Report

Landscape and Visual Appraisal

Singleton Birch Hydrogen Production Facility

North Lincolnshire

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1 Introduction

1.1 The proposed development

In July 2025 Centrica Energy Storage + (Centrica) commissioned Sweco UK to undertake a non-EIA landscape and visual appraisal to accompany an outline planning application for a proposed Hydrogen Production Facility at Singleton Birch, Melton Ross Quarry, North Lincolnshire.

The proposed development principally comprises:

- Various structures and buildings associated with hydrogen production including, most notably, two electrolyser stacks of approximately 12 m in height
- Access track and hard standing, including parking spaces
- Security fencing
- Landscape and ecological mitigation

1.2 The site

The site of the proposed hydrogen facility is approximately 1.7 hectares in area and is located on a former landfill site at grid reference 411.104N – 508.444E at Singleton Birch, Melton Ross Quarries. The main Singleton Birch site is located immediately to the northwest of the site separated by a railway line. The site is located immediately to the northwest of Humberside Airport and between the villages of Croxton, Kirmington and Melton Ross which form a triangle around the site at Barnetby in North Lincolnshire. Beyond the quarry and landfill site, the relatively flat, low-lying land surrounding the site is currently predominantly used for the production of arable crops.

1.3 Purpose of the report

This report comprises a non-EIA appraisal of the potential landscape and visual effects of the proposed development. It provides:

- An appraisal of the landscape and visual effects likely to be associated with the proposed development both immediately after its construction and over the longer term.
- Identification of any landscape and visual mitigation embedded within the site selection, layout, and design of the required infrastructure.
- A landscape and ecological mitigation scheme (planting proposals) to integrate the proposed development into its landscape setting and provide screening in any identified key views over the longer term.

2 Policy context

2.1 National planning policy context

The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government, December 2024) sets out the Government's planning policy framework for England, including the Government's expectation for the content and quality of planning applications and local plan policy.

Section 15 of the NPPF, paragraphs 187 to 191, sets out the framework with respect to conserving and enhancing the natural environment, with paragraph 187 (page 54) setting out how planning policies and decisions should contribute to the natural and local environment by:

- (a) *"protecting and enhancing valued landscapes"*;
- (b) "*recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services"*; and
- (d) *"minimising impacts on and providing net gains for biodiversity"*

2.2 Local planning policy context

The site is located within the boundary of the North Lincolnshire Council (the Local Planning Authority). West Lindsey District Council covers a small part of the 4km radius study area to the southeast, but due to the site being located at a considerable distance outside of this administrative boundary, planning policy in West Lindsey has not been considered further within this appraisal.

The North Lincolnshire Local Development Framework comprises a suite of development plan documents which set out the local planning policy for the area. The Core Strategy, which was adopted in June 2011, sets out the long-term vision for North Lincolnshire and provides a blueprint for managing growth and development in the area up to 2026. The core strategy is supported by various other documents and saved policies.

The following planning policies and supplementary planning guidance documents are of relevance to this appraisal:

Core Strategy Policies, 2011:

- CS5: Delivering quality design in North Lincolnshire
- CS16 North Lincolnshire's landscape, greenspace and waterscape

Saved 2003 North Lincolnshire Local Plan (NLLP) Policies:

- LC7 Landscape protection
- LC11 Areas of amenity importance
- LC12 Protection of trees woodland and hedgerows
- LC13 Parks, gardens and landscapes of special historical interest

Supplementary Planning Guidance (SPG) includes:

- SPG3 Design in the countryside (May 2003)
- North Lincolnshire Landscape Character Assessment & Guidelines (September 1999)
- North Lincolnshire Countryside Design Summary (September 1999)

- Trees and Development Supplementary Planning Guidance (March 2003)

2.2.1 Core Strategy Policies:

CS5: Delivering quality design in North Lincolnshire
CS5 sets out the key design principles for all new development in North Lincolnshire. Of relevance to this review the policy states that new development should *"…Incorporate appropriate landscaping and planting which enhances biodiversity or geological features whilst contributing to the creation of a network of linked greenspaces across the area…"*

CS16 North Lincolnshire's landscape, greenspace and waterscape
CS16 is concerned with the protecting, enhancing and supporting *"…a diverse and multi-functional network of landscape, greenspace and waterscape…".* The council seek to achieve this through a series of measures, those relevant to the proposed development include:

'...Requiring the protection of trees, hedgerows and historic landscape to be specified where appropriate...'

2.2.2 Saved 2003 NLLP Policies:

LC7 Landscape protection
"*Where development is permitted within rural settlements or within the open countryside, special attention would be given to the protection of the scenic quality and distinctive local character of the landscape. Development which does not respect the character of the local landscape would not be permitted."*

LC12 Protection of trees woodland and hedgerows
"Proposals for all new development would, wherever possible ensure the retention of trees, woodland and hedgerows…Landscaping and tree and hedgerow planting schemes would be required to accompany applications for new development where it is appropriate to the development and its setting."

In line within LC12, any application for development within the site would require the submission of an associated soft landscape plan with tree and hedgerow planting proposals.

LC13 Parks, gardens and landscapes of special historical interest
LC13 states…*"The character and features of parks and gardens of historic or landscape interest would be preserved and enhanced".*

Brocklesby Park Registered Park and Garden is located approximately 4 km to the east of the study area. No direct landscape effects would occur within the Registered Park and Garden. Indirect effects relating to intervisibility with the proposed development would be at such a distance and of such small magnitude as to be barely perceptible. Therefore, effects on Brocklesby Park Registered Park and Garden Registered are not considered further in this appraisal.

2.2.3 Supplementary Planning Guidance (SPG)

SPG3 Design in the countryside (May 2003)
Landscape planting guidance is covered in paragraphs 3.10 to 3.15 of the supplementary guidance note. Of relevance to the proposed development:

- New tree and shrub planting should be of native, predominantly deciduous species.
- To benefit wildlife and create wildlife corridors it is recommended planting is undertaken in substantial belts of groups of trees linked to existing hedgerows or copses.
- The design of planting should be in keeping with local landscape character.
- Where space permits and it is appropriate in terms of landscape character woodland planting would be encouraged.

SPG3 includes species recommendations for large and medium sized trees, small trees, and shrubs.

2.2.4 Emerging local planning policy

North Lincolnshire Council is preparing a new single Local Plan for North Lincolnshire. Once formally adopted it would replace the current NLLP Adopted 2003 and the Core Strategy 2011. The emerging North Lincolnshire Local Plan is available as a Publication Draft Addendum Plan, May 2022 and relevant policies have been extracted below:

Policy SS3: Development principles

"It is essential for new development, irrespective of its location, to make a positive contribution to North Lincolnshire and support the delivery of sustainable communities and places, where residents are safe, well, prosperous and connected. All proposals for development in North Lincolnshire should reflect the following key principles:

- Be of a high standard of design that is sympathetic and appropriate to the area's character, significance and setting in respect of its scale, massing, layout, function and materials.
- Plan positively and enhance local landscape characteristics, natural capital, geological conservation interests and soils, and avoid, remedy or mitigate any impacts on natural capital features and open spaces.
- Plan positively to enhance the natural environment through the design of the development and through the provision of measurable net gains to biodiversity net gain (BNG).

Policy RD1: Supporting sustainable development in the countryside
"Outside settlement development limits land would be regarded as the countryside and the following forms of development supported, where proposals respect the intrinsic character of their surroundings: […] New and enhanced infrastructure […]

Chapter 9 Delivering a Quality Environment

DQE1: Protection of Landscape, Townscape and Views

Landscape Protection

- Development proposals that would cause unacceptable harm and do not respect and protect the distinctive character and quality of the landscape or important features or views would not be permitted. Proposals should have regard to the North Lincolnshire Landscape Character Assessment and should contribute to the conservation or enhancement of the local landscape and establish coherent ecological networks, where possible.

Character and setting

- Proposals should have particular regard to maintaining and responding positively to any natural and man-made features within the landscape and townscape which positively contribute to the character of the area. These may include but are not limited to historic buildings and monuments, other landmark buildings, topography, trees and woodland, hedgerows, walls, water features, field patterns, and the intervisibility between historic rural settlements.
- Development proposals should:
  a. relate well to local topography and the built form and be of an appropriate scale, siting, layout, design, density and use of materials to minimise the impact on the landscape character of the site and its surroundings;
  b. include provisions for the long-term management and maintenance of any existing and proposed landscaping, woodlands and trees;
  c. avoid detrimental effects on, or the loss of, features that make a significant contribution to the particular landscape character type;
  d. aim to conserve, enhance or restore important natural and historic landscape features, including those relating to rivers, streams and the coast, and provide measurable BNG particularly where they contribute to Nature Recovery Networks;
  e. maintain and extend tree cover, where practicable and appropriate, through the retention of important trees, replacement of trees to be lost, and new planting to support green infrastructure, with respect to habitat priorities within the Biodiversity Opportunity Mapping and/or Local Nature Recovery Strategy;
  f. not have an unacceptable visual impact on skylines, key views and roofscapes and undertake measures, such as landscaping, to reduce those impacts where appropriate;
  g. be supported by a landscaping scheme that includes new landscaping measures that positively integrate the development into the landscape character of the area; and,
  h. be supported by a landscape analysis and management plan in appropriate cases. This should take account of, as a minimum, the most up to date Lincolnshire Landscape Character Assessment and information obtained from the North Lincolnshire Historic Environment Record.

- Where a proposal may result in significant harm it may, exceptionally, be permitted if the overriding benefits of the development demonstrably outweigh

the harm. In such circumstances, the harm should be minimised and mitigated.

Create and protect views

- All development proposals should take account of views in to, out of, and within development areas. Schemes should be designed to preserve or enhance key local views and vistas and create new public views, where possible by utilising considerate development, layout and design. Particular consideration should be given to views of significant buildings and views within landscapes, which are more sensitive to change due to their open, exposed character and extensive intervisibility from various viewpoints.

3 Appraisal methodology

3.1 Guidance

The method of appraisal is based on the principles established in the following best practice guidance:

- The Landscape Institute and the Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment, Third Edition* (GLVIA3);
- GOV.UK (2014) *Landscape and seascape character assessments – How to carry out and use landscape and seascape character assessments*;
- Natural England (2014) *An Approach to Landscape Character Assessment; and*
- The Landscape Institute (2019) *Technical Guidance Note 06/19, Visual Representation of Development Proposals*.

3.2 Study area

The study area for the landscape and visual appraisals extends to a 4km radius around the proposed development. The extent of this study area is considered adequate due to: the elevated landscape to the north of the site which prevents views from further north; the screening effect experienced at lower levels where layers of vegetation combine to screen longer distance views; the height of the proposed infrastructure (the tallest feature would extend to a maximum height of approximately 12m above current grade); and the presence of the existing Singleton Birch infrastructure in the immediate vicinity of the site.

3.3 Scope

This appraisal considers the likely landscape and visual effects of the proposed development. An appraisal of townscape effects is not required due to the rural nature of the site and study area.

The appraisal focuses on the operational phase effects of the proposed development. It considers effects immediately after completion in general terms but focuses principally on the longer-term residual level of effect likely to persist once any new planting would have begun to mature and take effect.

The proposed development would comprise an unmanned site which does not require lighting on a regular basis. Maintenance activity would be limited to daylight hours only. Proposed external lighting is limited to bulkhead lights located above doors on the buildings and the lighting would only be turned on in the event of emergency situation requiring nighttime access and maintenance. Therefore, this appraisal does not include an assessment of lighting and nighttime effects.

3.4 Consultation

The visual assessment is based on detailed consideration of a number of representative viewpoints. Representative viewpoint locations were agreed with the North Lincolnshire Council in August 2025 prior to undertaking the visual assessment. Of the seven viewpoints initially agreed for assessment, two were omitted in due course following verification on site, which found a lack of visibility, and clarification of

the maximum height of the proposed development which was reduced following the consultation with the LPA. The following initially suggested viewpoints were therefore scoped out of the assessment:

1. A18 High Street: This viewpoint was representative of Bluegate Cottages, Bluegate Lodge and road users of A18. Views towards the site are not available from these properties due to surrounding screening vegetation. Views from the A18 are not available in this location due to the height of the Proposed Development being lower than anticipated at consultation.
2. Hall Farm Barton Street: This viewpoint was thought to be a commercial receptor. However, upon site survey verification, the café business was no longer operating. Views from the residential building in this vicinity are screened by agricultural buildings.

3.5 Determining the baseline

Baseline landscape and visual assessments were undertaken in parallel and were informed by a combination of desk and field-based techniques.

Desktop assessment

Preliminary identification, description and evaluation of the existing landscape and visual context of the study area involved a desk-based review and interrogation of the following information sources:

- Ordnance Survey mapping; aerial photography relating to existing landform, vegetation, settlement patterns, promoted viewpoints and drainage regimes; and LiDAR digital surface data relating to topographical form and surface features such as vegetation and buildings
- Plans containing information relating to landscape designations and landscape related policies at the local and national level
- Engineering data and plans relating to the proposed infrastructure
- National landscape character area (NCAs) as defined by Natural England
- Local landscape character assessments

Field assessment

The site and study area field survey was undertaken in August 2025 during a period of dry, bright weather from public highways and publicly accessible areas. Site work involved:

- A corroboration of the findings of the desktop review
- Collection of additional information on landscape elements, character, views and localised screening
- Photography from representative viewpoints

3.6 Appraisal criteria

In accordance with GLVIA3, the assessment has been undertaken using experienced professional judgement to assess the sensitivity of the baseline landscape and visual environment and to consider the magnitude of potential change that the proposed development would cause. These are combined to identify the level of likely effect.

Landscape

The sensitivity of the landscape (whether a landscape character area or designated landscape resource) has been assessed by combining the susceptibility of its key characteristics to the type of landscape changes likely to be associated with the proposed development with the value or importance understood to be attached to the landscape.

Landscape susceptibility

Key characteristics of the landscape that might be indicators of susceptibility can include matters such as scale; enclosure; openness, landform; landcover; landscape pattern; and manmade influences. The susceptibility of the landscape has been assessed as **High**, **Medium** or **Low** using professional judgement.

High susceptibility landscapes have highly distinctive characteristics vulnerable to the type of changes proposed, where the type of development proposed is absent from the existing landscape and would make no contribution to the existing landscape character. **Medium** susceptibility landscapes have characteristics with some vulnerability to the type of changes proposed, where the type of development proposed is largely absent from the existing landscape and would make only a limited contribution to the existing landscape character. **Low** susceptibility landscapes lack distinctive characteristics, can accommodate the type of changes proposed, and the type of development proposed is present and contributing to the existing landscape character.

Landscape value

The value of an area of landscape is defined as either **High**, **Medium**, or **Low**. GLVIA3 (Box 5.1) and more recent guidance from the Landscape Institute *TGN 02-21: Assessing landscape value outside national designations* (2021), sets out a wide range of considerations that might inform an assessment of landscape value. The factors that influence landscape value include landscape condition, distinctiveness, cultural and natural heritage, perceptual (scenic and tranquillity), recreational importance, notable associations (people, events, the arts), and other landscape functions (e.g. ecosystem services, green infrastructure networks).

High value landscapes are typically those that: are subject to national-level landscape designations and/ or local-level designations where other criteria are also met; are intact, highly distinctive, and possibly rare; include distinctive and/or unusual landscape components; display historical and/or ecological richness; are perceived to be unusually scenic and/or tranquil; and are widely regarded as important for recreation, a special association or function.

Medium value landscapes are typically those that: are subject to national-level and /or local level landscape designation where other criteria suggest less than High value; are comprised of ordinary or everyday landscape components; display some limited historical and/or ecological richness; are perceived to display a moderate degree of scenic value and/or tranquillity; and locally regarded as important for recreation, associations or functions.

Low value landscapes are typically those that: are not subject to national-level and/or local level landscape designation; are in a state of deterioration with depletion and erosion of character with prominent detractors and discordant landscape features; lack of historical and/or ecological richness; lack perceptions of scenic value or tranquillity; have little or no importance in terms of recreation, associations and functions.

The value of the landscape has been assessed as **High**, **Medium** or **Low** using professional judgement.

Landscape sensitivity

The sensitivity of the landscape (combining both its susceptibility and value) has been assessed as **High**, **Medium** or **Low** using professional judgement.

Magnitude of landscape change

Assessment of the magnitude of landscape change may take account of all the following factors and professional judgement is used to determine the relevance and appropriate weighting to be attributed to each:

- The degree of change that takes place
- The geographical extent of the landscape area that would be changed
- The likely duration of the change to the landscape
- Whether the change to the landscape would be reversible if the development were decommissioned

The magnitude of likely landscape change has been assessed as **High**, **Medium**, **Low** or **Negligible**. A judgement of a **High** magnitude of change is typically defined as the development forming a prominent landscape element or would result in a substantial alteration to key landscape characteristics. A judgement of a **Medium** magnitude of change is typically defined as the development forming a notable landscape element that would result in a perceptible alteration to key landscape characteristics. A judgement of a **Low** magnitude of change is typically defined as the development forming generally unnoticed landscape element secondary to existing features that inform the landscape character. A judgement of a **Negligible** magnitude of change is typically defined as the development would be a barely perceptible landscape element or would not change the key landscape characteristics.

Level of effect

A final judgement on the overall level of effect on the landscape has then been made by combining the sensitivity of the receiving environment with the magnitude of change to it. The level of effect has been described using a four-point scale of **Major**, **Moderate**, **Minor** or **Negligible** and the nature of effect is judged as **Adverse** or **Beneficial**. Reasoned professional judgement has been used to combine considerations and assess the overall level of landscape effect.

<u>Visual</u>

In this appraisal, assessment of visual effects has been undertaken using representative viewpoints as the receptors of visual effects. The appraisal considers in detail and determines the level of effect at each representative viewpoint and then

uses these conclusions to support a more general discussion on the extent of visual effects in relation to different categories of viewer such as residents and footpath users. The level of visual effect upon every individual property or footpath is not however given as the assessment rests on the representativeness of the viewpoints.

Visual sensitivity

The sensitivity of visual receptors has been assessed by combining consideration of their visual susceptibility with the value, or importance, that they are likely to attribute to their available views. The sensitivity of the receptors has been assessed as **High**, **Medium** or **Low** using professional judgement. Typically, **high** sensitivity receptors are people with a particular interest in their available view or with prolonged viewing opportunities such as residential locations; tourist destinations providing a specific important and highly valued view; recreational hilltops; ornamental parks/designed landscapes; and national trails. Typically, **Medium** sensitivity receptors are people with a general interest in their available view or with occasional viewing opportunities and can include residential locations and footpaths where the quality of the existing visual amenity is poor; incidental public open spaces with some visual amenity; and roads that provide access to areas of higher scenic value. Typically, **low** sensitivity receptors are people with a passing interest in their surroundings such as places of employment; major highways; commercial buildings; and commuters.

Magnitude of visual change

Assessment of the magnitude of visual change may take account of all the following factors and professional judgement is used to determine the relevance and appropriate weighting to be attributed to each:

- The degree of visual change that takes place
- The geographical extent of the area from which the change would be visible
- The likely duration of the visual change
- Whether the visual change is likely to be reversible if the infrastructure were decommissioned

The magnitude of likely visual change is assessed as **High**, **Medium**, **Low** or **Negligible**. A judgement of a **High** magnitude of change is typically defined as the visual changes associated with the development would form a prominent element within the view, resulting in a prominent change to the quality and character of the view. A judgement of a **Medium** magnitude of change is typically defined as the visual change associated with the development would form a notable element within the view, resulting in a noticeable change to the quality and character of the view. A judgement of a **Low** magnitude of change is typically defined as the visual change associated with the development would form a perceptible element within the view, resulting in a perceptible change to the quality and character of the view. A judgement of a **Negligible** magnitude of change is typically defined as the visual changes associated with the development would result in a barely perceptible change in the view or would cause no change to the existing view.

A final judgement has been made on the overall level of visual effect by combing sensitivity with the magnitude of visual change that would likely be experience. The level of effect has been described using a four-point scale of **Major**, **Moderate**, **Minor** or **Negligible** and the nature of effect is judged as **Adverse** or **Beneficial**. Reasoned professional judgement has been used to combine considerations and assess the overall level of visual effect.

4 Baseline conditions

4.1 Site description

Figures 1 and 2 illustrate the site location and its landscape and visual context.

The approximately 1.7-hectare site comprises a former landfill site adjacent to Singleton Birch, and is located between the settlements of Kirmington and Barnetby le Wold in North Lincolnshire. The existing land parcel within which the proposed development will be sited is triangular in shape: the southern boundary is defined by a tree belt and the A18; the northern boundary is defined by the Sheffield to Lincoln railway line and the eastern boundary is defined by a tree belt along the field boundary. Melton Ross Quarry and the infrastructure of Singleton Birch are prominent features adjacent the northern boundary of the site on the opposite side of the railway. A line of Poplar trees directly to the northeast of the site immediately to the south of the existing Singleton Birch infrastructure is a prominent feature within the landscape. The industrial estate associated with Humberside Airport is prominent to the southeast of the site. To the west, south and east the immediate site context consists of rectilinear agricultural fields defined by hedgerows and tree belts.

The site lies at approximately 30m AOD (above ordnance datum). However, due to its former use as a landfill site the landform within the site itself is irregular. Where the proposed development is located, the landform of the site is approximately site approximately 2m below the surrounding context the site is surrounded by an embankment of up to approximately 3m in height on the eastern boundary and up to approximately 4m in height on the southern boundary. The lowest part of the wider study area is located in a central ribbon, following the Sheffield to Lincoln railway line (which passes adjacent the northern site boundary) at between 10 and 25 m AOD. Within the wider study area, the topography consists of rolling chalk hills but there is a noticeable rise to the scarp slope in the southeast, culminating at 80m AOD in the vicinity of Brocklesby Park. On the other side of the study area, the landform slopes gently upwards to the northwest and northeast, reaching 65m AOD at Elsham Wolds.

The site is located within a predominantly rural area where landcover is a mix of arable farmland, shelter belts/hedgerows, occasional small rectilinear blocks of woodland, and small areas of settlement. The existing Singleton Birch infrastructure and Humberside Airport are the notable exceptions in this rural context. Away from the settlements, the landscape pattern across the study area consists of medium to large rectilinear fields bisected by transport corridors: the A180, Sheffield to Lincoln railway line and the A18 sweep across the study area from west to east and bring a sense of busy-ness to the landscape. Pylons and industrial infrastructure also contribute to the disrupted sense of tranquillity, which is perceived from the numerous public rights of way and a National Cycle Route that are interlinked throughout the study area.

Settlement pattern throughout the study area is sparse with the exception of three distinct, larger areas of settlement comprising: Barnetby le Wold to the southwest, Kirmington to the east and Ulceby to the northeast (on the edge of the study area). These three settlements are located in gently graded valleys, and each laid out around a main road that passes through the settlement. New Barnetby and Melton Ross are two smaller settlements to the southwest. Little Limber is a third small settlement located on the escarpment top in the far eastern extent of the study area, where larger

settlements are notably absent. Additionally, there are various isolated individual dwellings and farm properties throughout the study area, each surrounded by vegetation creating a sense of privacy.

4.2 Landscape context

No national or local landscape designations apply within the site or 4km radius study area.

The following published landscape character documents are relevant to the site and development:

- Natural England (2015) National Character Area profile 43: Lincolnshire Wolds
- Natural England (2015) National Character Area profile 42: Lincolnshire Coast and Marshes
- North Lincolnshire Landscape Character Assessment and Guidelines, Estell Warren (1999).
- North Lincolnshire Landscape Character Assessment (review of the current 1999 assessment), JBA Consulting

National Character Areas

The site is located within National Character Area Profile **43: Lincolnshire Wolds** (NCA43). The study area also extends to a small extent into National Character Area Profile 42: Lincolnshire Coast and Marshes (NCA85) at the northeastern extents of the study area (See Figure 1). This appraisal reviews the key characteristics of the host National Character Area, NCA43, to introduce the character of the area only. Landscape effects are not assessed at this national scale.

Key characteristics of **NCA43: Lincolnshire Wolds** of relevance to this assessment are:

- *Rolling chalk hills and a predominantly agricultural landscape with a pronounced scarp edge to the north and west affording panoramic views across the surrounding land.*
- *A diverse geology of chalk, sandy limestone, ironstone and clay gives rise to a combination of elevated plateau and deep-sided dales.*
- *Predominantly arable, but some pasture fields with rectilinear patterns and clipped hawthorn hedgerows.*
- *Woodland is limited particularly to the north but there are occasional shelterbelts, hedgerow trees and scattered beech clumps.*
- *Isolated chalk and neutral grasslands typically on the steepest uncultivated slopes.*
- *A historically and archaeologically rich landscape of small parklands and modest country houses.*
- *A sparse settlement pattern of small market towns and small nucleated villages (often in sheltered valleys) and scattered farmsteads. The settlements are predominantly linked by west–east A roads linking to coastal areas.*

- *Development of wartime airfields including Kirmington (now operating as Humberside International Airport) and* Elsham Wolds.

North Lincolnshire Landscape Character Assessment and Guidelines (1999)

The local landscape character areas identified by the North Lincolnshire Landscape Character Assessment and Guidelines have been used as the spatial framework for the assessment of landscape effects.

The site sits within the **'Open Rolling High Farmland'** landscape character type (LCT) within the '**Lincolnshire Wolds'** Landscape Character Area (LCA). To the east of the site lies the adjacent '**Open Undulating Farmland'** LCT within the '**Lincolnshire Drift'** LCA and the '**Wooded Farmland'** LCT also within the **Lincolnshire Drift LCA** (see Figure 2).

Key Characteristics of the 'Open Rolling High Farmland' LCT of relevance to this assessment are:

- *Elevated, open and expansive, rolling arable landscape, dissected in places by gently graded dry valleys.*
- *Large fields often lacking boundary definition.*
- *Clipped thorn hedgerows defining some field boundaries.*
- *Occasional blocks of mainly deciduous woodland including a block of ancient semi-natural woodland west of Melton Ross, but few hedgerow trees.*
- *Isolated, often traditional farmsteads surrounded by shelterbelts of trees.*
- *Absence of villages from escarpment top.*
- *Areas of modern industrial development in large 'sheds', often sited in exposed locations.*
- *Transmission lines prominent, wooden pole lines and occasional radio masts a significant feature within the open landscape.*
- *Traffic prominent where the main roads sweep across the open landscape.*
- *Open long distance views, particularly from northern and eastern boundaries where there is an abrupt change in slope providing vantage points from which to view the Humber Bridge and Estuary, and the Vale of Ancholme.*

Inherent Landscape Sensitivities are:

- *The landscape of the Lincolnshire Wolds is vulnerable to change through insensitive development or inappropriate land management and the overall strategy for planning and management is therefore one of conservation and enhancement, to support North Lincolnshire Council's ambitions for the extension of the Lincolnshire Wolds AONB into this area.*
- *The combination of expansive views and areas of enclosed and intimate character, created by the woodland blocks both on the Wolds top and the scarp slopes, should be maintained.*

The Landscape Strategy is to:

- *Enhance the character of this simple rolling landscape.*

The landscape character of the adjacent **'Open Undulating Farmland'** LCT can be summarised as: gently undulating terrain; arable and pastoral land use bounded by clipped hawthorn hedges; dispersed settlements; open and sometimes exposed landscape away from woodland blocks; and presence of pylons, transport corridors and industry disrupt tranquillity.

Inherent Landscape Sensitivities of this adjacent Landscape Character Type, relevant to this assessment, include local enhancement through conservation and enhancement including the continued protection and strengthening of hedgerows, shelterbelts and woodland blocks. Strategic woodland planting can enhance views, provide greater local variation, and integrate intrusive elements into the landscape.

The character of the '**Wooded Farmland'** LCT located to the east of the study area can be summarised as: gently undulating wooded landscape, elevated around Kirmington where it abuts the Wolds; pockets of arable farmland and pasture with sheep grazing; peaceful, attractive unified setting with internal diversity and localised enclosure; strong rural character with lakes, ditches and streams and few detracting elements; mixed woodland at Kirmington is principally of planted origin; well matured, predominantly broadleaved species; settlement generally scarce, in the form of tightly nucleated traditional villages; villages have traditional buildings, with brick and pantile the vernacular.

Inherent Landscape Sensitivities of this Landscape Character Type, relevant to this assessment, include conservation of historic character, woodland management, hedgerow renewal and management and the creation of new woodland.

The following two landscape character areas within the study area would not experience either direct or indirect landscape effects and have therefore been scoped out of the appraisal.

- '**Lincolnshire Wolds' LCA:** Open Farmland Scarp Slope LCT and Wooded Farmland Scarp Slope LCT.
- '**Vale of Ancholme' LCA:** Open Undulating Farmland LCT.

In addition to the above landscape character areas, West Lindsey District Council Landscape Character **Area 14 Wold's Estates** has also been scoped out of this appraisal. This LCA would not experience a direct landscape effect and any indirect landscape effects resulting from intervisibility with the proposed development would be experienced at such a distance as to be barely perceptible.

4.3 Visual context

General

A Zone of Theoretical Visibility (ZTV) (Figure 2) was generated using digital surface model (DSM) data. DSM data includes the screening effects of buildings and vegetation along with the topographical limitations. The ZTV was based on a 12m point above existing ground level.

The site

The site itself is visually enclosed due to being surrounded on all three sides by established dense tree belts and hedgerows. There may however be glimpses into the site during the winter months.

The rolling landform and landscape pattern immediately surrounding the site and in the western and northern parts of the study area combine to promote a sense of enclosure from publicly accessible areas. The roads, field boundaries and settlements tend to be lined by trees and hedges which prevent long range views.

By contrast in the southwestern and southeastern parts of the study area (for example in the region of Little Limber and from various points on the footpath networks in the southwest if the study area) the rolling landform rises higher on the scarp slope and offers views over blocks of vegetation and built form. These long-distance panoramic views are available to the north of the study area and beyond, they include the industrial built form of the existing Singleton Birch infrastructure and Humberside airport in the mid-ground and the industrial development associated with the River Humber, such as Immingham Dock and the Humber Bridge just visible on the skyline in the distance.

Key visual receptors

Residential locations

Properties identified within the desktop ZTV (Figure 2) were reviewed during a landscape and visual survey. The following residential property groups were considered to be mostly likely to be visually affected after taking into account the screening effects of intervening vegetation:

- Residents of **The Lodge**, approximately 10m south of the site.
- Residents at **New Barnetby** approximately 1.6km southwest of the site.

Views from other residential properties within the 4km study area would be prevented by vegetation and built form in the intervening landscape.

Public rights of way

Public Rights of Way (PRoWs) within the study area are illustrated on Figure 2. There is potential for users of the following PRoWs to experience views of the proposed development, after considering the screening effects of intervening vegetation, built form and topography:

- **PRoW KIRM127** is located 10m south of the site. The footpath connects the A18/Humberside Airport at approximately 30m AOD with BARN124, at approximately 25m AOD.
- **PRoW KIRM120** is located directly to the east of the eastern site boundary The footpath runs through arable fields and connects the A18 (at approximately 30m AOD) with Croxton Road at approximately 15m AOD),
- **PRoW KIRM302** is located 2.9km to the south of the site at the closest point. The footpath connects Croxton Road, at approximately 75m AOD, with

BARN302, at approximately 65m AOD before it descends to the west to join Caistor Road at approximately 60m AOD.

- **PRoW BARN124** is located to 1.7km to the southwest of the site and connects KIRM127 at approximately 30m AOD, with BARN123 and Caistor Road to the west, at approximately 60m AOD.
- **PRoW BARN189** is located to 570m to the southwest of the site and connects KIRM127 at approximately 25m AOD, with Caistor Road to the west, at approximately 30m AOD.

Other recreational locations and routes

Brocklesby Registered Park and Garden is located to the southeastern extent of the study area. It is bordered by a dense woodland belt which prevents views towards the proposed development and as such it has not been considered further in this appraisal.

The Viking Way promoted route and National Cycle Network (NCR) Route 1 are located to the west of the study area. Due to intervening vegetation and landform, there are no views of the proposed development from either of these routes and as such they have not be considered further in this appraisal.

Roads and Rail

Roads within the study area with potential views include the A18, Caistor Road and Croxton Road. There is limited pedestrian use of the A18 and Croxton Road due to the absence of footways. Residents of New Barnetby are likely to use the footways of Caistor Road but views of the site are limited by intervening vegetation.

The Sheffield to Lincoln railway line passes adjacent the northern boundary of the site and as such users may have views of the site through and over the top of intervening vegetation.

Representative viewpoints

The following five representative viewpoints (see Figure 2 for locations) were identified for detailed assessment. None of the representative views are from the north of the site because of the visually enclosing landform and vegetation to the north of the site, including the sloped landform of the existing Singleton Birch site.

Conclusions of the assessment of these selected representative viewpoints support the more general discussion on the extent of visual effects in relation to different categories of viewer identified above. Baseline descriptions of each representative viewpoint are included in Section 6.2.

- **Viewpoint 1 – Public Right of Way KIRM127** – Close range viewpoint representative of high sensitivity residential property 'The Lodge' and footpath users of KIRM127 (Figure 3.1).

- **Viewpoint 2 – Public Right of Way KIRM120** – Medium range viewpoint representative of high sensitivity footpath users of KIRM120 (Figure3.2).

- **Viewpoint 3 – Public Right of Way KIRM302** – Long range viewpoint representative of high sensitivity footpath users of KIRM302. Located on the boundary of Broklesby Park Registered Park and Garden (Figure 3.3).

- **Viewpoint 4 – Public Right of Way BARN124** – Medium range viewpoint representative of high sensitivity footpath users of BARN124 (Figure 3.4).

- **Viewpoint 5 – Caistor Road** – Medium range viewpoint representative of high sensitivity residential receptors at New Barnetby and footpath users of BARN189. (Figure 3.5

5 Proposed mitigation

5.1 Potential landscape and visual effects

The components of the proposed development with the potential to give rise to landscape and visual effects included within this assessment are:

- electrolyser equipment including electrolyser stacks up to approximately 12m in height and associated buildings up to approximately 6.4m in height
- hydrogen compressor and shelter up to approximately 3m
- LP hydrogen compression up to approximately 3m
- hydrogen metering up to approximately 1m in height
- cooling water package, refrigeration package, water purification and demineralisation including storage housed in container units up to approximately 3m in height
- main interconnecting pipe-racks and pipe-tracks up to approximately 5m in height
- service buildings up to approximately 3m in height
- electrical substations up to approximately 3m in height
- security fencing up to approximately 3m in height
- landscape and ecological mitigation in the form of species rich grassland, hedgerow, scattered trees and broadleaf woodland.

As described in Section 4, the site is already visually contained by a landscape framework to all three sides in the form of embankments, tree belts of varying heights ranging from approximately 3m to 11m in height. This provides effective screening of the site for nearby receptors. The most sensitive visual receptors are residential properties and users of the footpath network to the east, south and west. Tree removal is required to accommodate site access from the A18 at the southeastern corner of the site. Replacement tree planting is proposed along the site boundary with the A18 to mitigate for trees removed and to maintain visual screening of the proposed development. Further scattered tree planting is proposed to the south of the proposed development to increase visual filtering of the proposed development. Hedgerow planting is proposed along the north of the site to replace hedgerow lost as a result of the site access and to provide ecological screening. Open mosaic habitat is proposed within the site to meet Biodiversity Net Gain requirements.

5.2 Mitigation aims and principles

The North Lincolnshire Landscape Character Assessment (1999) and the JBA Consulting review of this document provide *Landscape Planning Guideline*s for landscape character areas in the borough.

Open Rolling High Farmland Character Type (site located within) guidelines:

- *Consider the siting of new development, vertical structures or quarries, which can be highly intrusive within the open landscape. Ensure that there is a robust plan in place to assimilate it within the landscape, either through screening or, in the case of quarries through an acceptable restoration plan*

- *Seek to conserve the existing pattern of isolated large farmsteads and open views across rural land by avoiding new development in the open countryside.*
- *Maintain character of rural roads and protect from engineering improvements that would be insensitive to that character.*
- *Encourage the conservation, restoration, replacement and management of all primary hedgelines, particularly in prominent, or historically significant situations, i.e. along roadsides or parish boundaries.*
- *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.*
- *New woodland planting should reflect the existing native species mixes, wherever possible utilising plants of local provenance. In selected situations, other species could make notable visual contribution although their inclusion in planting mixes should not compromise specific local nature conservation objectives. Such additional species might include beech, sycamore, Scots pine, hybrid larch, beech, field maple and wild cherry.*
- *Integrate the incongruous features associated with the major road corridors, transmission lines, industrial estates, quarry sites, through planting and hedgerow repair appropriate to that character. Intermittent tree planting may diffuse their appearance as opposed to completely screening them which helps to retain the open nature of the landscape.*
- *The existing extent and general arrangement of woodland and shelterbelts is distinctive and should be maintained, any new woodland planting should reflect the existing pattern, species and scale (i.e. relationship with skylines and farmsteads should be maintained).*

The Character Area Landscape Planning Guidelines were used to develop the following aims for the proposed mitigation.

<u>Mitigation aims</u>

- Conserve rural character: Although there are some heavy industrial influences from Singleton Birch and Humberside Airport, aim to conserve the predominantly rural context of the site.
- Integrate development: Ensure that new development integrates well into the surrounding landscape.
- Screening of infrastructure: Screen visually detracting infrastructure via mitigation planting.

<u>Mitigation principles and measures</u>

- Rural character preservation:
    - Conserve rural characteristics when developing the site through inclusion of soft landscape planting proposals that follow the existing landscape pattern including replacement tree and hedgerow planting.
    - Native planting species in line with those found on site and within the wider study area have been selected to reflect the rural character.
- Development integration:
    - Position the proposed development to associate and integrate with the existing Singleton Birch infrastructure.
- Visual screening:

- Soft landscape proposals to screen and soften views of the proposed development from surrounding visual receptors. Lost vegetation along the site frontage would be replaced to recreate the visual enclosure on the southern side of the site.

5.3 Embedded mitigation

The site is surrounded by tree belts on all three sides which provides embedded mitigation of the proposed development. Additionally, the landform of the former landfill site is approximately 2m below the surrounding context and surrounded by embankment of up to approximately 3m in height on the eastern boundary and up to approximately 4m in height on the southern boundary, which would provide a natural advantage in terms of visual amenity and its perception by nearby visual receptors. The buildings would be located to the rear of the site in proximity to the existing large-scale infrastructure at Singleton Birch to assimilate the proposed development with the existing built form.

5.4 Landscape and ecological proposals plan

Planting proposals have been developed to integrate the proposed development into the existing landscape context, replace vegetation lost and to meet BNG requirements. Drawing 653216371_SWE_XX_XX_D_L_0001_Landscape and Ecological Proposals Plan illustrates the landscape and ecological proposals.

Native Woodland Planting

Tree planting is proposed along the southern boundary of the site to mitigate for trees lost as a result of the proposed access road visibility splays and provide screening and filtering of views towards the proposed scheme. Scattered trees located to the south of the proposed development would provide additional screening and filtering.

Native Hedgerow Planting

An area of native hedgerow is proposed along the northern site boundary to replace hedgerow lost to accommodate site access.

Open Mosaic Habitat

Open mosaic habitat is proposed on the site area which is not occupied by the development. This would help to fulfil BNG criteria.

6 Residual effects of the proposed development

This section of the appraisal assesses the residual level of landscape and visual effect that the proposed development would cause, taking account of the mitigation set out above.

6.1 Landscape effects

The local level landscape character areas within the North Lincolnshire Landscape Character Assessment have been used as the spatial framework for the assessment of landscape effects.

6.1.1 Open Rolling High Farmland landscape character type (LCT) within the Lincolnshire Wolds Landscape Character Area (LCA).

The site context consists of a landscape that is more enclosed than the published character description suggests. This is due to the amount of existing tree cover surrounding the site boundaries and the gentle valley in which the site is located combining with the surrounding rolling topography to prevent intervisibility in the immediate vicinity. The site context exhibits Open Rolling Farmland inherent landscape sensitivities as the influence of hedgerows and shelter belts are evident and there are numerous landscape detractors associated with the site, including the existing Singleton Birch infrastructure, Humberside Airport and the road and rail corridors and transmission lines and masts which have a large local influence on landscape character and contribute to the partially industrialised context of the site.

The Open Rolling High Farmland LCT is considered to have **medium susceptibility** to the type of development proposed due to the presence of the existing Singleton Birch infrastructure. The LCT is considered to be of **medium value** due to a moderate degree of scenic value being present. The character of the LCT is considered to be of **medium sensitivity** to the proposed development.

The development would introduce new built form into the site. The alterations to the site would be locally notable. The proposals would be understood as an extension of existing infrastructure already present within the local landscape context at Singleton Birch. The existing native hedgerow and tree belts surrounding the site would assist with integrating the proposals into the existing landscape framework, and industrial landscape context. Mitigation planting in the form of a belt of trees adjacent to the A180 aligns with the landscape planning guidelines for Open Rolling High Farmland that seek to: maintain the character of rural roads; integrate the incongruous features associated with the major road corridors and quarry sites, through planting and hedgerow repair appropriate to that character. Proposed woodland planting would reflect the existing pattern, species and scale of woodland and shelterbelts. The **magnitude** of landscape character change associated with the proposed development in the years immediately after its construction would be **low**. The level of effect on landscape character during this period of time would be **Slight adverse**.

Over time, as the vegetation matures, the development would further integrate into the landscape context. The magnitude of landscape character change associated with the proposed development in the longer term would become **Negligible**. At year 15, the level of effect on landscape character would be **Negligible**.

6.1.2 Open Undulating Farmland landscape character type (LCT) within the Lincolnshire Wolds Landscape Character Area (LCA).

The character of open undulating farmland is consistent with the published assessment and includes undulating open terrain bounded by hedgerows with shelterbelts and woodland blocks that create localised enclosure. Detractors are present in the form of Humberside airport and transport corridors. There is intervisibility with the large scale detracting built form associated with Singleton Birch.

The Open Undulating Farmland LCT is considered to have **medium susceptibility** to the type of development proposed due to the presence of the existing Singleton Birch infrastructure. The LCT is considered to be of **medium value** due to a moderate degree of scenic value being present. The character of the LCT is considered to be of **medium sensitivity** to the proposed development.

The proposed development would not result in any direct effects upon landscape character. Indirect effects on landscape character would result from intervisibility with the proposed scheme. Intervisibility would occur within limited areas of the LCT, predominantly in the south. The upper sections of the proposed electrolyser stacks would be intervisible at a distance above the existing tree lines. They would form a small feature within an existing context including detractors such as the large-scale infrastructure associated with Singleton Birch and Humberside Airport. The **magnitude** of landscape character change associated with the proposed development in the years immediately after its construction would be **Negligible**. The level of effect on landscape character during this period time would be **Negligible adverse.**

The magnitude of landscape character change associated with the proposed development in the longer terms would remain **Negligible**. At year 15, the level of effect on landscape character would remain **Negligible adverse**.

6.1.3 Wooded Farmland landscape character type (LCT) within the Lincolnshire Wolds Landscape Character Area (LCA).

The character of Wooded Farmland is consistent with the published assessment with hedgerows, shelterbelts, woodland blocks and built form that create localised enclosure. Recent residential development within Kirmington has diluted the historic character of this village. There is intervisibility with the large scale detracting built form associated with Singleton Birch and Humberside Airport from open areas within this LCT.

The Wooded Farmland LCT is considered to have **medium susceptibility** to the type of development proposed due to the presence of the existing Singleton Birch infrastructure. The LCT is considered to be of **medium value** due to a moderate degree of scenic value being present. The character of the LCT is considered to be of **medium sensitivity** to the proposed development.

The proposed development would not result in any direct effects upon landscape character. Indirect effects on landscape character would result from intervisibility with the proposed scheme. Intervisibility would occur within localised open areas of the

LCT. The upper sections of the proposed electrolyser stacks would be intervisible at a distance above the existing tree lines. They would form a small feature within an existing context including detractors such as the large-scale infrastructure associated with Singleton Birch and Humberside Airport. The **magnitude** of landscape character change associated with the proposed development in the years immediately after its construction would be **Negligible**. The level of effect on landscape character during this period time would be **Negligible adverse.**

The magnitude of landscape character change associated with the proposed development in the longer terms would remain **Negligible**. At year 15, the level of effect on landscape character would remain **Negligible adverse**.

6.2 Visual Effects

The following tables identify the residual visual effects of the proposed development from the five identified representative viewpoints. The visual assessment of each considers the degree to which the proposed new planting (see 653216371-SWE-XX-XX-D-L-0001 Landscape and Ecological Proposals Plan) would establish within a nominal timeframe of approximately 15 years. Representative viewpoint locations are identified on Figure 2. Baseline views from each representative viewpoint are provided by Figures 3.1 to 3.5.

6.2.1 Effects on representative viewpoints

Viewpoint 1 – Public Right of Way KIRM127	
Approximate distance	8m to the south
Receptors	Residents of The Lodge Users of KIRM127
Baseline view	Figure 3.1 This is a close-range view dominated by the A18, which is bounded by a dense tree belt with understory restricting views towards the site. There may be glimpsed views of the site in winter when the vegetation is no longer in leaf. The curtilage of the Lodge property is also surrounded by vegetation which screens views towards the site. The PRoW (KIRM127) is similarly bordered by vegetation which restricts views northwards towards the site. Further south along the PRoW there may be glimpsed views towards the site with the industrial development associated with Humberside Airport present in the context of the view.
Sensitivity	**High** – PRoW users and residents take an interest in views of the landscape around them.
Visibility of the proposed development	The dense vegetation surrounding the property, PRoW and bordering the northern side of the A18 limits visibility of the site.
Magnitude of visual change – year 1	**Medium** – the removal of trees to accommodate the site access off the A18 would result in a notable,

	permanent alteration to the view as it would not be possible to replace them. There would be a noticeable temporary thinning of trees along the A18 to accommodate the visibility splays associated with the site access. The extent of change would occupy the full extent of the view albeit the remaining existing trees along the A18 would provide some filtering of the proposed infrastructure within the site. Filtered views of the proposed development would introduce glimpses of industrial built form into the view.
Magnitude of visual change – year 15	**Low** – it would not be possible to mitigate the tree loss at the site access due to the requirement for visibility splays. As the proposed landscape scheme matures it would provide increased screening of the proposed development. As such magnitude of change would reduce to low due to the permanent visual changes arising across a small portion of the view where the access road would be visible.
Longer term residual level of visual effect	In the short term the level of visual effect would be **Moderate Adverse** which would reduce to **Minor adverse** over the long term. This is due to the change in view being relatively small and the majority of the proposed development being screened from view by existing vegetation.
Viewpoint 2 – Public Right of Way KIRM120	
Approximate distance	0.7km to the east
Receptors	Users of PRoW KIRM120
Baseline view	Figure 3.2 Open, expansive, west facing view across a flat landscape at the same level as the site. The open, arable field within which the footpath is located permits unobstructed views in the direction of the site. The existing white coloured infrastructure of Singleton Birch, including the four chimneys of the tallest structure is a dominant feature of the rural view due to the bright colouring in contrast to the surrounding vegetation and sky. The site itself is screened from view by a tree belt flanking the eastern site boundary. Long distance views are prevented due to the flat topography and the vegetation flanking Singleton Birch and the skyline beyond.
Sensitivity	**High** – PRoW users take a particular interest in views of the landscape around them.
Visibility of the proposed development	Whilst the foreground is open and the flat landscape affords unobstructed views towards the site, the site itself is screened from view by the tree belt flanking the eastern site boundary.

Magnitude of visual change – year 1	**Low** – the tree belt and embankment along the eastern boundary would provide screening of the lower parts of the proposed infrastructure, especially as the development would be sited approximately 2m lower in the landscape. The proposed development would be largely screened by the embankment landform and existing tree cover except for the upper sections of the two electrolyser stacks which would appear in close proximity to the larger scale existing infrastructure of Singleton Birch. Filtered views of the uppermost section of largest building would introduce glimpses of industrial built form into the view. This would result in a perceptible, permanent alteration to the amount of built form in the view. The extent of change would occupy a relatively small extent of the view and where visible would be viewed within the context of the existing infrastructure of Singleton Birch.
Magnitude of visual change – year 15	**Low** – the woodland planting in the northern part of the site would have matured and would assist in integrating the proposed development within the landscape framework. However, the upper sections of the proposed infrastructure would remain visible above the existing trees on the eastern site boundary.
Longer term residual level of visual effect	In both the short and long term, the level of visual effect would be **Minor Adverse**. This is due to the change in view being relatively small, the proposed development being partly screened from view by existing vegetation and viewed in the context of the existing Singleton Birch infrastructure.
Viewpoint 3 – Public Right of Way KIRM302	
Approximate distance	3km to the south
Receptors	Users of PRoW KIRM302
Baseline view	Figure 3.4 Panoramic long-distance view across a wide open landscape consisting of gently rolling topography sloping down towards the site. Large scale arable fields bordered by fragmented hedgerows are visible in the foreground of the view. The infrastructure of Humberside Airport and Singleton Birch are clustered together in the view and are backdropped by the wooded skyline but are nonetheless visually prominent due to their white colouring. The skyline is peppered with vertical elements across the entirety of this panoramic view, including pylons and masts. Humber Bridge is just visible in the distance directly above the existing Singleton Birch chimneys. There is plenty of movement in the landscape as numerous roads cross

	the view, as well as the railway line. Parked cars are visible at Humberside Airport
Sensitivity	**High** – PRoW users take a particular interest in views of the landscape around them.
Visibility of the proposed development	Whilst this is a wide-open view, the tree belts bordering the eastern and southern boundaries of the site provide partial screening and limit views directly into the site.
Magnitude of visual change – year 1	**Negligible** – there may be glimpsed views of the tops of the two electrolyser stacks, as the highest parts of the proposed development, above the existing trees. However, at this distance from the site the proposed development would occupy such a small proportion of the view that it would be barely perceptible, especially when it would appear within the cluster of existing Singleton Birch infrastructure.
Magnitude of visual change – year 15	**Negligible** –. The magnitude of change would be the same as year 1 and the proposed development would remain barely perceptible.
Longer term residual level of visual effect	In both the short and long term, the level of visual effect would be **Negligible Adverse,** this is due to the proposed development being barely perceptible in the view from this location.
Viewpoint 4 – Public Right of Way BARN124	
Approximate distance	1.7km to the southwest
Receptors	Users of PRoW BARN124
Baseline view	Figure 3.4 Medium range view across a wide open landscape consisting of gently rolling topography. Large scale arable fields bordered by fragmented hedgerows and tree belts dominate the foreground of the view. The midground of the view consists of the existing infrastructure elements of Singleton Birch and Humberside Airport, broken up by the presence of vegetation scattered across the view. The site is screened by an up to 11m high tree belt lining the A18. Belts of trees and shrubs in the mid-ground of the view also provide some screening elements. Traffic movement is evident on the A18 and the railway which bisect the view. The skyline is scattered with vertical elements across the full extent of the view, such as pylons, masts and cranes, as well as Immingham power station.
Sensitivity	**High** – PRoW users take a particular interest in views of the landscape around them.

Visibility of the proposed development	Whilst this is a wide open view, the intervening woodland and the up to 11m high tree belt bordering the southern boundary of the site provide screening of the site.
Magnitude of visual change – year 1	**Negligible** – the removal of existing trees to accommodate site access from the A18 may result in glimpsed views of the tops of the electrolyser stacks as the highest parts of the proposed development. However, the existing tree cover would screen the majority of the proposed development from this viewpoint to the extent that it would occupy such a small proportion of the view that it would be barely perceptible.
Magnitude of visual change – year 15	**Negligible** –The magnitude of change would be the same as year 1 and the proposed development would remain barely perceptible.
Longer term residual level of visual effect	In both the short and long term the level of visual effect would be **Negligible Adverse, t**his is due to the proposed development being barely perceptible in the view from this location.
Viewpoint 5 – Caistor Road	
Approximate distance	1.6km to the southwest
Receptors	Users of PRoW BARN189 Residents of New Barnetby
Baseline view	Figure 3.5 Wide, open view across large scale, gently rolling agricultural fields bordered by fragmented hedgerows with scattered tree copses and dissected by a line of telegraph poles and the Sheffield to Lincoln railway line in the mid ground. The landform rises to the left of the view and the existing white coloured infrastructure of Singleton Birch is prominent in this elevated position in the landscape. The tops of the industrial sheds associated with Humberside Airport are also visible on the horizon, backdropped by woodland. The presence of tree copses and shelter belts limit long distance visibility to the left and right of the view.
Sensitivity	**High** – Residents and PRoW users take a particular interest in views of the landscape around them.
Visibility of the proposed development	Whilst this is a wide-open view, the intervening woodland and the up to 11m high tree belt bordering the southern boundary of the site provide screening of the site.
Magnitude of visual change – year 1	**Negligible** - the tops of the two electrolyser stacks, as the highest parts of the proposed development, may be partially visible above the existing intervening tree belts and would appear visually separate from the existing

	Singleton Birch infrastructure. However, it would occupy such a small proportion of the view that it would be barely perceptible.
Magnitude of visual change – year 15	**Negligible** – there would be no screening benefit from mitigation planting. The magnitude of change would be the same as year 1 and the proposed development would remain barely perceptible.
Longer term residual level of visual effect	In both the short and long term, the level of visual effect would be **Negligible Adverse, t**his is due to the proposed development being barely perceptible in the view from this location.

6.2.2 Effects on visual receptors

There are no visual receptors of high sensitivity in close proximity to the site that are not represented in the above representative viewpoint appraisal. Visual receptors of a lower sensitivity in proximity of the site include users of Humberside Airport and associated commercial development, users of the Sheffield to Lincoln railway and road users. For these receptors there would be little change to the view as a result of the proposed development due to the site being visually contained by existing tree belts, the presence of tree belts in the surrounding area and the fact that these receptors are generally focussed on the activity they are undertaking rather than the view.

Views of the proposed development for high sensitivity users of the footpath network throughout the study area would be partially screened by intervening vegetation and the rolling topography. The visual experience of footpath users includes open views across the rolling chalk landscape and there are sections along the footpaths with localised reductions in vegetation which permits visibility in the direction of the site. The majority of the development would be screened by the existing tree belts surrounding the site, but where the development would be visible above the vegetation, it would be viewed within the context of the existing Singleton Birch infrastructure. Due to the proposed scale of the development and the degree of existing visual enclosure, the proposed development would not alter perceptions of openness or cause enclosure of views.

Visual effects summary

At year 1 the assessment of representative viewpoints has identified the greatest level of effect at viewpoint 1 located in the closest proximity to the site. **Moderate adverse** visual effects would initially be experienced in this location due to tree loss along the southern site boundary impacting views from the curtilage of The Lodge and PRoW KIRM127. Visual effects at the remaining viewpoints have been identified as **Minor adverse** or **Negligible adverse**.

At year 15, the assessment of the representative viewpoints has identified a **Minor Adverse** level of visual effect for the two receptors in closest proximity of the site. Visual effects at Viewpoint 1 would reduce to Minor adverse due to the maturity of site

boundary mitigation tree planting. For the remaining three receptors located at greater distances, the level of visual effect would be no more than **Negligible Adverse**. This is because:

- The site is already visually contained by existing tree belts and mitigation planting to enhance this has not been possible or necessary.
- Most receptors are set back from the development.
- The form of the proposed infrastructure would be similar to the existing Singleton Birch infrastructure and where visible would be seen within this context.

7 Summary and conclusions

Assessments have been undertaken of the likely landscape and visual effects of the proposed development adjacent the existing facility at Singleton Birch. Mitigation strategies have been developed to minimise both the shorter and longer-term residual landscape and visual effects. This includes woodland planting along the southern site boundary to:

- Facilitate the integration of the development into the landscape setting; and
- Replace trees lost as a result of the proposed site access to provide screening of the proposed development.

The appraisal has concluded that the level of long-term residual landscape and visual effects of the proposed development would generally be **Negligible**. However, visual receptors located in close proximity to the site including residents of The Lodge and users of PrOW KIRM127 and PrOW KIRM120 would experience **Minor adverse** effects (refer to Viewpoints 1 and 2).

The proposed development is positioned within a visually enclosed site where the context is influenced by the existing large scale Singleton Birch infrastructure. The proposed development would be largely screened by existing tree cover along the site boundaries and within the wider study area. It would be in keeping with the existing adjacent, large scale industrial built form and would appear to assimilate with the Singleton Birch site. The proposed mitigation planting would replace landscape elements lost as a result of the required site access and provide visual screening and landscape integration of the scheme.