive areas for settlement, as well as providing trade and communication routes and settlements such as Brigg developed at important river crossing points. The name of 'Brigg' comes from bridge, which the growing town soon acquired, and gained market charter in 1236. It remained a prosperous market town throughout the medieval period and rivers continued to provide important trade and communication routes as lowkey pottery and agricultural activities flourished. Patents covering improvements to the river are known from 1287 onwards and major change occurred in 1635, when a newly straightened channel was constructed from Bishopbridge to South Ferriby.

For much of its length, the Old River Ancholme is now a simple field drain, but still retains a sense of its former size as it runs through Brigg from the south. The addition of the new canalised route on the west of the town is re-joined by the old river from the east as they merge to the north of Brigg. The route of the two rivers have created a sizeable island of 85 ha, on the west of Brigg, known as 'Island Carr'.

The canalised river was reasonably profitable as a trade route following its completion in the 1820s, although the arrival of the railway within the area had an impact on this, trade picked up towards the end of the century, and was further boosted in the 1930s by cargoes of sugar beet. By the 1970s all the river's use as a trade route ceased above Brigg, before stopping completely in the 1980s. The upper section was almost derelict by then but was restored and dredged in 2004. Although the canalised river was completed by John Rennie the Younger in 1820, it was his father, John Rennie the Elder who initiated further improvements in the early 1800s.

John Rennie the Elder was a Scottish civil engineer who designed many bridges, canals, and docks of great significance, including Waterloo Bridge and London Bridge. His son, John Rennie the younger, completed the work for London Bridge in 1831, for which he was knighted. He designed Horkstow Bridge which was completed in 1836, enabling passage across the New River Ancholme at Horkstow, which is the earliest known suspension bridge and remains substantially as designed today.

Many of the original bridges which cross the river are only accessible by small local roads and have escaped modernisation due to their separation from the road network and have not been replaced or improved to handle increased traffic. There are six listed bridges along the reach, from Horkstow Bridge in the north to Hibaldstow Bridge in the south.

24.4 Settlements and Buildings:

Brigg remains an important market town and the only significant settlement in the LCAR. The development of local brick and tile manufacturing in the mid-18th century had a significant influence on the area's architecture and vernacular, contributing to the present-day dominance of Barton clay red-brick built housing with pantile roofs.

The original centre of Brigg, which is located on either side of the Old River Ancholme, is now a Conservation Area containing a dense cluster of listed buildings and structures, with some buildings dating back to the 16th century. Brigg has historically acted as a bridging point in the valley and together with the adjacent village of Wrawby, both of which benefit from the slightly elevated position over the central low-lying areas of the area where settlements are generally absent.

Brigg is nucleated in form with the two principal railway and road crossings, M180 and A18, concentrated on the surrounding land. Wrawby has developed at the junction of the roads from Brigg to Barton and from Brigg to Barnetby le Wold. It is less nucleated in form with some ribbon development extending out along these roads.

Much of the remaining valley is accessible by minor roads only, which do not offer vehicle crossing over the river and consequently, Historic Farmsteads in the valley, particularly in the north, are remarkably dispersed. Most of the Historic Farmsteads survive in an altered condition, with a couple near Worlaby to the east, survive in their extant condition.

Typically, the older brick-built farmhouses are surrounded by a cluster of more modern barns and outbuildings constructed from a variety of materials, such as timber, concrete, corrugated steel and, less commonly, brick. Most of these more modern structures are highly visible even where located close to established, mature shelterbelts.

Elsham Hall Gardens and Country Park, located on the eastern edge of the LCAR, 3km north east of Wrawby, includes the Grade II* listed Elsham Hall which dates to the 1760s, with the associated 19th century orangery also Grade II* listed. The Park and Gardens were opened as a Country Park in 1970 and the gardens include a large medieval carp lake and stew pond, and a 19th century coach house and stables are Grade II listed.

Other, older settlement is represented through the Scheduled Monuments of Thornholme Augustinian priory at Appleby Carrs.

24.5 Landcover and Wildlife:

The Old River Ancholme meanders through the landscape although it is the New River Ancholme that stands as the most prominent feature, carving and adapting the LCAR and central to the landscape in the valley and provides the perfect haven for the local wildlife.

The New River Ancholme has maintained a distinctly rural character, dominated by arable cultivation, isolated farms and woodlands. The Carr woodland contributes to a diverse natural landscape. The New and Old Rivers are relatively species-rich in terms of aquatic plants. Along with several tributary drains, they have been selected as Local Wildlife Sites.

The river is popular with anglers and is a well-stocked and diverse lowland river containing roach, bream and perch amongst others. The majority of the river is ideal for pleasure fishing in the summer months however the fish migrate to the sheltered and slightly warmer waters around Brigg in winter, moving upstream to spawn in spring before moving back to cover most of the river in summer.

In the summer, the Ancholme Valley supports good breeding populations of protected and priority wetland and farmland birds including kingfisher, barn owl, marsh harrier, Cetti's warbler, reed bunting, skylark, tree sparrow, linnet and lapwing. In winter, areas of grassland provide valuable hunting grounds for short-eared owls and hen harriers, whilst arable fields and stubbles support large feeding flocks of pink-footed geese, lapwings and golden plover associated with the internationally important Humber Estuary. In terms of mammals, the valley is a stronghold for water voles, otters, brown hares, badgers and several species of bat.

The Priority Habitat Inventory, a spatial dataset describing the extent and location of habitats of principal importance, records numerous areas of Deciduous Woodland and Coastal and Floodplain Grazing Marsh along the valley bottom, as well as areas of Lowland Fens and lowland heathland around Elsham Hall Gardens and Country Park.

As a result of agricultural intensification, few hedgerows remain on the valley floor but where present, the hedges are often in poor condition being discontinuous and gapped. This arrangement of hedgerows aligned to watercourses contributes to their ecological importance, offering improved conditions for habitat development and wildlife dispersal. Hedgerow cover is generally more common and of better quality on elevated land.

The LCAR retains a positive sense of place and uniqueness through its low-lying condition and the fact that it is well contained by the rising landscape immediately to the east and west; once outside of the North Lincolnshire administrative boundary, the underlying geology significantly widens and it its appearance as a valley becomes broader and less distinctive.

24.6 Connectivity:

The primary Public Rights of Way (PROW) route within the Vale of Ancholme LCAR is the footpath adjacent to the River Ancholme which runs practically the full length of the river, from north to south, and is currently being adapted to also accommodate cycling access. In the northern half of the LCAR there are no connections to the wider PROW network, however the local roads which run perpendicular to the river continue to facilitate pedestrian and cycle access to the wider area.

Around Brigg and to the south, the wider PROW network is better connected between the surrounding areas and the river.

There is also a range of self-guided walks and cycling routes available on the Council's website.

24.7 Landscape Strategy:

The Ancholme valley would benefit from enhancement to improve landscape unity and structure and the following should be considered:

- Traditional landscape elements such as Carr woodland and hedgerows need to be re-instated to reverse losses as a result of the intrusive level of agricultural management. Localised strategies need to soften the impact of intrusive elements and instigate habitat creation.
- Consideration of NFM (Natural Flood Management) measures within the floodplain of the Ancholme Valley and also on the scarp slopes to the east and west, to help mitigate the impact of climate change, reduce flood risk, improve water quality and to make more space for nature. There is a considerable body of evidence to demonstrate how integrated catchment management change, working with natural processes, implementing a range of NFM measures and partnership working, can all contribute to reducing local flood risk and deliver multiple benefits.
- The strategy for the Vale of Ancholme is to retain and enhance the areas of woodland and ensure that they are managed to establish diversity in age, structure and species.
- Development around farmsteads should be encouraged to accord with the materials of the original structure, or to suitably compliment them. They should also be sensitively sited and screened to assimilate them within the landscape.
- The Statements of Environmental Opportunity (SEO) 2, referenced in National Character Area profile 44, refer to habitat creation and regulating water quality. Opportunities include:

1. *Where feasible, creating areas of wet grassland and other wetland habitats along watercourses, such as in the Ancholme Valley, to improve water quality and support the wildlife of the Humber Estuary.*
2. *Planning to adapt to the impacts of sea level rise which is likely to reduce the extent of freshwater habitat around the Humber in the longer term; and seeking opportunities to positively adapt by establishing a variety of wetland habitats within the Ancholme flood plain – where feasible – to partially compensate for loss.*

- Particular target habitats include floodplain grazing marsh, reedbed and wet woodland.
- Consideration should be given to supporting and expanding the existing footpath network, for example using technology and downloadable maps and information onto mobile devices. These maps can highlight the existing historical and ecological assets and features of interest within the Vale of Ancholme which would raise awareness of their value and perhaps promote a sense of ownership and safeguarding within the local community.
- Monitor the condition of the bridges which span the Ancholme and prevent any structural degradation to these important historical assets and links.

36. Humber Estuary Landscape Character Area

The Humber Estuary Landscape Character Area (LCAR) is a predominantly low-lying estuarine landscape which wraps around the eastern and northern edge of North Lincolnshire. It is contained by the higher inland terrain within it and outside by the Humber Estuary causing its width to vary accordingly, measuring barely 1km wide in some parts and as much as 10km in other parts. The Humber Estuary is one of the largest estuaries in England and drains approximately one fifth of the area of the country and has a maximum width of approximately 14km at its mouth. The estuary can be divided into two sections, the 'inner' and 'outer' estuary, situated up-stream and down-stream of the Humber Bridge, some 45km up-stream of the mouth. The western extent of the LCAR is around the confluence of the Rivers Trent and Ouse and is within the 'inner' area as far as the Humber Bridge. To the east of the bridge, in the 'outer' area of the estuary, the LCAR continues east then south east, extending to South Killingholme Haven and North Lincolnshire's southern, land based administrative boundary.

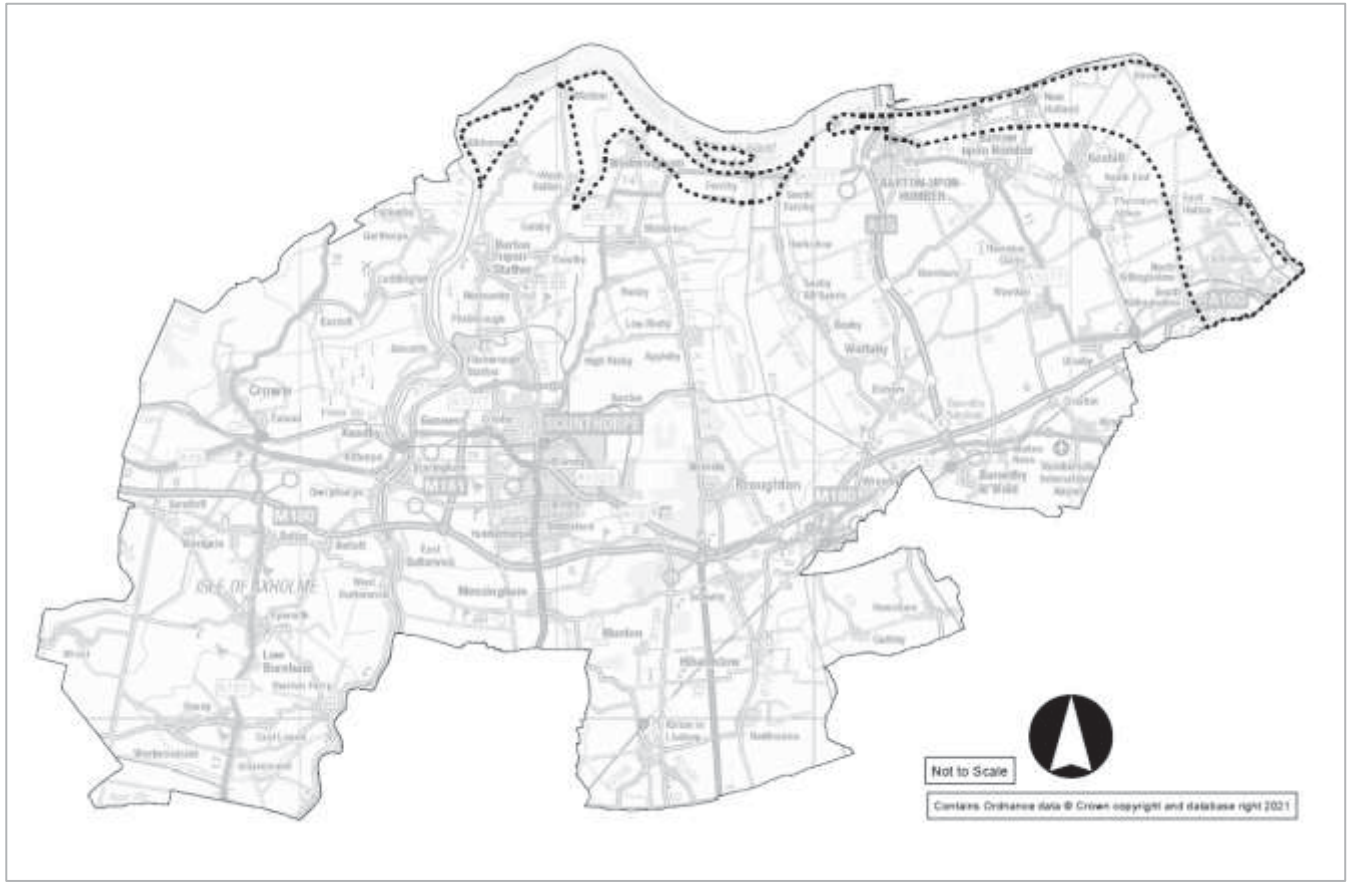

Figure 62 – Humber Estuary

36.1 Key characteristics:

The Humber Estuary LCAR consists of 6 individual Landscape Character Types (LCTs) over 8 geographical locations. Although visually important, the marine environment was not previously assessed and therefore has not been included within this review. The key characteristics of note are:

- The Humber Estuary is a pre-dominantly flat, expansive, low-lying, estuarine landscape.
- Local areas of undulating terrain and wooded farmland inland of the estuary.
- Visual presence of the Humber from within the LCAR itself is often slight, owing to the low-lying nature of the terrain and the visual obstruction created by flood alleviation defences.
- The sky and open views dominate, with ever-changing character due to tidal influences, and mudflats, salt marshes and reedbeds form where flood embankments allow.
- Tidal dynamics create recurring change as the low tide reveals extensive areas of mudflat in contrast to the high tide which creates a brighter more attractive coastal feel.
- The dynamics of tides, changing weather, flocks of wetland birds and visible activity on the estuary can combine to create a vibrant scene.
- The whole of the estuary is an internationally and nationally designated area of ecological conservation importance containing important wetland and coastal habitats.
- Inland of the floodbanks, there are significant areas of wetland habitat at Alkborough Flats and in the blow wells and claypits stretching from Barton upon Humber to East Halton.
- A predominantly reclaimed, formerly intertidal landscape of rectilinear, mainly arable fields on fertile well-drained soils, often unbounded, with dikes, drains and embankments characteristic.
- The agricultural land is graded as ‘High’ and ‘Good to Moderate’ in Natural England’s Agricultural Land Classification system; the second and third highest grade.
- Hedgerow and tree cover is limited, although occasional dense woodland blocks break up views and are visually prominent.
- Urban and industrial complexes are significant. Away from settlement and industrial influences there is a sense of remoteness and isolation.
- Strong Cultural Heritage across the LCAR, notably through the presence of the Grade I Listed Humber Bridge.
- Good regional connectivity in the form of the PROW network with some routes along the estuary edge, including overlap with the Viking Way long distance footpath. The National Cycle Network Route 1 crosses the Humber Bridge.

“The sky and open views dominate, with ever-changing character due to tidal influences, and mudflats, salt marshes and reedbeds form where flood embankments allow.”

36.2 Physical Influences:

In geomorphic terms, the Humber Estuary is a recent feature, with its present form having been created since the last ice age by processes that occurred during the late Quaternary period. At its maximum, the ice advanced along the eastern edge of the Wolds, plugging the mouth of the estuary and impounding a large lake over the Vale of York and the Goole and Crowle Lowlands. In the post-glacial period this lake, now unplugged, discharged eastward, through a gap approximately at the position of the Humber Bridge, across the muddy boulder clay wastes. It formed a deep channel with a wide shallow valley flowing out into the North Sea, which at this time was dry. As the sea level rose, the wide valley became flooded and the estuary slowly developed, so that around 6000 years ago, the estuary's current form was largely established.

Many of the poorly drained alluvial soils around the estuary are of good to moderate agricultural value through human management of the land, largely due to the extensive drainage improvements that were carried out over the past few centuries, including the cutting of new drainage channels, enlarging and diverting of existing watercourses, construction of flood alleviation berms, sluices and installation of pumps. Soils of the area were also extensively modified from the mid-18th century onwards by the practice of `warping' i.e. the seasonal impoundment of tidal silts. This practice owed much to the influence of Dutch engineers. Warping increased the fertility of the land such that most of the land close to the estuary is now of Grade 2 and 3 classification and is used for arable, root crop and market garden production.

Although warping is no longer practised, the drains remain useful for land drainage and are still locally prominent by virtue of their raised grassed flood defence embankments. It has been estimated that around 78% of the estuary's original salt marsh has been converted to agricultural production in recent centuries, although a substantial area has been preserved. In addition, over 5000 hectares of inter-tidal wetland has been reclaimed.

36.3 Historic and Cultural Influences:

The Humber Estuary has encouraged settlement and trade across the past several thousand years as well as its use as a resource for industry and extraction in more recent centuries.

The Humber was a northern frontier of the Roman Empire for some 20 years (AD 50 to 70), before a northward push was made. This led to the development of Ermine Street (now the B1207) which carried trade to the ferry at Winteringham. New Romano-British settlements grew up along the Humber to take advantage of the new trading routes as exemplified by the Old Winteringham Roman Settlement, which is located to the east of the current village of Winteringham, is now a Scheduled Monument site. By the 3rd and 4th Centuries the area was densely populated and wealthy.

Tidal erosion has exposed archaeological finds suggesting considerable human activity during prehistoric times. Of these by far the most important are the Bronze Age boats and several log boats that have been discovered on the Humber foreshore. These boats have contributed much to the knowledge of early boat building in north west Europe and would certainly have been used in the Humber estuary and the surrounding rivers. Additional archaeological and palaeoecological evidence suggests that early settlement clustered around the higher land above the estuary. These elevated and drier positions allowed exploitation of the low-lying surrounds and with gradual clearance of the woodland allowed the development of pastoral and small-scale agriculture. By the late Iron Age, a major settlement had developed at South Ferriby.

Traces of medieval cultivation and early settlement are evident around North Killingholme with 'ridge and furrow' lines visible within the fields and surrounding archaeological sites from this period. There are earthworks of the deserted village of Lobingham, recorded in the Doomsday Book, with the site located around the village of East Halton. There are also two Scheduled Monument sites at East Halton at Manor Farm and Baysgarth Farm which are moated sites and the latter also with associated earthworks. At North Killingholme there are two similarly moated sites at Manor Farm and North Garth which are both Scheduled Monuments, the latter with associated enclosure.

The Humber continued to play an important role in the development of trade and commerce throughout the medieval period and contributed to the growth and prosperity of several market towns. The 16th and17th Centuries saw the fortunes of many of the market towns begin to fluctuate. The reasons for this included a decline in water-borne

trade, competition between market centres, localised famines or epidemics and improved land-based transport and communication. Selective urban growth continued during 17th century often favouring those towns with access to water communications. Work was commenced during the 1630s by Sir John Monson to build the South Ferriby sluice to control the flow of water within the Ancholme Valley. The structure was seen as an extreme measure leading to animosity within local villagers and the sluice was subsequently destroyed. South Ferriby sluice and lock were eventually built in 1842, to the design of Sir John Rennie and the sluice is now a Scheduled Monument.

In the 18th century, widespread enclosure and improvements in farming methods significantly increased agriculture productivity in the region. Extensive drainage improvements and warping brought most of the soils to their current classification status of Grade 2 and 3 and the area prospered.

Due to the natural clay deposits found within this area, Barton upon Humber was once the brick and tile-making capital of Britain following the industry's birth around the seventeenth century, as tile roofs and brick gradually replaced thatch.

The claypits were created through the extraction of clay for the thriving brick and roof tile making industry of Barton with around 20 manufacturers operating in Barton Upon Humber from the 1850s onwards. By around 1959 the extraction had ceased, with just a handful of manufacturers continuing the work. In more recent times the pits have been flooded and several of them transformed into a network of nature reserves or used for water-based activities such as New Holland Mere.

Erosion of the older patterns of urban development began in the 20th century with the spread of industry and the establishment of the port, oil storage and chemical industries at North Killingholme and the South Humber Gateway. Since the beginning of the 21st century, the pace of development has increased, with much former pasture at Killingholme Marsh converted to industry and hardstanding. Farming intensification has been evident in the last 60 years and more recently, farm diversification for example, poultry farming.

Completion of the Humber Bridge in 1981 resulted in more direct and quicker transport links between south and north Humberside (now North Lincolnshire and East Riding of Yorkshire respectively) and a shift away from the Humber ferry services and the gridlocked road network of the day.

36.4 Settlements and Buildings:

Settlement near the Humber Estuary has traditionally been restricted to the higher drier land beyond the boundaries of this regional landscape character area. With improvement to flood defences, development has grown in association with industrial and shipping activity along the estuary.

Barton upon Humber which lies on the LCAR boundary, was a late Saxon planned town that expanded in response to the abundant clay resource, becoming home to the early English brick and tile industries. Roman and Anglo-Saxon finds suggest that Barton upon Humber's earliest settlement stretches back to these eras of influence. The town was recorded in the Doomsday Book of 1066 as having a ferry and playing an important role on the River Humber. The line of the bridge is believed to be similar to an ancient ferry route between Hessle to Barton upon Humber.

Smaller settlements, such as New Holland and Barrow Haven, developed in the early 1800s in a linear arrangement extending along roads and rail from the estuary to larger inland settlements. Such has been the growth of trade through New Holland that a new bypass was constructed to the west, shortly after the completion of the Humber Bridge, to reduce road traffic running through the centre of the village and to accommodate large storage facilities.

South Ferriby's origin is as a nucleated settlement lying at the foot of the Wolds, exploiting the slightly elevated position and proximity to the mouth of the River Ancholme. Settlement in general and intermittent settlement to the west of the main village, along what is now the A1077, Sluice Road, reflected the growth in water-borne trade generated in this locality and the drainage improvements following the construction of the South Ferriby sluice. More recent development along the south of Sluice Road has resulted in infill development using a variation of building materials and property sizes creating a disjointed and irregular appearance.

There are a significant number of Historic farmsteads scattered across the LCAR, with the strongest presence around East Halton and North and South Killingholme with around 50% of them surviving in an extant condition and the remainder identified as partially altered. To the north east of Goxhill, a number are also distributed along the network of local roads. Other areas, such as north of Winteringham, are less accessible and therefore have only a few isolated farmsteads.

Industrial complexes are common around the Humber, the most significant being the South Humber Gateway which has developed on the estuary at the south eastern edge of North Lincolnshire's administrative boundary. It is a highly strategic location in relation to European trade and the deep nature of the estuary which can accommodate larger scale ships and tankers. The industrial infrastructure and transport corridor has had a significant impact on the surrounding countryside due to its size and scale. The proximity to the clay resource at Barton upon Humber is evident in the number of former extraction sites as well as the many buildings built from local red brick and pantile materials. Proximity to the coast also results in the distinctive use of cobble and brick-cobble materials. In a local context, concrete sea defences, former military installations, and lighthouses, combine to create a coastal vernacular, significant on the South Bank.

The cement works at South Ferriby, currently owned by Cemex, has been in operation for over 80 years and has a significant presence across the low-lying landscape. At the time of writing, the plant had been moth balled since the end of 2020 following an analysis of Cemex's European cement supply chain. No indications have been provided regarding the longer-term plans for the site although the conveyor belt between the plant and the South Ferriby Quarry has been earmarked for decommission.

Use of the Cemex site and the provision of clay has been integral to the alignment and construction of the flood defence embankment at South Ferriby which is due for completion by summer 2021. The flood defences are part of the response to the tidal surge which hit the east coast of England on 5 December 2013 and caused extensive damage to South Ferriby.

36.5 Landcover and Wildlife:

The Humber Estuary is an internationally and nationally important site of ecological value, as recognised by its multiple designations including Ramsar, Site of Special Scientific Interest (SSSIs), Special Protection Areas (SPA) and Special Areas of Conservation (SAC).

These designations not only classify the estuary as a 'Wetland of International Importance' but they also cover its mudflats, saltmarsh, reedbeds and the claypits. Although the estuary edge supports much industry and urban development and receives high inputs of agricultural chemicals by way of its feeder rivers, the extent of mud and the volume of through-flow mean that a rich invertebrate fauna can still be supported.

The Humber Estuary shoreline of North Lincolnshire forms part of an area notable for its important feeding and roosting sites for large numbers of waders and wildfowl, supporting more than 140,000 wintering and passage waterbirds at the time of writing. Features along the estuary include relict lines of saltmarsh and reedbed vegetation along tidal channels, marshy grassland and, significantly, water-filled clay pits around Barton. These are mosaics of open water and extensive stands of reed, with intervening rough grassland and scrub of note for its breeding bird community.

The re-purposing of some of the clay pits has resulted in the establishment of publicly accessible locations to experience the flora and fauna associated with the Humber Estuary within North Lincolnshire. The Waters' Edge Country Park is one of North Lincolnshire's success stories with the creation of ponds, reedbeds, native woodland and wildflower meadows within an 86 acre site immediately to the east of the Humber Bridge. The first part of the country park opened to the public in 2003 and an innovative, sustainable green visitor's centre building was opened in 2006. The site supports a diverse range of flora and fauna. To the west of the bridge is Far Ings National Nature Reserve, managed by the Lincolnshire Wildlife Trust: another example of where pioneering work has created a site which is now rich in wildlife and a breeding site for bittern, a species listed as amber on the UK conservation status list.

The Barton and Barrow Claypits are a complex of reedbeds and open water in flooded claypits which are important for breeding bittern, marsh harrier, bearded tits, water rail, reed warblers and sedge warblers. They also support wintering waterfowl, including good numbers of pochard, tufted duck, goldeneye, teal and gadwall.

To the very west of the LCAR, at the confluence of the Humber Estuary and the River Trent, Alkborough Flats was designated a Local Wildlife Site in 2018 and supports breeding bittern, marsh harrier, bearded tit and water rail in impressive numbers, with huge flocks of wintering waterfowl and frequent rare visitors, such as spoonbill and green-winged teal. Mammals present include otter, water vole, badger, harvest mouse and several species of bat. Not only are the Flats a spectacularly beautiful landscape but they have been at the vanguard of a new approach to managing tidal flood risk whereby tidal waters were allowed to flood a large part of the site which not only saved money on flood defences elsewhere but now also plays a key role in capturing and storing carbon and helping to increase resilience to climate change.

Approximately 7km to the east of Alkborough Flats is Winteringham Ings and Read's Island, within the estuary which are of great importance for breeding avocets and wintering waterfowl, including avocets, curlew and thousands of lapwing, golden plover and pink footed geese.

To the east on Goxhill Marsh, is an area known locally as The Grues, which was previously designated as a separate SSSI but is now part of the wider Humber Estuary designation and comprises of areas of coastal grazing marsh, saltmarsh that features drainage channels and borrow pits together with intertidal mudflats of ornithological value.

Further east still is the Halton Marshes wet grassland scheme, completed in 2020 as part of a mitigation for Able Humber Ports Limited development consent for the construction and operation of a new quay at Killingholme. This new wetland habitat has been created over 90 hectares of arable land on the banks of the Humber Estuary.

The North Killingholme Haven Pits, situated on the South Bank are a separate SSSI with national importance due to their range of saline lagoons which differ in both size and salinity. These have an exceptionally rich fauna with many rare invertebrates and are significant as roosting and feeding grounds for visiting waterfowl, especially waders.

Woodland cover is sparse across the whole LCAR but there are a few blocks of medium-sized, regularly shaped deciduous woodland on the more elevated land, usually in linear form as shelterbelts associated with farmsteads. Regular medium-sized shaped blocks of mixed woodland are associated with the South Bank industrial complex where coniferous planting offers a greater element of all-year round screening. The woodlands at Burkinshaw's Covert and Chase Hill Wood on the periphery the South Humber Gateway industrial area have been present for over 100 years. Some semi-natural woodland and pasture surrounds historic villages and the naturally regenerating areas of the clay pits.

Farm intensification has led to the loss of trees, hedgerows and woodland. Hedgerow loss in some areas has been significant and where hedges remain, they tend to be closely clipped. Hedgerow trees become more common on higher land. The man-modified watercourses, drainage ditches and dikes have little associated vegetation, with little ecological value. In winter, the open fields are attractive to flocks of wintering waterbirds such as lapwing, golden plover and curlew.

36.6 Connectivity:

The Humber Estuary LCAR has a good, well-established network of Public Rights of Way (PROW) some of which overlap with the coastal section of the Viking Way long distance footpath.

The Viking Way route runs from Oakham in Rutland to the Waters' Edge Country Park in Barton-Upon-Humber. Within the LCAR it overlaps with the PROW network and skirts the edge of South Ferriby and then along the estuary shoreline, eastwards, towards Barton-Upon-Humber.

At the time of writing, the England Coast Path Mablethorpe to Humber Bridge section is proposed to lead from the boundary of North Lincolnshire at South Killingholme, primarily along the floodbank to the Humber Bridge, as the name suggests.

Sustrans' National Cycle Network Route 1 is a national route which runs in sections from Dover up to the Highlands of Scotland and the route through the LCAR, across the Humber Bridge, is part of the larger regional section which runs from Lincoln to the Humber Bridge.

There is also a range of self-guided walks and cycling routes are promoted regionally through the Council's website. There is a range of self-guided walks and cycling routes which are promoted regionally through the Council's website.

36.7 Landscape Strategy:

The strategy for the Humber Estuary LCAR is to enhance the landscape through restoration. In many circumstances these strategies should be designed to mitigate specific visual impacts of developments or structures. The agricultural landscape needs to be enhanced to strengthen rural character and visual value as well as ecological value. Coastal habitats need continued protection with opportunities for enhancement identified such as the recent scheme at Alkborough Flats. In addition to the above, the following should also be considered:

- Maintain the openness of the farmland, to provide feeding, roosting and loafing habitat, known as “functionally-linked land” for the waterbirds of the Humber Estuary.
- Plan to adapt to the impacts of sea level rise which is likely to reduce the extent of farmland and freshwater habitat around the Humber in the longer term; and seek opportunities to positively adapt by establishing a variety of wetland, intertidal and grazing marsh habitats– where feasible – to partially compensate for loss.
- Protect existing hedgerow trees, and replant in selected locations, taking care to reflect the existing sparse pattern of these trees which is characteristic of the open landscape. The remaining native black poplar trees at Goxhill Marsh are of particular importance.
- Development around farmsteads should be encouraged to accord with the materials of the original structure, or to suitably compliment them. They should also be sensitively sited and screened to assimilate them within the landscape.
- Consider the siting of new development which can be highly intrusive within the open landscape. Ensure that there is a robust plan in place to assimilate them within the landscape, either through screening and/or through an acceptable restoration plan.
- Retain and enhance the areas of woodland and ensure that they are managed to establish diversity in age, structure and species. Management should favour predominantly native species, with a proportion of species from more southerly zones, to allow for the effects of climate change. The existing extent and general arrangement of woodland and shelterbelts is distinctive and should be maintained and any new woodland planting should reflect the existing pattern, species and scale so that its relationship with skylines and farmsteads is harmonious.
- Consider the use of appropriate planting to filter views of heavy industry to the east without restricting views of the Humber Estuary, in accordance with the South Humber Bank Landscaping Initiative (SHBLI).
- Local Wildlife Sites should be regularly monitored to ensure that they are not being affected or eroded by development or other activities within or near to these valuable habitats.
- Manage field drainage channels to allow native habitats and species to establish and flourish.
- Consideration should be given to supporting and expanding the existing PROW network, for example using technology with interactive maps and accessing waymarking and information through mobile devices. These maps can highlight the existing historical and ecological assets and features of interest within the Humber Estuary which would raise awareness of their value and promote a sense of ownership and surveillance within the local community.