



Technical Appendix 5.3

Residential Visual Amenity Assessment

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5 Introduction

5.1 Overview

1. The purpose of this Technical Appendix is to provide an assessment of the potential effects of the proposed Harestanes South Extension Windfarm (the Proposed Development) on the visual amenity of residential receptors living within close proximity to the Proposed Development. Assessment of impacts on Residential Visual Amenity from energy infrastructure proposals is set out as a requirement in Scottish Planning Policy (SPP) para 169.
2. The approach to this assessment is in accordance with the recent Landscape Institute's publication: Technical Guidance Note 2/19: *Residential Visual Amenity Assessment* (RVAA) (March 2019), hereafter referred to as TGN-2/19. In addition, the LVIA methodology described in **Chapter 5: Landscape and Visual Impact Assessment** and presented in detail in **Appendix 5.1: LVIA Methodology**, underpins the approach taken to the RVAA.
3. TGN-2/19 (para 1.2) defines Residential Visual Amenity as “the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from gardens and domestic curtilage.” It is a subset of residential amenity, which may include aspects such as noise, light, vibration, traffic and shadow flicker for example. This report only addresses the visual component of residential amenity.
4. The purpose of RVAA is “to provide an informed, well-reasoned answer to the question: ‘is the effect of the development on Residential Visual Amenity of such nature and / or magnitude that it potentially affects ‘living conditions’ or Residential Amenity?’” (TGN-02/19, para 2.1). The guidance refers to this as the “Residential Visual Amenity Threshold”. Where this threshold is reached, in these circumstances predicted effects on visual amenity arising from a proposal would be considered ‘unpleasantly overwhelming’ or ‘overbearing or dominant’ which would render the affected property an ‘unattractive’ or ‘unsatisfactory’ place to live.

5.2 Methodology

5. The assessment and conclusions of this Technical Appendix are based on professional judgment, informed by the findings of desk study, field survey and the visual information (including wirelines, OS maps and aerial photography) provided in this Appendix.
6. The RVAA follows the four step process as identified in TGN-02/19 and summarised below including the specific approach for this Proposed Development.

5.2.1 Step 1: Definition of the Study Area and Scope of Assessment

7. The Study Area is established by understanding the existing landscape and visual context and extent of visibility of the Proposed Development. Zone of Theoretical Visibility (ZTV) mapping of the Proposed Development to hub and blade tip height is a starting point in understanding the extent of visibility for local residents. It is also very important to consider the scale, topography, and built form of the existing landscape context in relation to the Proposed Development. As TGN-02/19 (para 4.5) states: “*Simply being able to see a proposed development from a property is no reason to include it within the RVAA*”. Particularly in the context of windfarms, significant effects being identified for a settlement or group of properties within the LVIA does not automatically mean that the Residential Visual Amenity Threshold is reached for those properties. RVAA provides the next level of assessment to ascertain whether that threshold has been reached.

8. TGN-02/19 (para 4.7) advises for windfarm projects that a preliminary study area of 1.5-2km from proposed wind turbines is appropriate to begin identifying which properties should be included in the RVAA. For the purposes of this RVAA, the Study Area has been set at a 2km offset from the proposed turbines and met mast position.
9. An initial desk-based review has been made of all the properties within this Study Area to determine those properties that have the most potential for significant effects, and thus require further assessment. This process has also identified those properties which through a variety of factors (screening from topography, vegetation, orientation of building for example) have less potential to reach the Residential Visual Amenity Threshold and do not need to be further assessed. Properties have been either assessed individually or grouped where outlooks are similar.

5.2.2 Step 2: Evaluation of Baseline Visual Amenity

10. For each property identified through the initial appraisal as requiring further assessment, the baseline visual conditions have been evaluated through desk study and field work. Field survey does not necessarily require visiting properties unless there are no publicly available vantage points available. Where it is necessary to visit individual properties (such as remote houses off long private driveways), contact has been made in advance with the property owners to gain permission.
11. The baseline visual conditions include the type, nature, extent and quality of views from the property and its domestic curtilage such as gardens, and immediate driveway considering views on arrival or departure at the property. This does not include farmyards, paddocks or working areas not directly associated with the house.

5.2.3 Step 3: Assessment of Likely Change to Visual Amenity of Properties and Step 4: Forming the RVAA Judgement

12. Step 3 considers the magnitude and significance of effect at the identified properties. These effects are assessed in accordance with Guidelines for Landscape and Visual Impact Assessment: 3rd Edition (GLVIA3) methodology, considering the sensitivity (comprising value and susceptibility to the type of development) with the nature of effect –the scale of effect, geographical extent of change, duration and thus the subsequent significance of effect. Refer to **Appendix 5.1 LVIA Methodology** for full details of the assessment methodology.
13. Step 4 considers only those properties where the assessment as part of Step 3 identified a major significance of effect. This concluding assessment advises “*the decision maker whether the predicted effects on visual amenity and views at the property are such that it has reached the Residential Visual Amenity Threshold, therefore potentially becoming a matter of Residential Amenity.*” (TGN 02/19 para 4.18).
14. The Step 3 and Step 4 assessment are undertaken through desk and field survey (at the same time as Step 2 Baseline survey). It is aided by aerial photographs annotated with the main outlooks of the property towards the Proposed Development, angle of available view, and wirelines illustrating the proposed view. Photography of the views is included where permission has been given by the residents and where it is considered valuable to the assessment to include.
15. The assessment records and considers the following aspects:
 - distance of the property from the nearest proposed wind turbine;
 - potential number and extent of the proposed wind turbines visible;
 - position of the wind turbines within the overall context of the views from the property, i.e. whether sited on the skyline, at similar or different elevation from the property, at the edge of the view or within a key focal point of the view;
 - orientation of the main façade in relation to the nearest proposed wind turbine;
 - whether views of the proposed wind turbines would be direct (within 45 degrees of a line perpendicular to the Proposed Development from the main façade); or indirect (more than 45 degrees of a line perpendicular to the Proposed Development from the main façade);
 - whether views of the proposed wind turbines would be open (with no intervening structure(s), landform or vegetation); or screened by any intervening structure(s), landform or vegetation;
 - prominence of the proposed wind turbines in the views from the property; and
 - proportion of the views from the property which would be occupied by the Proposed Development and whether the proposed wind turbines would be visible on more than one elevation of the property.

16. The assessment considers the cumulative context in terms of visibility of existing baseline windfarms. Consented and application windfarms are not considered in the RVAA in accordance with TGN-02/19 which clarifies that it is the existing visual amenity which is the focus of the assessment.
17. Likely seasonal and future changes such as views through deciduous woodland and vegetation as well as forestry operations have been considered, where relevant.
18. The effects of turbine aviation lighting on residents is also considered. Reference should be made to **Appendix 5.5 Landscape and Visual Lighting Assessment** of the EIAR for details of the proposed lighting.

5.3 Assessment

5.3.1 Scope and Study Area

19. **Figure 5.3.1** illustrates the turbine and met mast locations and includes the ZTV to hub and blade tip height of the proposed development. A 1km and 2km radius buffer is shown from the turbine locations and met mast.
20. The Proposed Development's turbines lie within the Foothills with Forest landscape character type, which is characterised by its undulating landform, rounded hills and simple and uniform forested landcover. The proposed turbines' position within the foothills results in them being at a higher elevation than any residential properties in the main settlement areas to the south east. The ZTV in Figure 5.3.1 illustrates that the hills at the south west perimeter of the Proposed Development screen views from properties in and surrounding Ae. Overall, the higher elevation of the Proposed Development in relation to the surrounding settlement pattern limits the potential for close direct views of the proposed turbines, and as such a 2km study area is considered appropriate for the RVAA.
21. The ZTV does not take into account the extensive forestry cover, and whilst at this close distance it would not screen the turbines fully, it would potentially screen some blade visibility and the bases of turbines, thus providing a degree of separation compared to turbines on open moorland hills for example. It is however acknowledged that the forestry is commercial and on a felling cycle so that limited reliance on forestry as screening can be given.
22. The turbine layouts have undergone a number of design iterations. As a result, some residential properties just beyond the current 2km boundary on Figure 1 originally fell inside the 2km buffer. However, we have retained them as part of this initial Step 1 process for completeness and to further demonstrate the assessment process, as well as justify the 2km boundary.

As identified on **Figure 5.3.1 RVAA ZTV**, there are seven properties that lie on the hillsides east, south east, and south of the Site within or just beyond the 2km study area. These are listed on **Table 5.3.1**.

Property	Approx. distance from nearest proposed turbine or met mast (where closer than turbine)
Glenkiln	0.90km from turbine
Craigshiels (Activity Centre)	1.88km from turbine
Mollin Farm	1.84km from met mast 2.27km from turbine
Burrancehill Cottage	2.18km from met mast 2.38km from turbine
Courancehill	2.29km from met mast (not visible) 2.66km from turbine
Holmwood	2.31km from met mast 2.76km from turbine
Lamphitt	2.75km from turbine

Table 5.3.1: Initial RVAA Property List

23. The initial Step 1 assessment was undertaken of all the properties in **Table 5.1** based on a site visit, review of aerial photography, and production of wirelines from the properties to understand the potential visibility of the Proposed Development. Based on this initial Step 1 assessment, the following properties are scoped out of any further RVAA as explained below.
24. **Glenkiln: Figure 5.3.1 RVAA ZTV** identifies that one property 'Glenkiln' lies within 1km of the turbines. This is owned by the Developer and is unoccupied. It is therefore not considered further in this RVAA.
25. **Craigsheils:** A property at Craigshiels, which is an activity centre (including overnight stays), lies just within 2km of the nearest turbine. **Figure 5.3.1 RVAA ZTV** illustrates that there would be no visibility from this property due to the valley location and screening by the intervening hillside. It is therefore not considered further in this RVAA.
26. **Lamphitt:** This property is a two storey stone house with outbuildings located next to a stream at the edge of a field, accessed from the Forest of Ae tracks. It sits in a slight valley and views from the house in the direction of the Proposed Development are largely enclosed by the outbuildings. The ZTV in **Figure 5.3.1 RVAA ZTV** and initial wireline analysis shows that there would be no visibility of the Proposed Development from this property or its curtilage, even without taking into account screening from forestry. This was confirmed through site survey. It is therefore scoped out of any further RVAA.
27. **Burrancehill Cottage:** This property is a single storey cottage currently being renovated. It is located within a local undulation on the hillside south east of the Proposed Development. The topography, as shown on the ZTV in **Figure 5.3.1 RVAA ZTV**, screens any visibility of the Proposed Development from the property and its curtilage. This was confirmed through site survey. Burrancehill Cottage is therefore scoped out of any further RVAA.

5.3.2 Evaluation of Baseline Visual Amenity and Assessment of Likely Change

28. Following the Step 1 review, it was identified that only three of the identified residential properties were likely to have visibility of the Proposed Development, and therefore these three only would be taken forward to Step 2. The three properties identified were Holmwood, Courancehill and Mollin Farm. These all have potential to see parts of the Proposed Development and their baseline amenity (Step 2) is recorded along with the assessment of likely change (Step 3) in the following tables. Wirelines illustrating the potential view from each property are presented in **Figures 5.3.2a-b**.

5.3.2.1 Courancehill

29. Courancehill is a single storey property with attic conversion that is the main house at Courancehill Farm. The farm buildings lie to the west of the property, as shown on **Plate 5.3.1**. The property is orientated south east/north west, with main access on the south west side as well as its south east side. It has small gardens to the front and back. The main view is to the south east where there are panoramic views across the lowlands and beyond. The garden to the rear is stepped up from the house and partially enclosed by hedging and fencing. From the garden there are views through gaps in the boundary up to the hillsides, with the skyline notably higher than the property. The outlook from the house is more enclosed due to the level change and there is only one window from the property overlooking the garden.

Courancehill	
Property Type	Single storey farmhouse with attic conversion
Access:	Long farm track from the A701
Orientation of main façade	South East
Outdoor Curtilage	Garden to front and rear (SE and NW)
Predicted wireline view of Proposed Development	Hub and blades of one turbine (T5), blades of three turbines (T3, T7 and T8) and blade-tip of one (T6).
Approx. Distance to nearest turbine and/or met mast (km)	2.29km from met mast (not visible) 2.66km from turbine

Courancehill	
View direction towards Proposed Development	North West
Direct or Indirect Views towards Proposed Development	Direct
Open or Screened Views towards Proposed Development	Partially screened from the house by the garden boundary hedging. Open views from parts of the garden.
Predicted Cumulative Views	Visibility of distant windfarms at around 20km, no cumulative effects on residential visual amenity.
Overview:	<p>The wireline illustrates that there would potentially be a direct view of the upper part of one proposed turbine, and the blades and blade-tip of four other turbines, appearing from behind the foreground hillside. From site survey, it is considered that the woodland cover on the foreground hillside (Photograph 5.3.1), which is a mix of mature broadleaf and young conifers, would screen views of the blades of T3, T6-T8 and likely the hub of T5, so that only the blades of T5 would be seen. The hillside woodland appears permanent rather than part of commercial plantation and as it matures it is likely all of the Proposed Development would be screened.</p> <p>The main views are from the front of the house, the opposite direction from the Proposed Development. The garden to the rear is stepped up from the house and partially enclosed by hedging and fencing (Photograph 5.3.2). Over the hedge and within gaps along the boundary, there are views up to the hillsides and horizon towards the location of the Proposed Development. The outlook from the house in the direction of the Proposed Development is more enclosed due to the level change of the garden and there is only one window from the property overlooking the garden with limited potential for longer distance views.</p>
Predicted Magnitude of Change	The Proposed Development would lie beyond the immediate foreground hillside and only the blades of one turbine would be directly seen from the rear garden of this property, where the views out are more incidental than a particular feature. At 2.67km from the property the turbine blades would be noticeable but appear set back from the immediate view, separated by the elevation and vegetation cover of the hillside. The scale of effect is considered to be Low-Negligible across a narrow (low) extent of the views available. Taking into account the permanent duration of the Proposed Development, the magnitude of change is considered to be Low-Negligible.
Level of Effect	As the residents have a High sensitivity to the change proposed and magnitude of change is Low-Negligible, the level of effect is considered Moderate-Minor and not significant. The effect would not reach the Residential Visual Amenity Threshold and consequently no further assessment is required.
Effect of turbine aviation lighting	The wireline illustrates that one nacelle turbine aviation light would be potentially visible from this property. The vegetation cover on the intervening hillside would likely screen the light, although a glow may be discernible which would only be seen from the curtilage and not from within the property. Taking into account only one light would be potentially visible and it would be partially screened it is considered that the level of effect from the turbine aviation lighting on residents at Courancehill would not reach the Residential Visual Amenity Threshold.

Table 5.3.2: Courancehill



Plate 5.3.1 Courancehill aerial image with angle of view towards the visible proposed turbines illustrated.



Photograph 5.3.1 View towards the Proposed Development from garden at rear of property.



Photograph 5.3.2 View of garden at rear of property illustrating limited views out from property and enclosure by hedgerows.

5.3.2.2 Mollin Farm

31. Mollin Farmhouse is a large two storey house which sits on the hillside to the east of the Proposed Development, as shown on **Plate 5.3.2**. The property's frontage faces east with access from the northern side, as illustrated on **Photograph 5.3.3**. There is no curtilage at the rear as it directly abuts farm buildings, as shown on **Photograph 5.3.4**. A garden lies at the front which affords panoramic views towards the east and south east. There are no open views from the back of the property due to the farm buildings which are on slightly higher ground.

Mollin Farm	
Property Type	Two storey farmhouse
Access:	Long farm track from the A701
Orientation of main façade	East, with entrance on northern side of property
Outdoor Curtilage	Garden to front (East). No rear curtilage (farm buildings and yard)
Predicted wireline view of Proposed Development	Upper tower, hub and blades of three turbines (T5, T7 and T8), blades of one turbine (T6) and blade tip of one turbine (T4). Top of Met Mast.
Approx. Distance to nearest turbine and/or met mast (km)	1.84km from met mast 2.27km from turbine
View direction towards Proposed Development	West
Direct or Indirect Views towards Proposed Development	Direct
Open or Screened Views towards Proposed Development	Screened views from property due to farm buildings. Potential to see Proposed Development from farmyard and on driveway to farm.

Mollin Farm	
Predicted Cumulative Views	Visibility of distant windfarms at c. 20km, no cumulative effects on residential visual amenity.
Overview:	<p>The house is orientated to make the most of the panoramic views across the landscape to the east and south east with the garden to the front and all the main windows of the house on the east facing façade (Photograph 5.3.3). The house is set slightly into the hillside so that the farm buildings to the rear are higher than the house and prevent any open or long distant views from the few windows at the rear of the property (Photograph 5.3.4). There would be no open view towards the Proposed Development from within the property or its garden.</p> <p>The parts of the five proposed turbines and top of the met mast potentially visible would likely be seen from the farmyard and on driving towards the property along the access track. The turbines would appear from behind the foreground hillside, with most of their column hidden. Woodland and the surrounding farm buildings would also provide partial screening.</p>
Predicted Magnitude of Change	The Proposed Development would not be seen from within the property or its garden, only within the working farmyard and on the access track which does not form part of residential amenity in accordance with guidance. The scale of effect is therefore considered to be Negligible and the resulting magnitude of change is also Negligible.
Level of Effect	As the residents have a High sensitivity to the change proposed and magnitude of change is Negligible the level of effect is considered Negligible and not significant. It is considered that the effect would not reach the Residential Visual Amenity Threshold and no further assessment is required.
Effect of turbine aviation lighting	The wireline indicates that four nacelle turbine aviation lights would be potentially be visible just above the hillside to the west of the property. Intervening woodland may screen one of these lights. The lights would not be seen from within the property or its garden, only within the working farmyard and on the access track which does not form part of residential amenity in accordance with guidance. It is considered that the level of effect from the turbine aviation lighting on residents at Mollins Farm would not reach the Residential Visual Amenity Threshold.

Table 5.3.3: Mollin Farm



Plate 5.3.2 Mollin Farm aerial image with angle of view towards the visible proposed turbines illustrated.



Photograph 5.3.3 View of Mollin Farms illustrating main outlook towards the east, and enclosure by farm buildings and trees to the west.



Photograph 5.3.4 View of rear of Mollin Farm illustrating no direct views from the property towards the Proposed Development and enclosure by farm buildings.

5.3.2.3 Holmwood

33. Holmwood is a single storey cottage that is orientated north/south with curtilage on either side, as illustrated on **Plate 5.3.3**. The main outlook from the cottage is to the south and south east. There are derelict buildings and garages on the other side of the access track, directly to the west of the property. A dense block of mixed woodland lies on the hillside beyond these to the west and north west. The buildings and woodland enclose the cottage from any views in this direction.

Holmwood	
Property Type	Single storey cottage
Access:	Long farm track from the A701
Orientation of main façade	South
Outdoor Curtilage	Garden to front and rear of property (north and south)
Predicted wireline view of Proposed Development	Upper tower, hub and blades of three turbines (T5, T7 and T8), blades of one turbine (T6), and blade tip of one turbine (T4). Top of met mast.
Approx. Distance to nearest turbine and/or met mast (km)	2.31km from met mast 2.75km from turbine
View direction towards Proposed Development	West / North West
Direct or Indirect Views towards Proposed Development	Indirect
Open or Screened Views towards Proposed Development	Screened views from property due to adjacent derelict property and outhouses, as well as surrounding woodland.
Predicted Cumulative Views	Visibility of distant windfarms at c. 20km, no cumulative effects on residential visual amenity.
Overview:	<p>The house is very enclosed to the west, with its main orientation north/south and some longer distance open views towards the east.</p> <p>The wireline illustrates that the potentially visible five proposed turbines and top of the met mast would appear from behind the hillside to the west of the property, with most of their columns obscured. The foreground woodland and the intervening buildings to the west of Holmwood would further screen any views from the property or its curtilage.</p> <p>There would be no visibility of the Proposed Development from within the property or its garden.</p>
Predicted Magnitude of Change	The Proposed Development would not be seen from within the property or its curtilage. The magnitude of change would be Negligible.
Level of Effect	As there is a Negligible magnitude of change, the level of effect would also be Negligible and as such there is limited potential for the Residential Visual Amenity Threshold to be reached and no further assessment is required.
Effect of turbine aviation lighting	The wireline indicates that four nacelle turbine aviation lights would be potentially visible in views to the west from this property. The intervening woodland and buildings to the west of the property would screen clear views of the lights and they would not be seen in the direct views from the property. It is considered that the level of effect from the turbine aviation lighting on residents at Holmwood would not reach the Residential Visual Amenity Threshold.

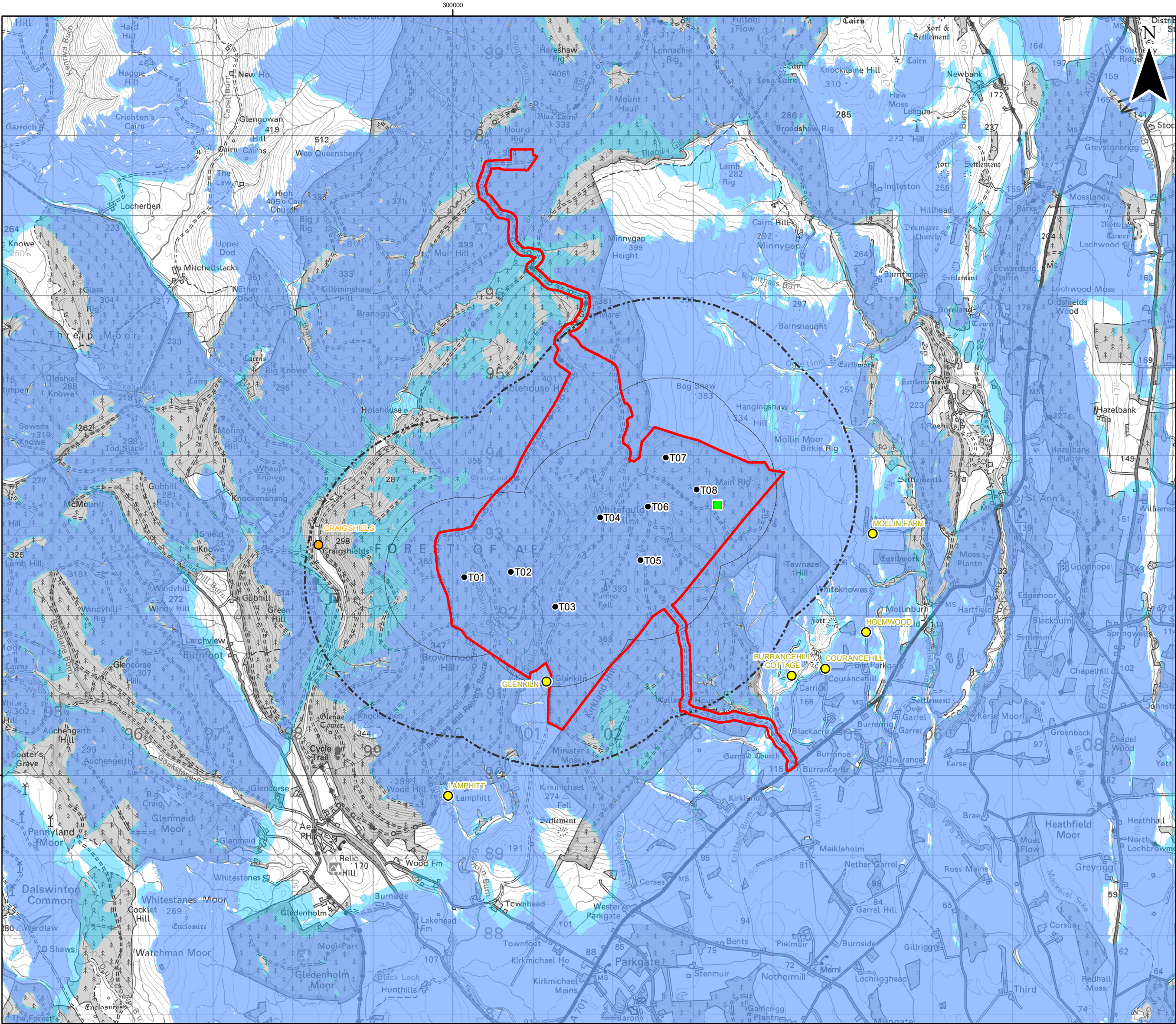
Table 5.3.4: Holmwood



Plate 5.3.3 Holmwood aerial image with angle of view towards the visible proposed turbines illustrated.

5.4 Summary and Conclusion

- 35. Through this analysis it is clear that there is no potential for reaching the Residential Amenity Threshold at Lamphitt, Burrancehill Cottage, Courancehill, Mollin Farm and Holmwood due to lack of or limited visibility of the Proposed Development from the properties or their immediate curtilage. This includes consideration of turbine aviation lighting.
- 36. Future forestry felling operations would not make any difference to the views from the assessed properties as any screening is due to the landform and closer non-commercial woodland and vegetation.
- 37. It is therefore considered that there is no potential for the Proposed Development to cause the Residential Amenity Threshold to be reached for residents at any property, and no further detailed assessment is required.



Legend

- Application Boundary
- 1km Buffer from Proposed Turbines
- 2km RVAA Study Area
- Proposed Turbine Location
- Proposed Met Mast
- Craighiells Activity Camp
- RVAA Residential Property

Zone of Theoretical Visibility (ZTV)

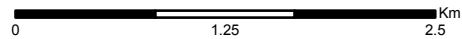
- Not Visible
- Hub Visible
- Blade Visible

Note:
The ZTV is calculated to turbine tip height (200m) and Hub height (125m) from a viewing height of 2m above ground level.

The terrain model assumes bare ground and is derived from OS Terrain 5 height data.

Earth curvature and atmospheric refraction have been taken into account.

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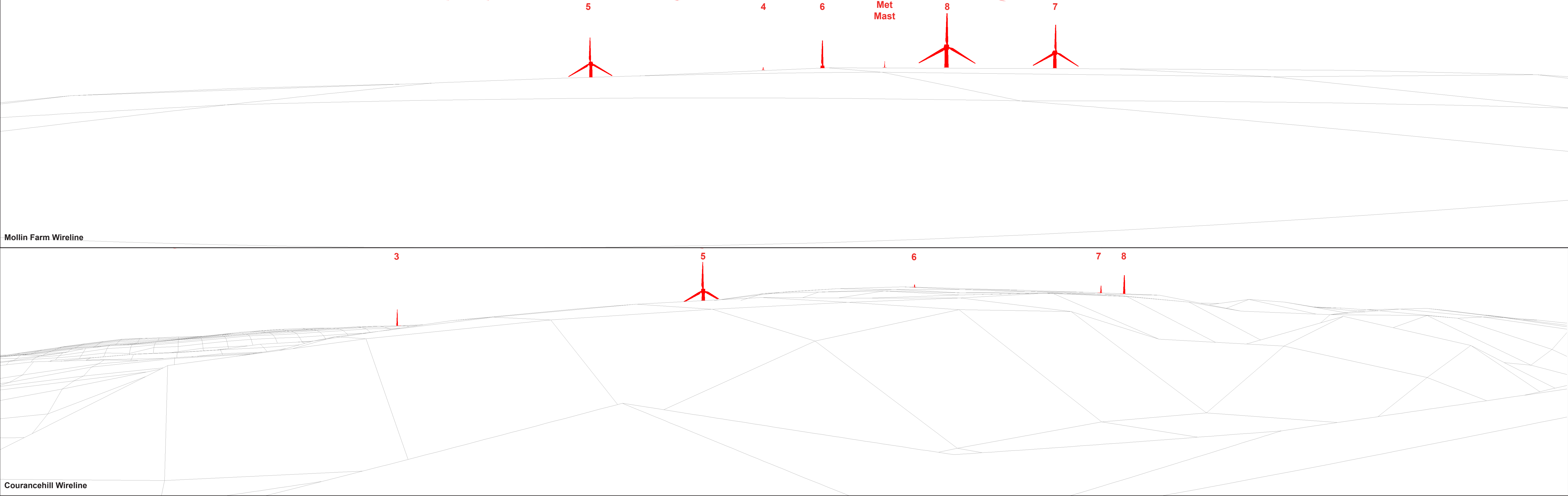
Rev	Date	By	Comment
B	11/11/2020	BG	Second Issue.
A	10/03/2020	CW	First Issue.



Harestanes South Windfarm Extension

Figure 5.3.1: Residential Visual Amenity Assessment Plan

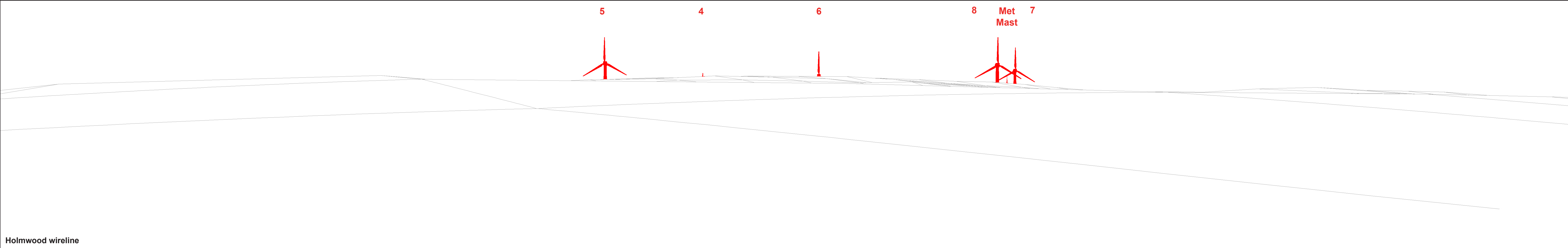
Drg No	HARESTANES_WSP_I_052
Rev	A
Date	11/11/2020
Scale	1:45,000 @ A3



Courancehill Viewpoint OS Grid Reference: 304649, 591353 Nearest Turbine: 2.66km	Horizontal Field of View: 90° (cylindrical projection) Direction of View: 305°(centre of windfarm)	Paper Size: 841 x 297mm Image Size: 820 x 130mm Principle Viewing Distance: 812.5mm
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Mollin Farm Viewpoint OS Grid Reference: 305259, 593031 Nearest Turbine: 2.27km	Horizontal Field of View: 90° (cylindrical projection) Direction of View: 274°(centre of windfarm)	Paper Size: 841 x 297mm Image Size: 820 x 130mm Principal Viewing Distance:812.5mm
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Figure 5.3.2a
Courancehill and Mollin Farm Wirelines
Harestanes South Windfarm Extension



Holmwood wireline

Holmwood		
Viewpoint OS Grid Reference: 305153, 591787	Horizontal Field of View: 90° (cylindrical projection)	Paper Size: 841 x 297mm
Nearest Turbine: 2.76km	Direction of View: 298°(centre of windfarm)	Image Size: 820 x 130mm
		Principal Viewing Distance: 812.5mm

Figure 5.3.2b
Holmwood Wireline
Harestanes South Windfarm Extension

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