

HIGH MATHERNOCK BESS

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

p1 - 37

VERSION 1

Included for reference



LANDSCAPE AND VISUAL IMPACT ASSESSMENT

on Behalf of

Harmony HM Ltd

in regard to a

Proposed Battery Energy Storage System

at

High Mathernock

July 2024



Designing for the present whilst protecting the future
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Landscape and Visual Impact Assessment

in relation to an

Battery Energy Storage System (BESS) Facility

at

**High Mathernock,
Inverclyde**

On behalf of

Harmony HM Ltd

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1. INTRODUCTION

- 1.1 The following study sets out a Landscape and Visual Impact Assessment of the potential effects of creating a new Battery Energy Storage System (BESS) facility at High Mathernock in Inverclyde. This would sit within a field south of Auchentiber Road in the Gryfe River Valley between Port Glasgow and Kilmacolm.
- 1.2 The land immediately adjacent to the west of the site was also subject to an application for a similar BESS facility which was granted permission in late 2024. The proposed site will be considered in conjunction with the construction of this development, as part of the landscape context of development.



Fig 1 – Aerial Photograph taken from Google Earth

- 1.3 The proposed site lies within Inverclyde Council’s jurisdiction, so the following planning documents have been reviewed.
- Inverclyde Local Development Plan 2019
 - Inverclyde Core Paths Plan – 2019

- 1.4 Documents and reference databases which will be referred to in the course of this study will be:
- National Planning Framework 4 (February 2023)
 - Nature Scots online database of Landscape Character Types
 - Glasgow and Clyde Valley landscape character assessment
 - Past Map (pastmap.org.uk)
 - Scotland’s Environment (www.environment.gov.scot)
- 1.5 This assessment will firstly look at the location and context of the site, taking account of surrounding settlement patterns, transport networks, cultural heritage features and nature conservation designations. It will also consider any constraints set out in the current Local Development Plan, where they relate to the landscape or surrounding context. These factors will set out the base line conditions for the existing landscape against any assessment of potential impacts will be made.
- 1.6 A review of the physical conditions of the site will be carried out and any constraints identified, followed by a review of the potential visual impacts which a development of this kind may produce. This will be based on a full review of the significant visual receptors in the landscape identified in the baseline study and then falling within the Zone of Theoretical Visibility (ZTV) model. This ZTV model will be prepared using Key-Terra Firma software and based upon Ordnance Survey topographical data to produce a bare earth representation of the locations within the landscape where visual impacts may be possible. From this initial starting point, further on-site assessment is undertaken to determine the extent and nature of any visual impacts.
- 1.7 This assessment is supported by a set photographic study to illustrate the finding of the visual impact assessment which will produce a set of photo montages for the development as proposed. These will include a computer-generated model of the buildings proposed along with the access roads and infrastructure and proposed earthworks and changes in level – including retaining wall. This will be set within a wireframe model of the landscape generated from Ordnance Survey topographical data and GPS positional technology to create accurate representations of the scaled development within the landscape from key viewpoints. This representation can then be superimposed upon photographs taken from the viewpoints to show a reasonable illustration of what the development may look like, and more importantly the potential visual impact of it within the landscape.
- 1.8 A set of overall constraints to development will be highlighted and recommendations set out.

2. METHODOLOGY

- 2.1 The subject of this study is the assessment and mitigation of potential landscape and visual impacts of the proposed development at High Mathernock, Inverclyde. The following methodology sets out the parameters for conducting this study.
- 2.2 This study will consider the wider context of the landscape in which the site is located. Elements such as settlements, transport links, core paths, recreational attractions, Tree Preservation Orders, and cultural and natural heritage designations are examined in this section and the relevant conclusions drawn. These elements will form the core of the baseline conditions against which the assessment of impact can be made.
- 2.3 National Planning Framework 4 was published in February 2023 and sets out the national approach to planning issues and gives the context in which policy should be set and ultimately decisions made regarding development in the coming years. This is a relatively new document, and its full implications may not yet have been fully digested by the range of authorities and developers who it will affect, and it has not yet had a chance to affect local planning policy. It will however be applied to any decision-making process relating to this proposal. The current Policy document is the Inverclyde Local Development Plan adopted in 2019 and its associated supporting and supplementary guidance documents. These will be considered in the course of the assessment and any landscape related constraints or issues assessed.
- 2.4 The Landscape Character of the site and surroundings is then examined in relation to “SNH National Landscape Character Assessment” particularly “Landscape Character Assessment: Glasgow and the Clyde Valley - Landscape Evolution and Influences” and its subsequent Landscape Character Type definitions. These documents supersede, but draws from, the original “NatureScot Review 116 – Glasgow and Clyde Valley landscape character assessment”, 1999, Land Use Consultants in association with Glasgow University Archaeological Research Division”, which set out the officially accepted description of the character of the site and surrounding environment. These documents contain guidelines for development within the landscape, and these have been taken into consideration.
- 2.5 Following this, the physical conditions of the site itself are addressed through the study of the site’s topography, gradients, vegetation and built forms. Other detailed assessments of ecology, arboriculture and archaeology have also been carried out upon the site and any implications resulting from these will be considered. This is followed up with a photographic study of the site, illustrating the conditions and features that currently exist.
- 2.6 The visual impact of any development of the site is then looked at in more detail. This will be carried out using Key Terra Firma ground modelling software to anticipate the visual range of the development by creating a Zone of Theoretical Visibility (ZTV) map based upon Ordnance Survey topographical data. In this case two ZTV drawings have been prepared to illustrate the potential visibility of the energy crop plantation and of the proposed service area as these have varying degrees of potential impact. This potential difference in impacts will be considered throughout the subsequent visual impacts assessment.
- 2.7 An assessment of the visual receptors within the area, which fall within the zone of theoretical visibility envelopes, is then undertaken considering individual dwellings, leisure facilities, businesses, and farms over a range of 1km, towns and settlements, transport links, cultural Heritage features and any natural heritage designations or sites. Any issues or potential impacts have been highlighted and supported by a photographic study.
- 2.8 From the conclusions drawn, a set of constraints to development and any necessary mitigation is compiled and recommendations are made for the development of the site with the least degree of impact.
- 2.9 The overall methodology has been undertaken in accordance with the recommendations of “Guidelines for Landscape and Visual Impact Assessment (Third Edition) published by the Landscape Institute in conjunction with the Institute of Environmental Management and Assessment.

3. CONTEXT AND LANDSCAPE SETTING

3.1 Drawing L1 shows a study area extending over a 5km radius from the site. This area will be assessed in detail, as being the landscape where impacts could potentially result from a development of this size and nature. Impacts are highly likely to diminish rapidly with distance from the site so subdivisions of 1km and 2km have been shown to highlight the range that a feature or receptor has from the proposals. In unusual circumstances, there may be potential impacts which extend further than 5km from the site. Any potential longer ranging impacts will also be considered.

Context

3.2 The site lies within the Gryfe Water Valley on the raised landscape above the Clyde Estuary's southern shore. The coastal towns of Port Glasgow and Greenock lie to the north and north west respectively. To the south east the small town of Kilmacolm lies along the Gryfe Valley but the wider landscape is rural in nature with large stands of plantation woodland and notable wind turbine and overhead power transmission lines crossing the landscape. Agriculture is the predominant land use in the study area but raised areas of landscape transition into more natural heath and moor and a large area to the north is taken up by the open water of the estuary.

3.3 Of note is the proposed Battery Energy Storage System development for the fields immediately adjacent to the west along the valley. Although this has been consented, it is not present in the landscape in any form but there is a presence of energy related development in the wider landscape with the Devol Moor Electricity Sub Station to the north west and turbines at Inverclyde Wind Farm and Priest side to the north of the valley.

Topography

3.4 Drawing L2 shows the topography of the 5km study area. The topography show great variation with the low-lying water of the Clyde to the north lying at 0m (AOD) which rises steeply from the coastal shelf up a steep but extensively settlement escarpment to a higher-level plateau of more open and undeveloped land. This is the landscape in which the site lies, in the shallow valley of the Gryfe Water which runs approximately west to east before turning south east towards Kilmacolm, Bridge of Weir and Renfrewshire. There is much localised variation within the landscape, albeit not as dramatic as the rise from the estuary. This provides variety and shelter within the landscape with some notable hills such as Jock's Craig (192m AOD) to the south east of the site. To the south west of the study area the landscape rises markedly area across the Renfrewshire Heights to a height of 380m (AOD) within the study area but continuing to rise beyond. This area is designated as a SSSI largely based upon its value as a nesting site for Hen Harriers.

Transport Links

3.5 The rural nature of the landscape around the site is such that roads close to it tend to be narrow and even single-track routes providing access to farms and dwellings. Auchentiber Road to the immediate north of the site is one such road although it provides a link between the busier A761 and B788 to east and west. The majority of traffic will be local access however, with High Mathernock Road performing a similar function, without the through route. Devol road to the north of the site appears to be a historic route to Port Glasgow but is also closed to through traffic. It remains a pedestrian route and Core Path. The main route through the study area is the B788 Auchenfoil Road to the west which links Kilmacolm with Port Glasgow and Greenock.

Core Paths

3.6 There are several Core Path Routes identified in the Inverclyde Core Path Plan which pass close to the site. These all tend to follow the road links described above but provide more continuous routes for pedestrians and cyclists.

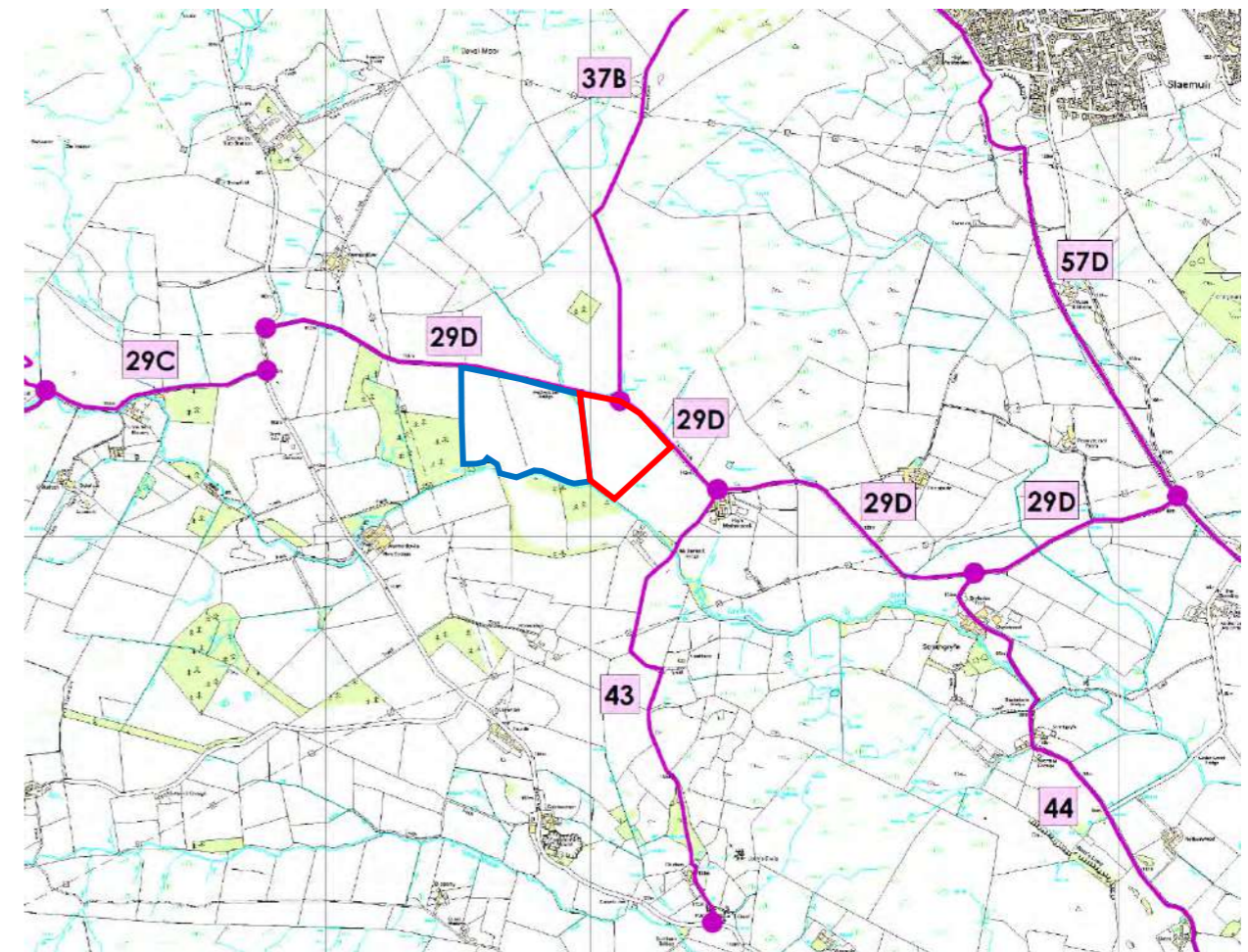
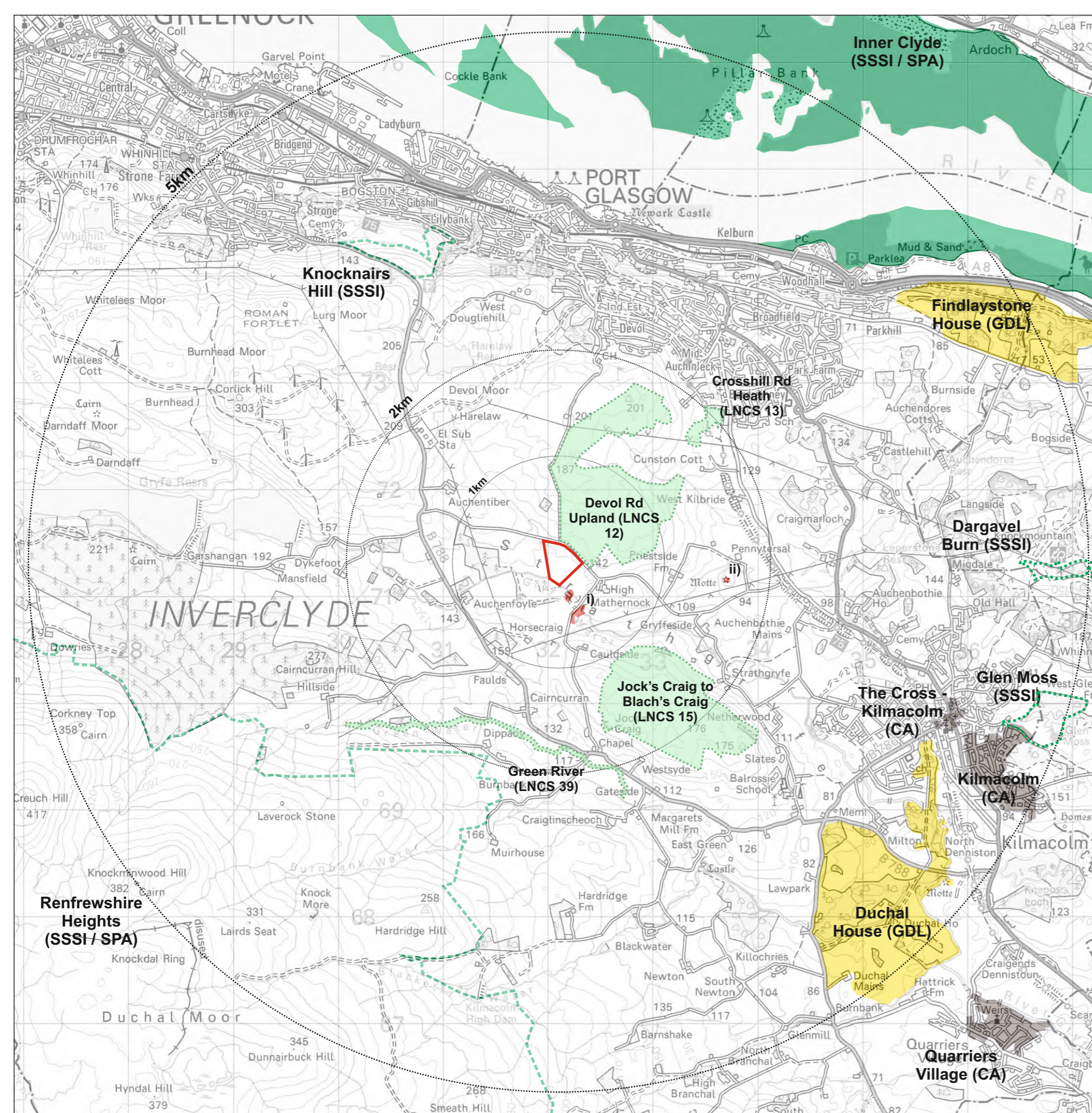



Fig 2 – Excerpt from the Inverclyde Council Core Paths Plan – site location indicated with red line



KEY

-  Scheduled Monument (SM)
-  Conservation Area (CA)
-  Garden or Designed Landscape (GDL)
-  Site of Special Scientific Interest (SSSI)
-  Special Protection Area (SPA)
-  Site of Importance for Nature Conservation (SINC)

 Proposed Site Boundary

**HIGH MATHERDOCK
BESS FACILITY**

**L1 LOCATION &
CONTEXT**

July 2024



Cultural Heritage

- 3.7 The landscape around the site has been settled for thousands of years and as such there are many remnants of historic, cultural, and industrial heritage features across the study area. Impacts upon the settings of these features and visual impacts experienced by them, will be considered in the course of this study, along with other features within the study area as listed below.
- 3.8 Listed Buildings - within 1km
- None within this range
- 3.9 Scheduled Monuments - within 2km
- High Mathernock AA Battery
 - Pennytersal Farm, Motte
- 3.10 Gardens and Designed Landscapes - within 5km
- Duchal House
 - Finlaystone House
- 3.11 Conservation Areas - within 5km
- The Cross, Kilmalcolm
 - Kilmacolm
- 3.12 World Heritage Site – within 5km
- None within this range

Natural Heritage

- 3.13 A study to determine the presence of any significant conservation designations within the 5km study area, such as Sites of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Area of Conservation (SAC), National or Local Nature Reserve (NNR/LNR) or RAMSAR or any other designations such as Country Parks has been undertaken.
- Inner Clyde (SSSI / SPA)
 - Knocknairs Hill (SSSI)
 - Glen Moss (SSSI)
 - Dargavel Burn (SSSI)
 - Renfrewshire Heights (SSSI/SPA)
- 3.14 In addition, the Local Development Plan identifies several Local Nature Conservation Site (LNCS) across the council area which are local designations designed to give a degree

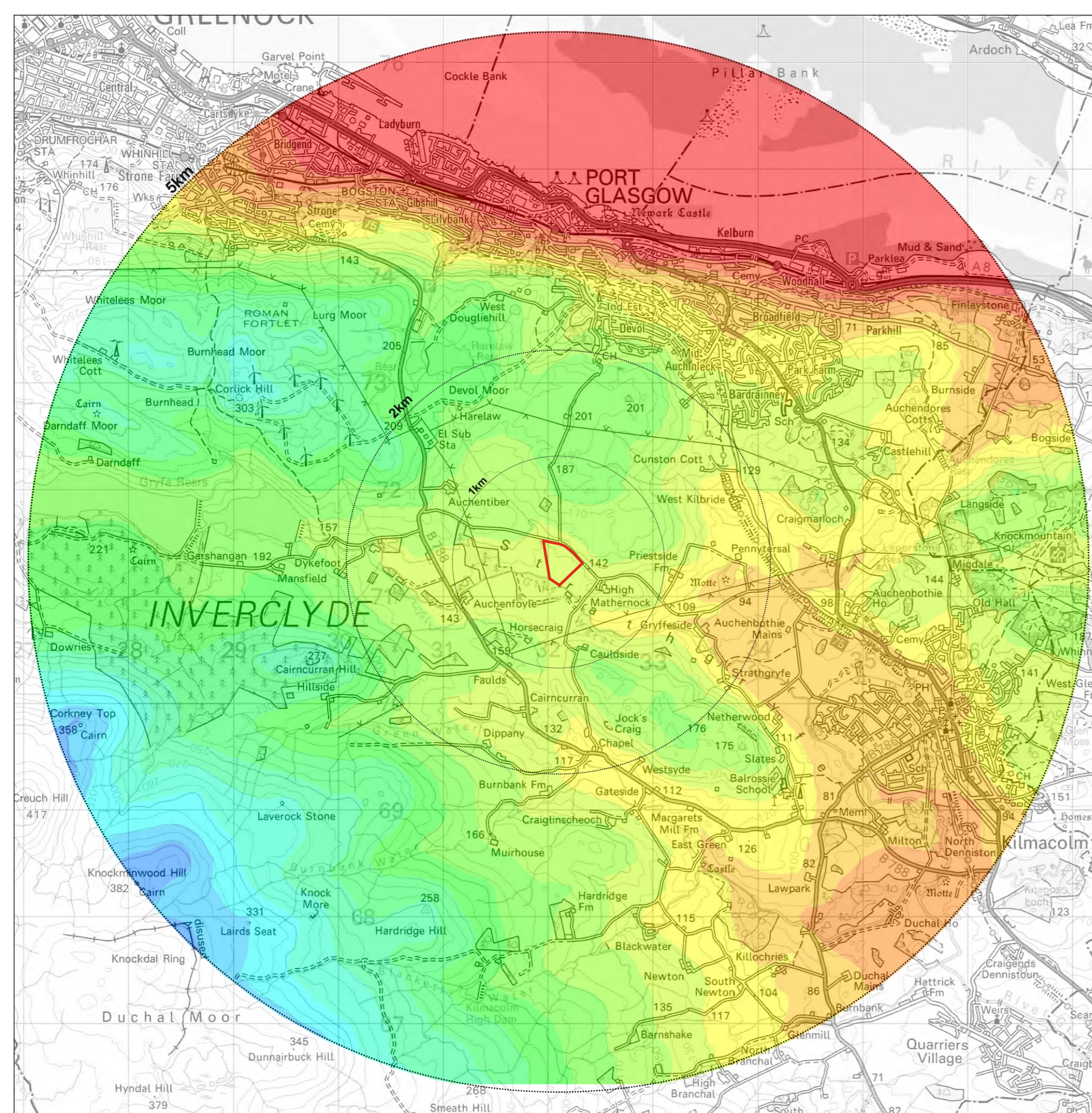
of recognition and protection to natural features within the Council area. Those which lie within 2km of the site are identified below.

- Devol Road Upland (LNCS)
- Crosshill Road Heath (LNCS)
- Jock's Craig to Black Craig (LNCS)
- Green Water (LNCS)

















- 3.15 These features are shown on drawing L1.


Conclusions

- 3.16 There are no significant settlements or designation which apply to the landscape of the site and no specific contextual features within the landscape which would constrain development.



KEY

- | | |
|---|--|
|  0m-20m |  200m-220m |
|  20m-40m |  220m-240m |
|  40m-60m |  240m-260m |
|  60m-80m |  260m-280m |
|  80m-100m |  280m-300m |
|  100m-120m |  300m-320m |
|  120m-140m |  320m-340m |
|  140m-160m |  340m-360m |
|  160m-180m |  360m-3800m |
|  180m-200m | |

 Proposed Site Boundary

**HIGH MATHERDOCK
BESS FACILITY**

L2 TOPOGRAPHY



DWA

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4. PLANNING CONTEXT

National Planning Framework 4

4.1 The National Planning Framework 4 was published in February 2023 and sets out the planning context for Scotland for the coming years. This takes a broad strategic view on planning issues with the intent of creating a more balanced and sustainable planning policy set up with communities and the environment at the forefront. There are elements to consider in relation to the proposed development of the site at High Mathernock, but the key element will likely be in the protection of existing and promotion of new and improved levels of biodiversity. This effect is known as biodiversity net gain or enhancement and works on the principle that wherever possible the highest value habitats within the landscape must be protected and integrated into the design of a scheme and where this cannot be achieved, an enhancement (or net gain) in value must be achieved through compensation. The relative baseline value of the habitats affected would be identified through initial assessment and will dictate the degree of action required to achieve a net gain in the proposals. This will require a higher degree of involvement of ecologist and designers at the outset to ensure that these requirements can be achieved by developers.

Inverclyde Local Development Plan

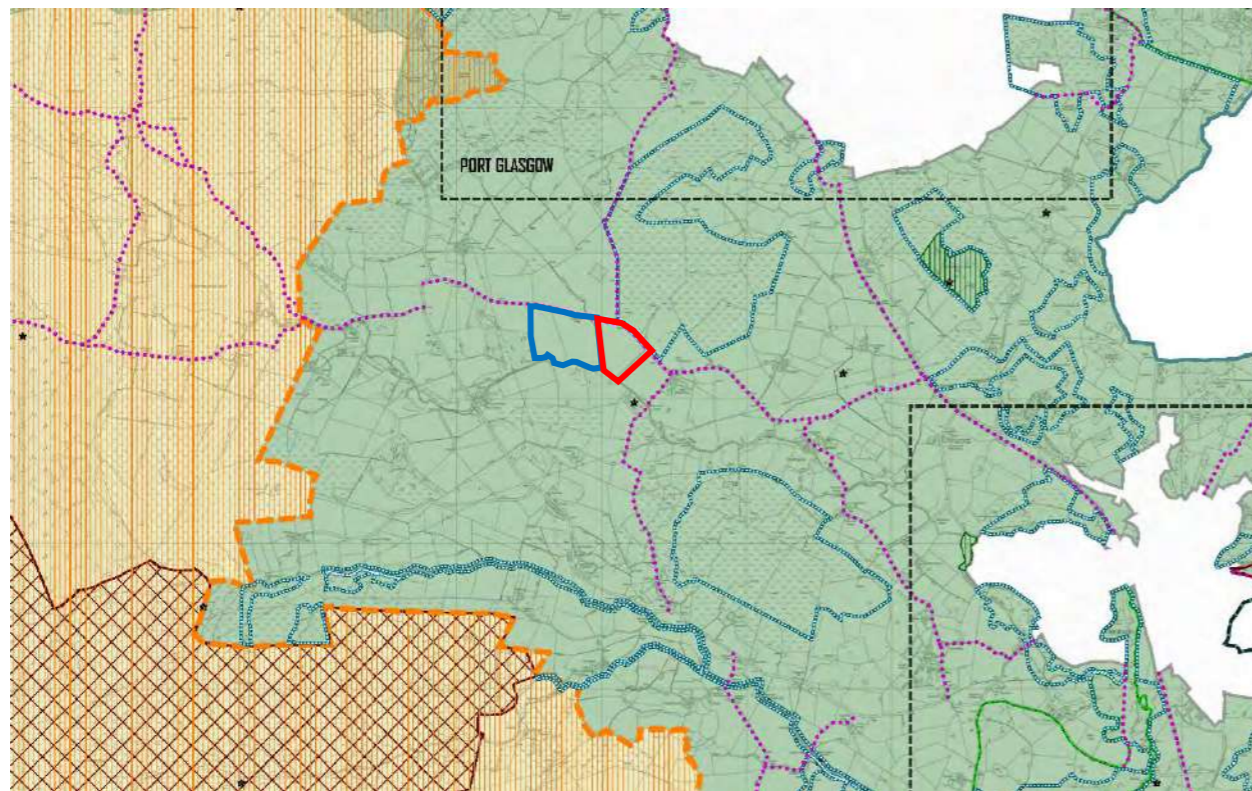


Fig 3 Excerpt from Inverclyde Local Development Plan Proposal Map - site location is indicated with red line with the other proposed adjacent proposal shown in blue

4.2 The site lies within Inverclyde Councils area and as such is subject to the policies of the Inverclyde Local Plan. The excerpt from the LDP proposal map shown in figure 3 indicates that the site is part of the Green Belt. This is addressed through Policy 15 Green Belt and Countryside which states:

“Policy 15 - Green Belt and Countryside

Development in the Green Belt and Countryside will only be permitted if it is appropriately designed, located, and landscaped, and is associated with:

- *agriculture, horticulture, woodland or forestry;*
- *a tourism or recreational use that requires a countryside location;*
- *infrastructure with a specific locational need;*
- *the appropriate re-use of a redundant stone or brick building, the retention of which is desirable for its historic interest or architectural character, subject to that interest or character being retained; or*
- *intensification (including extensions and outbuildings) within the curtilage of an existing use, which is of an appropriate scale and form.*

Proposals associated with the uses set out in criteria a)-c) must provide justification as to why the development is required at the proposed location. Proposals in the green belt must not undermine the objectives of the green belt as set out in Scottish Planning Policy and the Clydeplan Strategic Development Plan. Non-conforming uses will only be considered favourably in exceptional or mitigating circumstances.”

4.3 The Green Belt is intended to control development rather than preclude it entirely and there is provision within the policy for development where there is a locational need. This type of infrastructure development is unsuited to being with settlements due to its site and nature and therefore will generally be required to be located within the countryside somewhere. Provided that impacts can be shown to be acceptable, the proposals should be worthy of consideration within the Green Belt area.

4.4 Other policies which may be relevant are listed below and will be considered in more detail in the course of the assessment. In brief these are:

- **Policy 31 - Scheduled Monuments and Archaeological Sites** – *The site is not designated as a cultural heritage feature therefore any impacts would be visual and considered in the course of the assessment*

- **Policy 33 – Biodiversity and Geodiversity** – the site is currently an agricultural field and of limited (albeit some) biodiversity value. Any proposals should seek to limit impact on higher value features such as trees, hedgerows, or the river corridor should be retained and enhanced where possible and additional biodiversity measures incorporated to produce a net gain for the development.
- **Policy 34 – Landscape** – Consideration will be given to the defined Landscape Character in the course of this assessment.
- **Policy 35 – Trees, Woodland and Forestry** – there is no tree cover upon the site and any in the adjacent landscape would be protected in the course of the development as required.
- **Policy 36 – Safeguarding Green Infrastructure** – the site is open countryside but as agricultural land it does not form part of any formal or informal recreational or sports ground. Access is not encouraged from the public nor does it form any part of the Core Paths system. Adjacent Core Paths would be unaffected.
- **Policy 39 – Water Environment** – the southern boundary of the site meets the River Gryfe but the development is proposed to be in the northern part of the site. There should therefore be no impact upon the physical landscape of the watercourse and run off from the site would be attenuated on site through the proposed SuDs basin system.

4.5 Full consideration to the planning context of the proposals will be given by others for the proposals.

Conclusions

4.6 The site is part of the designated Green Belt in the Local Development Plan but there is provision for allowing development where there is a locational need. The nature of this infrastructure development is such that it cannot be located within a settlement so provided impact are deemed acceptable, there should be scope to consider the proposals under this policy. There would be no significant impact which results from the proposals under other landscape related planning policy.

5. LANDSCAPE CHARACTER

5.1 The land of the study area was originally defined in the “NatureScot Review 116 – Glasgow and Clyde Valley landscape character assessment”, 1999, Land Use Consultants in association with Glasgow University Archaeological Research Division. This has since been superseded by the “Landscape Character Assessment: Glasgow and Clyde Valley - Landscape Evolution and Influences” and subsequent landscape character type definition, which draw heavily from the original document as much of the information remains relevant.

5.2 The NatureScot landscape character type database defines the *Rugged Upland Farmland* (202) landscape type as follows (where relevant):

Location and Context

5.3 *The Rugged Upland Farmland Landscape Character Type, which shares many of the attributes of Plateau Farmland – Glasgow & Clyde Valley, is found in Kilmacolm, Johnstone and Neilston. It occurs in Inverclyde, Renfrewshire and East Renfrewshire local authority areas, north and west of Newton Mearns, where the smooth plateau farmlands and higher plateau moorlands give way to a more rugged farmland landscape, forming a transition to the rugged moorland area further north west.*

Key Characteristics

- *Rugged landform comprising rocky bluffs and shallow troughs.*
- *Reservoirs in flooded troughs.*
- *Dominance of pastoral farming.*
- *Frequent tree cover often emphasising landform, for example concentrated on bluffs and outcrops.*
- *Settlement limited to farms and villages.*

Landscape Character Description – Landform

5.4 The Rugged Upland Farmland landscapes are, for the large part underlain by millstone grits and carboniferous limestone with peripheral, higher areas of basalt. They are characterised, to a greater or lesser degree, by a rugged, hummocky landscape of steep, craggy bluffs interspersed with gentler farmland. Many of the troughs and valleys are flooded, providing reservoirs for urban areas to the north.

Landcover

5.5 Woodland cover is relatively extensive, providing an important structural element, with many of the rugged hillocks covered in stands of beech or pine. The more hospitable areas are mostly improved pasture (mainly given over to sheep farming). Beech hedgerow trees are a distinctive feature in many parts of this landscape, often associated with past estates.

Settlement

5.6 Farms and villages tend to be concentrated in more sheltered areas, particularly near the northern edge of these areas. Scattered farms tucked into the hillsides are an important

landscape feature. The majority are white-washed with gabled, grey slate roofs and comprise a 1- or 2-storey house closely surrounded by byres and other farm buildings.

5.7The Kilmacolm area contains a number of small towns or villages including Kilmacolm, Bridge or Weir, Houston, Quarriers Village and Erskine. Kilmacolm and Bridge of Weir have village cores containing traditional vernacular buildings, surrounded large areas of high-quality 19th and early 20th Century villas. Quarriers Village is a distinctive group of late 19th Century villas designed to house orphaned and destitute children in family-sized units. The villas are laid out in spacious landscaped grounds planted with individual shrubs and small trees and are distinguished by the lack of fences, hedges, or other boundary treatments between the buildings.

5.8 The Kilmacolm area contains a number of designed landscapes, many of them relatively complete. Two, Duchal House and Formakin are listed in the Inventory of Gardens and designed Landscapes. The Duchal House landscape incorporates formal early 18th Century planting and informal 19th Century planting. The Formakin landscape contains an important number of picturesquely-grouped Scots Renaissance style buildings by the architect Sir Robert Lorimer. All parts of the Landscape Character Type contain the remains of 18th and 19th Century policy planting from less intact estates.

5.9 Scheduled hillforts, mottes, and other defensive sites, typically located on prominent rocky knolls or hilltops are located throughout this Landscape Character Type. These are most numerous in the Kilmacolm area. Although locally prominent in the landscape the undulating topography means that they tend to be less visible from a distance.

5.10 Although this area does not include urban areas, influences include electricity infrastructure and masts, particularly around Gleniffer Braes, some forestry, isolated suburban development, settlement expansion and the aural impact of aircraft approaching or leaving Glasgow Airport.

Perception

5.11 Views are relatively contained within the western areas of this landscape, which are fringed by higher ground. The valley of Strathgryffe channels views locally.....

Conclusions

5.12 The description within the landscape character type provides a great deal of information on the area around the River Gryfe although not specifically the site area. It also does not consider the type of development proposed which is a relatively new kind of facility. It can be considered that the location and nature of the BESS will be out of keeping with the existing landscape character – as it would be with any rural location, but the existing infrastructure in the surrounding landscape creates a precedent. The degree to which the proposed development influences the character of the wider landscape will also be a consideration which will form part of the visual impacts assessment.

6. PROPOSED DEVELOPMENT

6.1 The proposals are to develop the site for a Battery Energy Storage System (BESS) facility. This consists of a series of 87no battery units and associated apparatus in rows and columns to the northern part of the site, surrounded by an acoustic fence. The requirement is to create a level platform to accommodate the apparatus therefore a retaining wall will be required to drop the levels at the north of the site. This will create

a platform at 138m (AOD) which will continue across approx. 60% of the way south across the site where an embankment will fall to rejoin the natural levels of the landscape. A SuDs basin will be formed on the lower ground to attenuate any rain water run off before release to the river. Access will be taken from the north west and north eastern corners of the site from Auchentiber Road. The proposal is to plant structural woodland around the periphery of the site to mitigate potential visual impacts and also enhance biodiversity across the site.

6.2 A proposal for the land adjacent to the east seeks to create a similar facility but with a larger capacity and greater number of battery units, split into two sections with sub station between. This proposal received planning consent from the Energy Consents Unit on 11th September 2024



Fig 4 Proposed adjacent BESS Facility

Fig 5 Plan of the proposed BESS facility

7. SITE ANALYSIS

Site Analysis

- 7.1 The image below shows the site in its current context with the line of the River Gryfe visible to the southern boundary and Auchentiber Road to the north. It is broadly triangular in shape, tapering towards the southern end. It is approximately 8.48Ha in area.

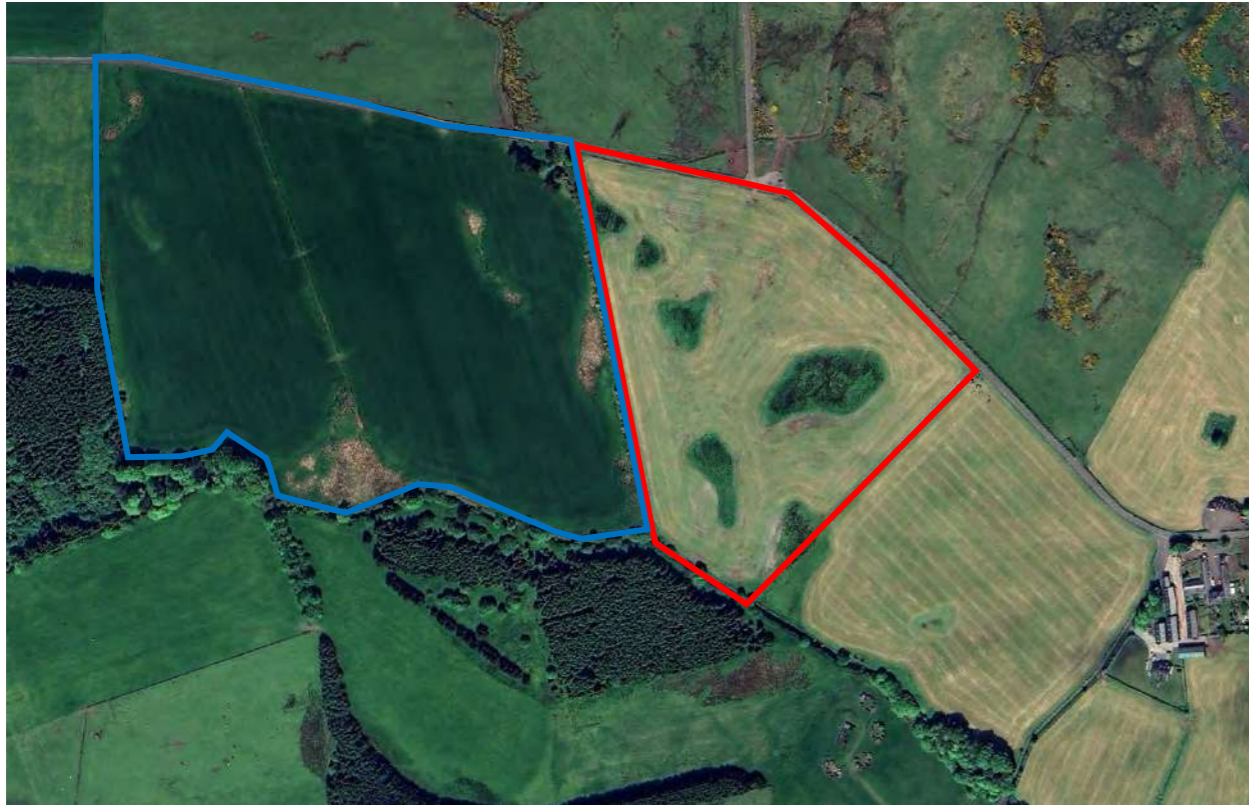


Fig 6 Aerial image of the site area with the boundary superimposed in red. Adjacent proposed site in blue.

- 7.2 Also shown is the outline of the adjacent proposed BESS site to the west. This is approximately 16.88Ha in area, although both facilities would occupy a smaller footprint within the boundaries. The field to the eastern side of the site would remain open farm land with High Mathernock Farm and Loganwood house to the far lever right of the image. The High Mathernock Battery site can be seen towards the bottom right south of the river.

Topography

- 7.3 The site slopes from north to south down from Auchentiber Road from a height of approx. 145m (AOD) down to 133m (AOD) on the southern boundary at the river. The gradient is relatively consistent with localised rises and falls and some depressions in pockets across the site which tend to be damper ground underfoot.

Boundaries

- 7.4 The northern boundary to the site is set by Auchentiber Road although a grass verge lines the road and then a low drystone wall in poor condition and a dilapidated post and wire fence an access point lies midway along this boundary which curves at a bend close to this, and the junction with Devol Road.
- 7.5 The western boundary is set by a linear field drain and hawthorn hedge and the eastern boundary by a hawthorn hedge with a post and wire fence separating it from the field to the east. The southern boundary with the river is marked with a post and wire fence and some scattered multi-stem scrubby bushes along the bank.

Structures

- 7.6 There are no structures upon the site beyond the low drystone wall to the northern boundary.

Vegetation

- 7.7 There is no notable vegetation upon the site beyond planted crop areas and boundary hedges. Some depressed areas of ground exist where vegetation appears different but these are due to damper ground conditions rather than significant vegetation variations.

Watercourses

- 7.8 There are no watercourses upon the site, but the River Gryfe runs immediately to the south. The proposed development would be to the northern part of the site well away from the river bank. A small linear field drain also runs along the western boundary of the field to the river, passing under Auchentiber Road from the north via a stone bridge to the west of the site. Again, development would be away from the boundary and impact would be avoided.

Archaeology

- 7.9 There is no record of any archaeological finds or cultural heritage designations.

Conclusions

- 7.10 Beyond the loss of agricultural land there are no significant constraints to the development of the site.

8. VISUAL APPRAISAL

- 8.1 The following is a study of the visual envelope that the proposed development would be anticipated to create, i.e. the parcel of land from which the development would be seen. For the purposes of this study an area of 5km in all directions from the site was therefore used for a detailed visual analysis. This is considered as a more than adequate radius to cover the likely impacts caused by the development within this landscape and given the contextual factors described in the previous sections. The ZTV is based on a visibility of points 8m from the ground across the site, to represent two storey buildings where a reasonable section of the roof might be seen. The analysis follows the method set out in "Guidelines for Landscape and Visual Assessment" Third Edition 2013, published by the Landscape Institute.
- 8.2 The visual envelope has been established through ground model analysis software and topographical Land-Form PROFILE data supplied by Ordnance Survey. The 'Zones of Theoretical Visibility' (ZTV) output data show the areas from which the site can be seen based on the topography of the landscape alone. The ground model takes no account of settlements or built structures in the landscape and is a "Bare Earth" representation.
- 8.3 Within the ZTV, there will be areas, which will have more visual sensitivity than others. Elements from which the site can be seen from are referred to as visual receptors. These visual receptors have been considered through desktop study and then on-site analysis.

Theoretical Visibility over 5km

- 8.4 Drawings L5 shows the ZTV for the proposed development, overlaid on a Landranger Ordnance Survey map over 5km. Coloured areas show a theoretical visibility of the development, and clear areas show that views will not be possible from these locations. Radii of 1km, 2km and 5km have been added to show the range at which potential views would be over.
- 8.5 The drawing shows a visual envelope which is mostly contained within the section of the Gryffe River Valley between High Mathernock to the east and B788 Auchenfoil Road to the west. Some potential views extend further to the west along the valley and across the high ground to the south west but for the most part any potential visibility is limited to a contained area by the topography of the valley.

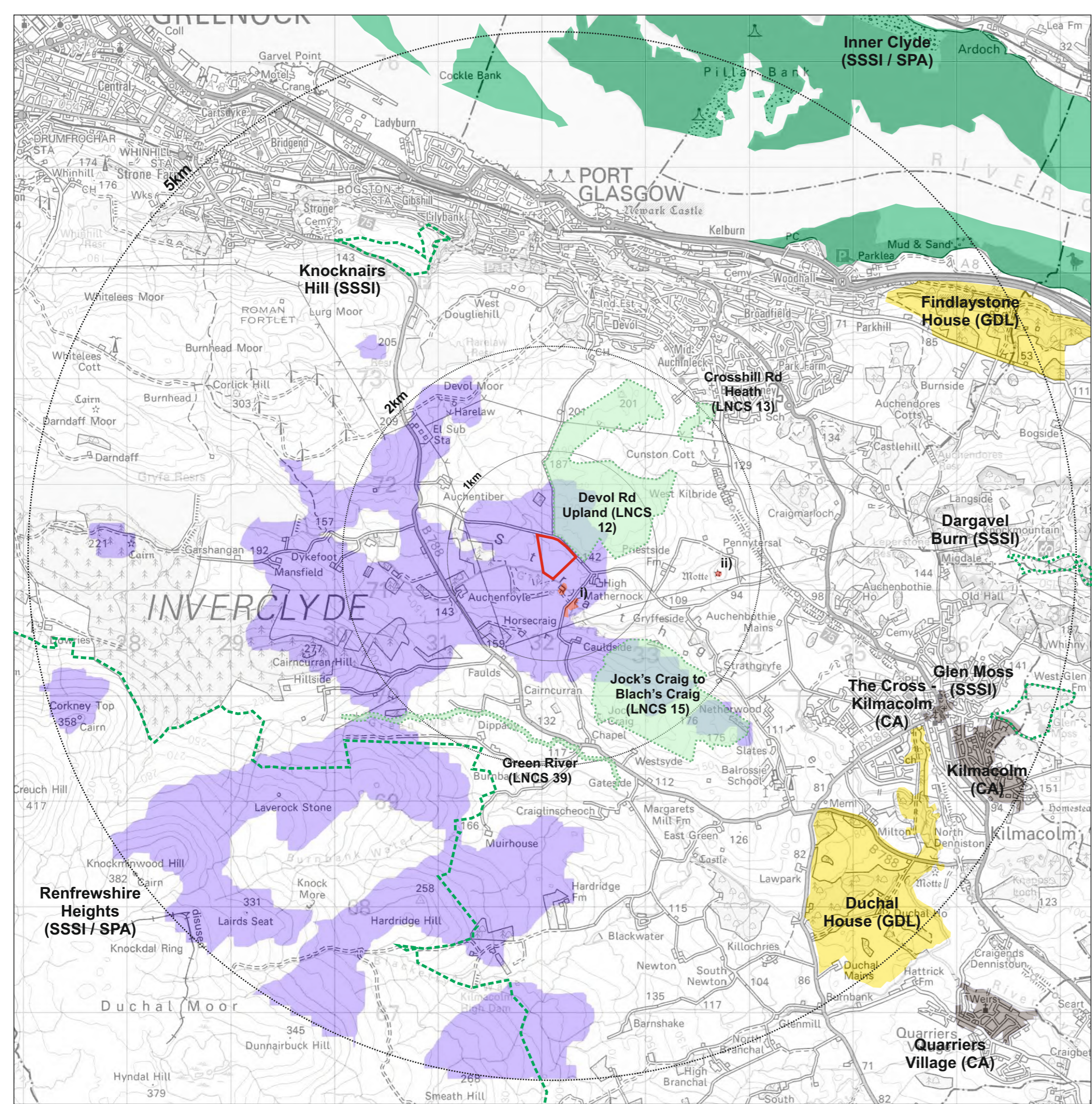
Receptors

- 8.6 An assessment of the impact upon the main settlements which lie within a 5km radius of the site has been made. Drawing L5 show the Zones of Theoretical Visibility or ZTV diagram over 5km which has also been prepared using the method described previously.

Coloured areas show a theoretical visibility of the development and clear areas show that views will not be possible from these locations. In addition to the settlements there are other features such as transport routes, core paths, regional parks and cycle networks which are also considered as receptors requiring analysis.

Determination of impact levels

- 8.7 Impacts reduce considerably the further the receptor is from the development. The sensitivity of the receptor is then considered to ascertain its susceptibility to impact. This is assessed through consideration of the nature of the receptor i.e. the number of people who might see a development and the reason they are there i.e. a passing view or a permanent residence. Permanent residences will have a potentially high sensitivity to visual impact in their primary views (and to a lesser extent in their secondary views) as will tourist attractions or landscapes with designated value. Transport routes, industrial complexes and farms may have less sensitivity and some conservation sites or historic features may have even less. The level of sensitivity will vary in each case and a brief explanation of each sensitivity classification is given for each receptor.
- 8.8 The impacts of the proposal are then assessed, firstly based on the visual envelope model, and then through site study which will establish a predicted magnitude of change in the views from a receptor, should the development be implemented. This will be determined by assessing the existing view of the site from the receptor and predicting how this will change, taking into account the distance to the development, the existing features and screening elements (or lack of), the orientation of primary views and the overall composition of the view in light of the proposal. In this case the increased development area. A resultant predicted impact derived is the 'magnitude of change' caused by the proposal in relation to what exists at present.
- 8.9 The resulting impact takes into consideration the distance to the receptor, the sensitivity of the receptor and the magnitude of change caused by implementing the proposal. This is subject to the professional opinion of the landscape architect, through basing the assessment on physical data and on-site observation. It is intended that the resultant impact will represent as true a reflection as is possible.
- 8.10 The level of sensitivity and the level of impact are each assessed according to one of following levels:
- None / Negligible
 - Low
 - Medium to Low
 - Medium



- Proposed Site Boundary
- Visual Envelope

**HIGH MATHERDOCK
BESS FACILITY**

L3 ZONES OF THEORETICAL
VISIBILITY (ZTV)

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- High to Medium
- High

8.11 The receptors have been separated into five categories listed below:

- Farms, Dwellings and Small Hamlets
- Towns and Villages
- Transport Routes
- Cultural Heritage
- Nature Conservation

8.12 Full details of the analysis of visual receptors are provided in the appendix of this document and the findings are summarised in the paragraphs which follow.

Farms, Dwellings and Small Hamlets

8.13 There are a few scattered dwellings and farms within the valley but few with clear views to the proposed development. The house at Cauldside, retreat at Horsecraigs and to a lesser extent High Mathernock Farm / Loganwood House, will have some views of the facility but partially obscured by existing tree cover along the river. This could be mitigated through additional planting along the southern and eastern boundaries of the site.



Towns and Villages

8.14 There are no settlements of any significance within the visual envelope and therefore there will be no impact upon this type of visual receptor.



Transport Routes

8.15 The road network around the site, and in the visual envelope contained within the Gryffe Valley is restricted to narrow local country roads which provide access to farms and dwellings. These do not carry much traffic or are regularly used by travellers in the wider context. Sensitivity is therefore limited, although many also function as Core Paths. Views will be possible from Auchentiber Road from High Mathernock Farm to a point on the far side of the adjacent proposed development. Some views will also be possible from High Mathernock road to the east although these will be intermittent due to tree cover in the valley – particularly along the river. Views from Devol Road to the north will be possible for a short stretch before the topography crests the hill. This road is closed to through traffic so will not be heavily used.





View from Auchintiber Road to the west looking east across the adjacent site towards High Mathernock

Cultural Heritage

8.16 The only feature of this nature is the High Mathernock AA Battery which lies close to the south east across the River Gryffe. This Scheduled Monument exists as a series of brick structures which would have functioned as base foundations for artillery gun emplacements during the Second World War – presumably to defend against air raids targeting the shipyards of the Clyde and the estuary. These lie within a gated field but with a mown grass path to provide access. They are unlikely to draw high number of visitors but will be of reasonable interest to some. There will be clear views to the proposed site from the receptor although the historic setting will be the range of views of the sky above the valley which would be unaffected. Some visual impact would be experienced, however.



View across the Gryffe from High Mathernock AA Battery site. Remnants of brick platforms for artillery can be seen.

Natural Heritage

8.17 There are some large nationally recognised designated sites in the surrounding landscape, but most lie out with the visual envelope. The exception to this would be the Renfrewshire Heights SSSI/SPA site to the south west which would potentially have scattered views over high ground. This site is not particularly visual sensitive and the distance to the site would mean that impacts would be low. In the closer range, there are some locally designated sites called Local Nature Conservation Sites (LNCS) such as Devol Road Upland to the north and Jocks Craigs to Black Craig to the South east. Views would be possible from pockets within these locations, but these are not particularly visually sensitive.



View north west from Jocks Craig near Cauldside

Overall Visual Impact Conclusions

8.18 Overall, The visual impact of the proposed site is greatly influenced by both the context and the topography of the River Gryffe Valley. Its low lying position in the valley limits the potential visibility to within a relatively small visual envelope that is contained within the valley to north and south and between High Mathernock to the east and topography and woodland within 500m to the west. Some brief views from elevated and remote locations are possible from the wider area such as Devol Moor, Inverclyde Wind Farm and Renfrewshire Height, but these would be over distance and would be seen by few people.

8.19 The context of the valley where views are possible is also limiting to the degree of visual impact with few receptors in the valley, and areas of plantation woodland and tree cover which help to screen views. Some views would be possible from Horsecraigs and Cauldside across the valley where gaps in the woodland allow views across and potentially from High Mathernock and Loganwood House but these sit in tree cover so this would be minimal.

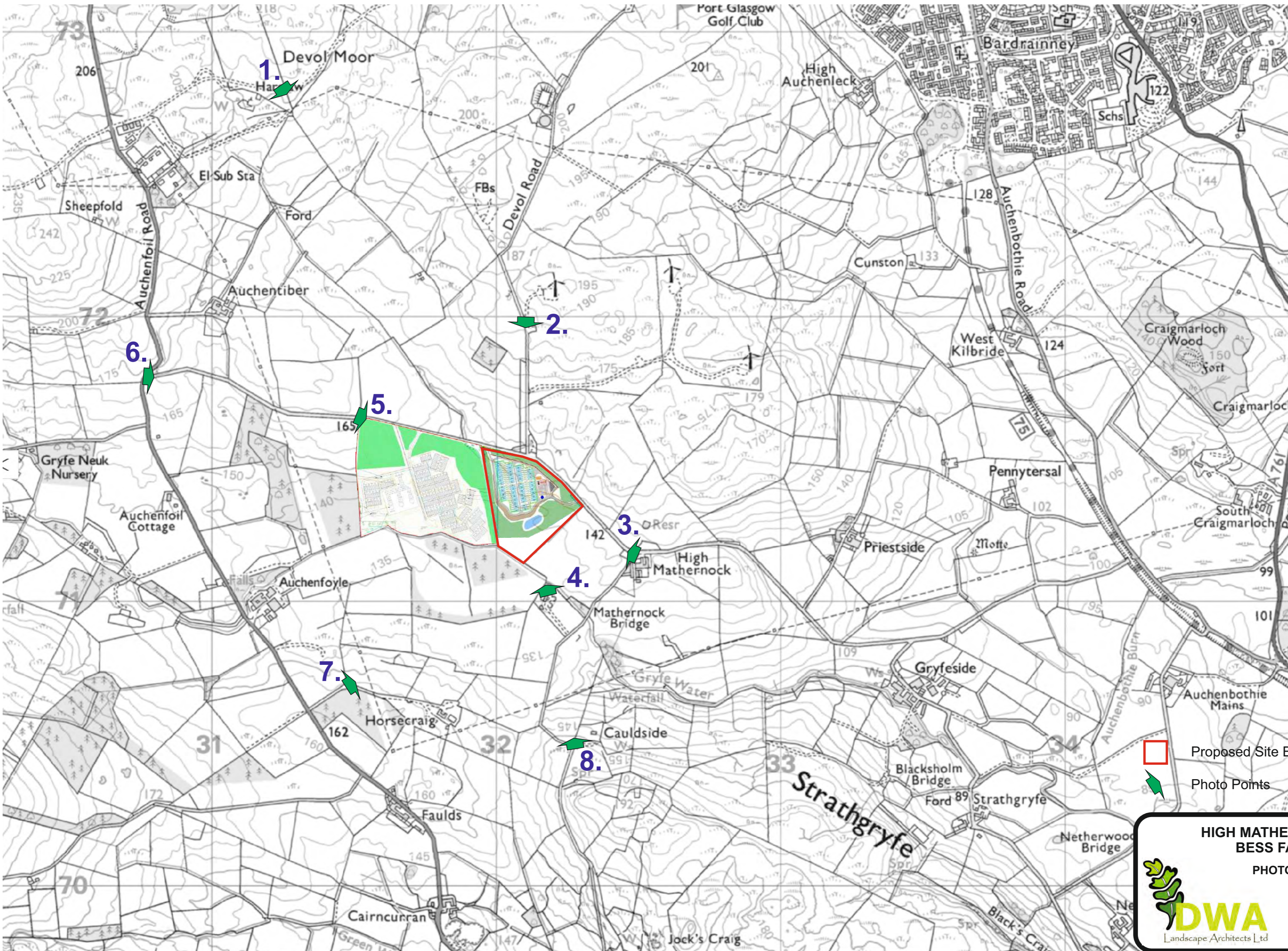
View west from High Mathernock at junction of Auchintiber and High Mathernock Roads



- 8.20 Views from Auchintiber Road would be possible as the site lies immediately to the south, and from sections of High Mathernock and Devol Road will be possible, but these are all lower sensitivity local access routes with limited traffic. These also function as Core Paths which may elevate sensitivity levels, but the areas affected will remain well contained within the valley.
- 8.21 The proposed adjacent development will have an influence on the levels of potential visual impact as, if developed, it will have a screening influence from the west. Woodland tree cover proposed for the site would mean that views would be screened in this direction. It would however be seen in conjunction with this development and cumulative impact must be considered.

9. PHOTO MONTAGES

- 9.1 A series of photo montages have been prepared from eight key viewpoints. These have been based on similar locations to those requested by Inverclyde Council for the adjacent proposed BESS site, with some additional ones which have been determined to best illustrate potential visual impacts.
- 9.2 The images have been produced through the creation of a scales and grid referenced 3D model of the proposed facility in AutoCAD and placing this within a wireframe model of the landscape generated from Ordnance Survey topographical data using Key Terra Firma software. This is then used to generate images from virtual cameras within AutoCAD from the grid referenced locations within the model using the correct elevations and bearings which replicate the locations of photographs taken from the selected viewpoints in the landscape. These locations, elevations and bearings have been confirmed through GPS technology whilst taking the photographs during on site assessment.
- 9.3 Images of first the wireframe model (using reference points to ensure that the images align with feature sin the landscape – and are then removed for clarity) are overlaid with the photographs using Corel Draw publishing software. One this have been achieved a rendered image of the proposal model it produced and overlaid and placed within the scene taking into account screening elements which would naturally sit in front of the view of the model.
- 9.4 This 3D model shows battery units, infrastructure buildings, fencing, retaining wall, roads, and earthwork embankments – but it is inevitably limited in degree of photo realistic quality. It must be bourn in mind that the intention is to show a representation of potential visibility and visual impacts rather than to create a photo realistic impression of the final scheme.
- 9.5 In addition to the above a representation of the adjacent proposed development is included for context. This is less detailed than the 3D model shown for the proposed BESS as the level of information is not available for this development – and it is not intended as the main focus of the assessment. The proposed structural landscaping has not initially been shown in the photo montages as they are intended to show potential visual impacts.
- 9.6 The viewpoint locations (L4) and subsequent photo montages are shown on the following pages and described as follows:
- 9.7 **Photo Montage 1** – This image is taken from Devol Moor to the North west of the site looking down into the Gryfe Valley from the high ground of the ridge which separates it from the Clyde Estuary to the north. The landscape in this area already has several overhead power cable pylons due to the location of Devol Sub Station close by to the west, which acts a s a hub. The landscape is relatively remote with footpaths closing the Moor but not settlements due to the exposed location. The Wireframe shows the proposed BESS and the adjacent proposal sitting low in the valley. These would be visible from this location but for the most part along the path, the varying topography would screen views. For areas which would be visible the distance and low lying location would help to mitigate impacts and screening boundary planting would further help to blend the facility into the landscape.
- 9.8 **Photo Montage 2** –This photograph is taken from Devol Road to the north of the site from close to the nearest wind turbine. It is at the crest of the hill where the topography transitions to the above mentioned ridge. Beyond this point the road continues as a pedestrian route and view to the valley below are hidden by the topography. From this location clear views down to the site will be possible as the field stretches out down to the river. This is shown in the wireframe along with the adjacent proposed BESS. The site level will drop at the northern end as a retaining wall is proposed to achieve a level platform for the facility. This would then be raised at the southern end to account for the slope across the site down to the river. This location is unlikely to have a high volume of visitors and therefore sensitivity would be limited but views of the proposed development would be possible from the elevated location. Some screening to the northern boundary would mitigate this – particularly when descending in height, closer to the site.
- 9.9 **Photo Montage 3** – This shows the view looking west along the north side of the valley from High Mathernock Road, next to the farm of the same name. The wireframe shows the view of the proposed development and adjacent site beyond. These would be visible in the landscape from this relatively close location. Screening woodland planting along the eastern boundary of the site would help to screen the proposal. The scene would change from open fields to woodland in that instance, but some visual impact would be inevitable from this location.
- 9.10 **Photo Montage 4** – This image shows the view from the High Mathernock AA battery site looking north west across the River Gryfe. From this location there would be clear views across to the site as there is a gap in tree cover in this direction. The site is of cultural heritage interest but would have limited visitor traffic. The historic setting of the feature would be the range of views of the sky over the valley and estuary and the site



Proposed Site Boundary
Photo Points

**HIGH MATHERNOCK
BESS FACILITY**
PHOTO POINTS

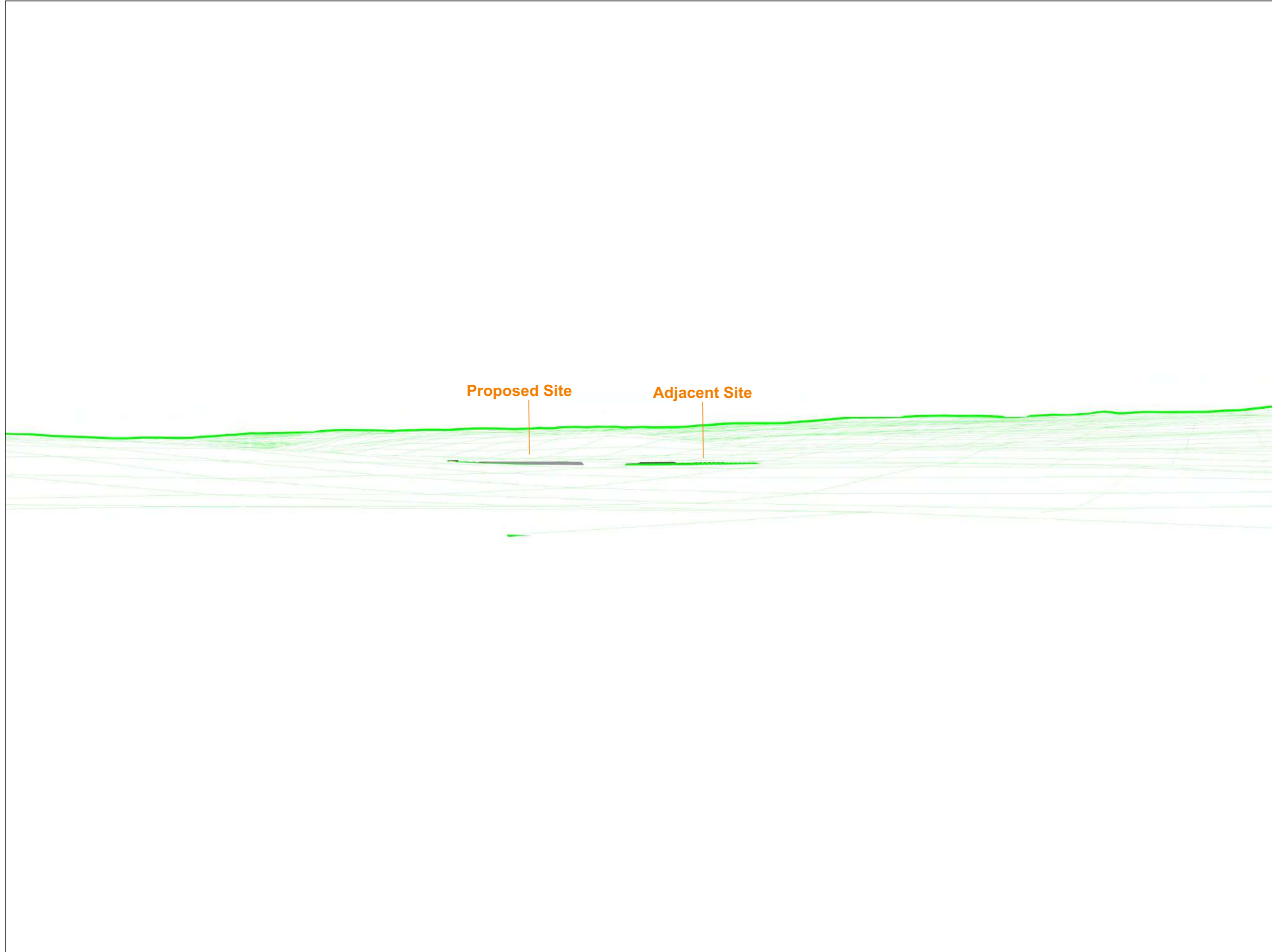


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VIEWPOINT INFORMATION	
Version Name	High Mathernock
Image Name	Devol Moor
Location	NS 31200 72799
Distance To	1.5 km
Observer Altitude	203 m
Camera Altitude	204.5 m
Heading	158.0°
Date	25-05-2024
Time	14:43
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Mathernock
Image Name	Devol Moor
Location	NS 31200 72799
Distance To	1.5 km
Observer Altitude	203 m
Camera Altitude	204.5 m
Heading	158.0°
Date	25-05-2024
Time	14:43
Angle Of View	30°



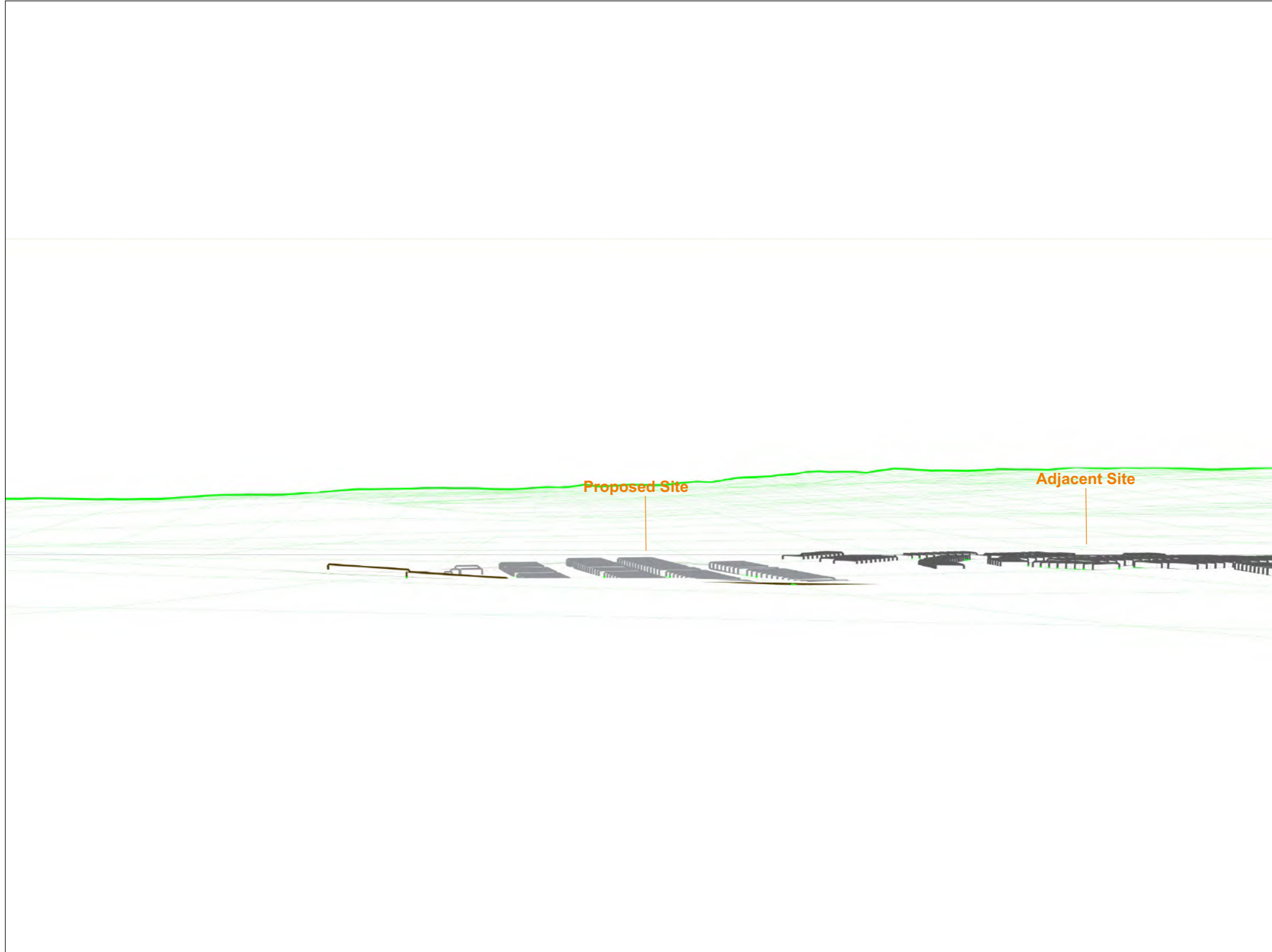
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Image Name	Devol Moor
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Observer Altitude	203 m
Camera Altitude	204.5 m
Heading	158.0°
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Distance To	1.5 km
Observer Altitude	203 m
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Heading	158.0°
Date	25-05-2024
Time	14:43
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Mathernock
Image Name	Devol Road
Location	NS 32112 71869
Distance To	0.46 km
Observer Altitude	178 m
Camera Altitude	179.5 m
Heading	178°
Date	25-05-2024
Time	15:11
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Mathernock
Image Name	Devol Road
Location	NS 32112 71869
Distance To	0.46 km
Observer Altitude	178 m
Camera Altitude	179.5 m
Heading	178°
Date	25-05-2024
Time	15:11
Angle Of View	30°



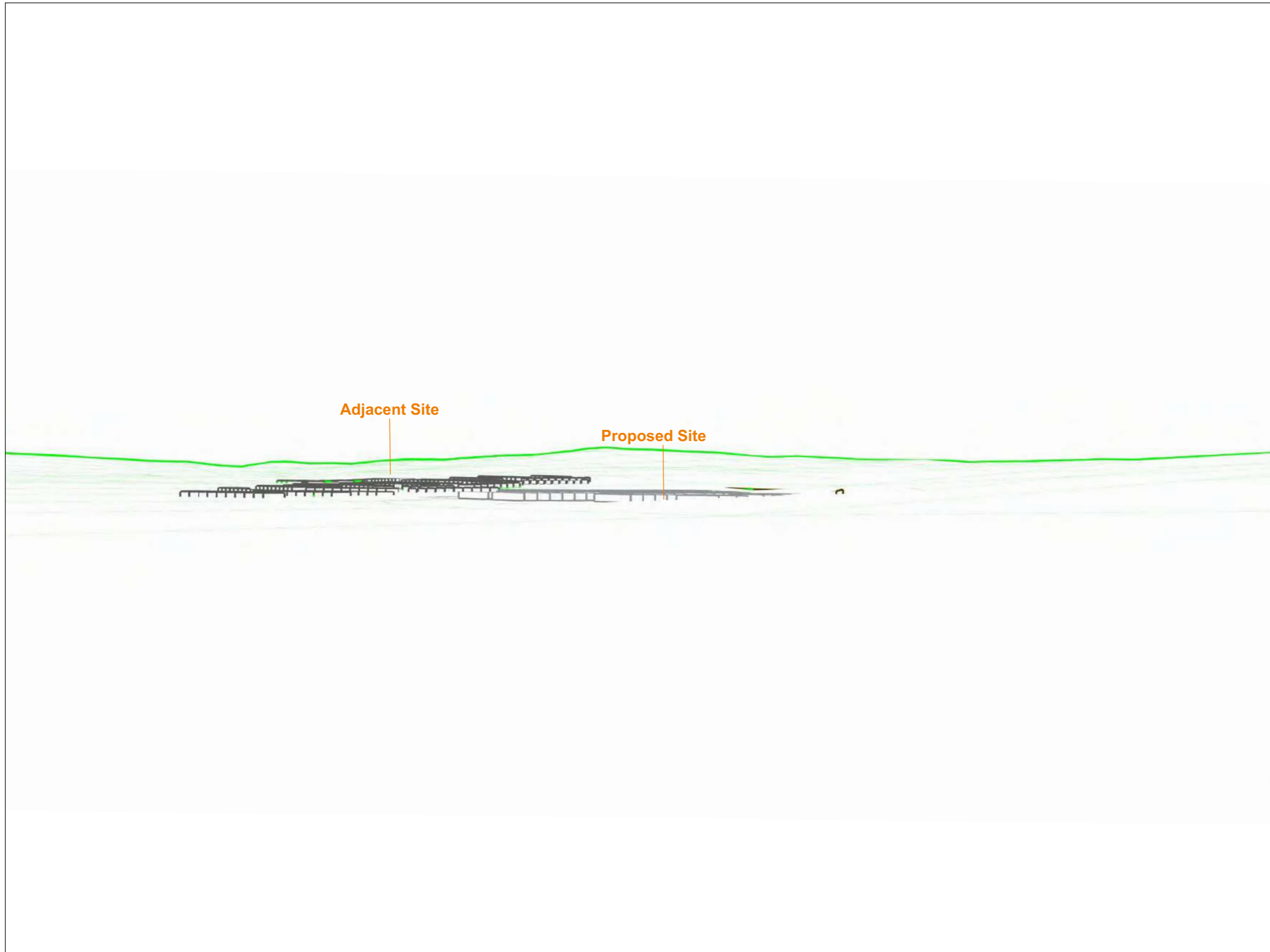
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Distance To	0.46 km
Observer Altitude	178 m
Camera Altitude	179.5 m
Heading	178°
Date	25-05-2024
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VIEWPOINT INFORMATION	
Version Name	High Mathernock
Image Name	Devol Road
Location	NS 32112 71869
Distance To	0.46 km
Observer Altitude	178 m
Camera Altitude	179.5 m
Heading	178°
Date	25-05-2024
Time	15:11
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Matherknock
Image Name	High Matherknock
Location	NS 32474 71169
Distance To	0.25 km
Observer Altitude	143 m
Camera Altitude	144.5 m
Heading	305°
Date	25-05-2024
Time	15:16
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Matherknock
Image Name	High Matherknock
Location	NS 32474 71169
Distance To	0.25 km
Observer Altitude	143 m
Camera Altitude	144.5 m
Heading	305°
Date	25-05-2024
Time	15:16
Angle Of View	30°



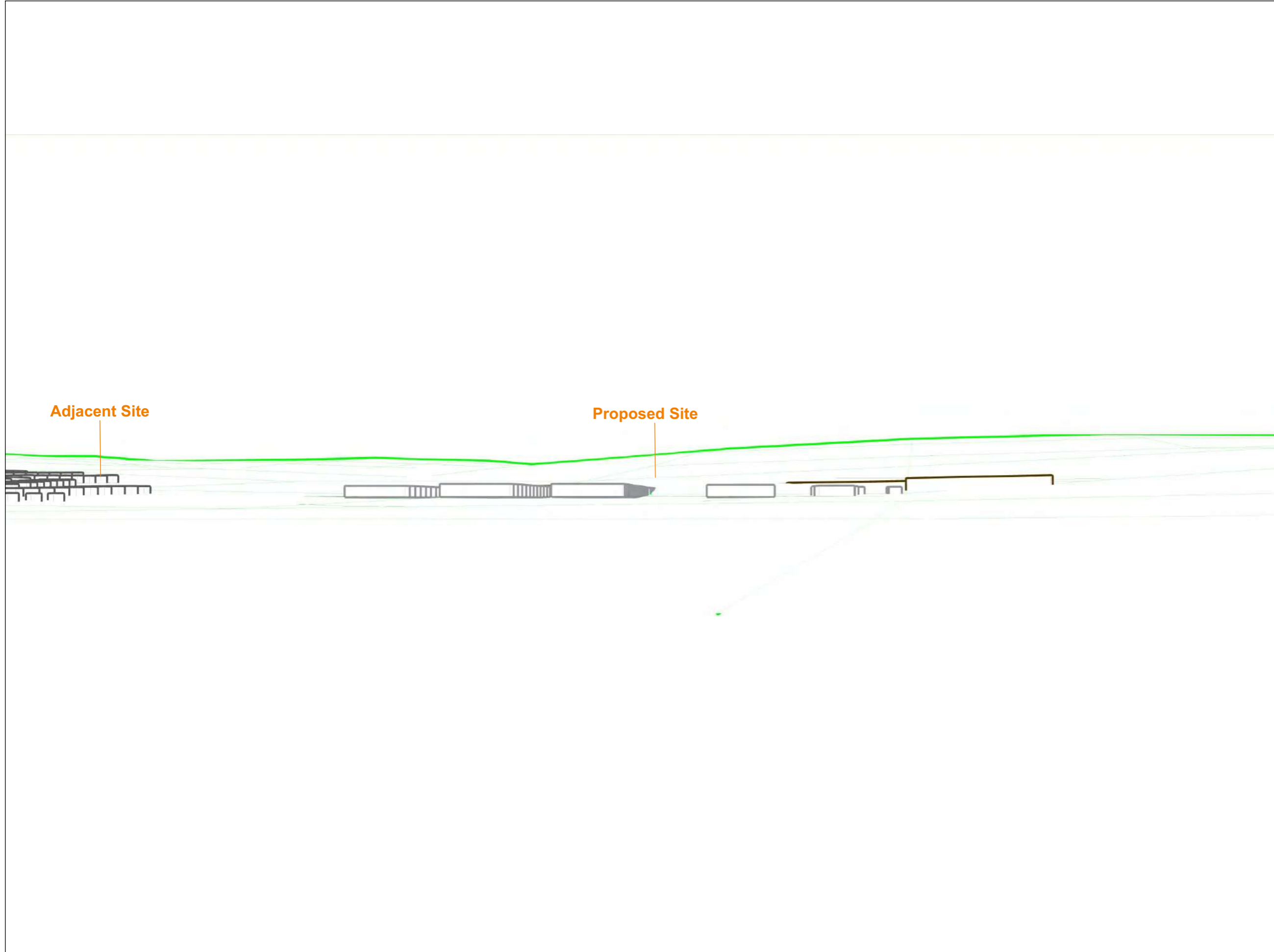
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Image Name	High Matherknock
Location	NS 32474 71169
Distance To	0.25 km
Observer Altitude	143 m
Camera Altitude	144.5 m
Heading	305°
Date	25-05-2024
Time	15:16
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Matherknock
Image Name	High Matherknock
Location	NS 32474 71169
Distance To	0.25 km
Observer Altitude	143 m
Camera Altitude	144.5 m
Heading	305°
Date	25-05-2024
Time	15:16
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Mathernock
Image Name	Matherknock Battery (SM)
Location	NS 32178 71030
Distance To	0.25 km
Observer Altitude	135m
Camera Altitude	136.5m
Heading	340°
Date	25-05-2024
Time	15:24
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Matherknock
Image Name	Matherknock Battery (SM)
Location	NS 32178 71030
Distance To	0.25 km
Observer Altitude	135m
Camera Altitude	136.5m
Heading	340°
Date	25-05-2024
Time	15:24
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Mathernock
Image Name	Matherknock Battery (SM)
Location	NS 32178 71030
Distance To	0.25 km
Observer Altitude	135m
Camera Altitude	136.5m
Heading	340°
Date	25-05-2024
Time	15:24
Angle Of View	30°



VIEWPOINT INFORMATION	
Version Name	High Mathernock
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Observer Altitude	135m
Camera Altitude	136.5m
Heading	340°
Date	25-05-2024
Time	15:24
Angle Of View	30°