Rosefield Solar Farm

Applicant's Response to Action Point 22 and 23 from ISH3

EN010158/APP/8.41
Deadline 5
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Rosefield Energyfarm Limited

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1. Applicant's response to Action Point 22 and 23 from ISH 3

1.1. Introduction

1.1.1. This technical note has been prepared on behalf of Rosefield Energyfarm Limited (the Applicant) in response to Action Points 22 and 23 from Issue Specific Hearing 3 (ISH3) which asked the following in respect of glint and glare effects:

- AP22 - 'provide its further assessment of the local roads in the study area with an accompanying sensitivity test to the Council as soon as possible, to enable the Council to comment at D5' and;
- AP23 - 'comment on the assessment of the Prestons/TCS in its Glint and Glare Assessment'

1.1.2. This technical note sets out the Applicant's response to the Action Points, building on information contained in documents already submitted to the Examination in **ES Volume 4, Appendix 5.4: Glint and Glare Assessment [EN010158/APP/6.4.2]** and includes some additional assessments of local roads and buildings.

1.1.3. The results of these assessments have shown that impacts to local roads will be Low if the roads are categorised as local and between Low and Moderate if the roads are categorised as Major National, National or Regional roads. The impacts to buildings at Preston Farms Limited /TCS Biosciences will be Low. No further mitigation is required.

1.1.4. The additional technical assessment of roads is provided for in **Appendix 1** to this technical note.

1.2. Further assessment of Local Roads – Action Point 22

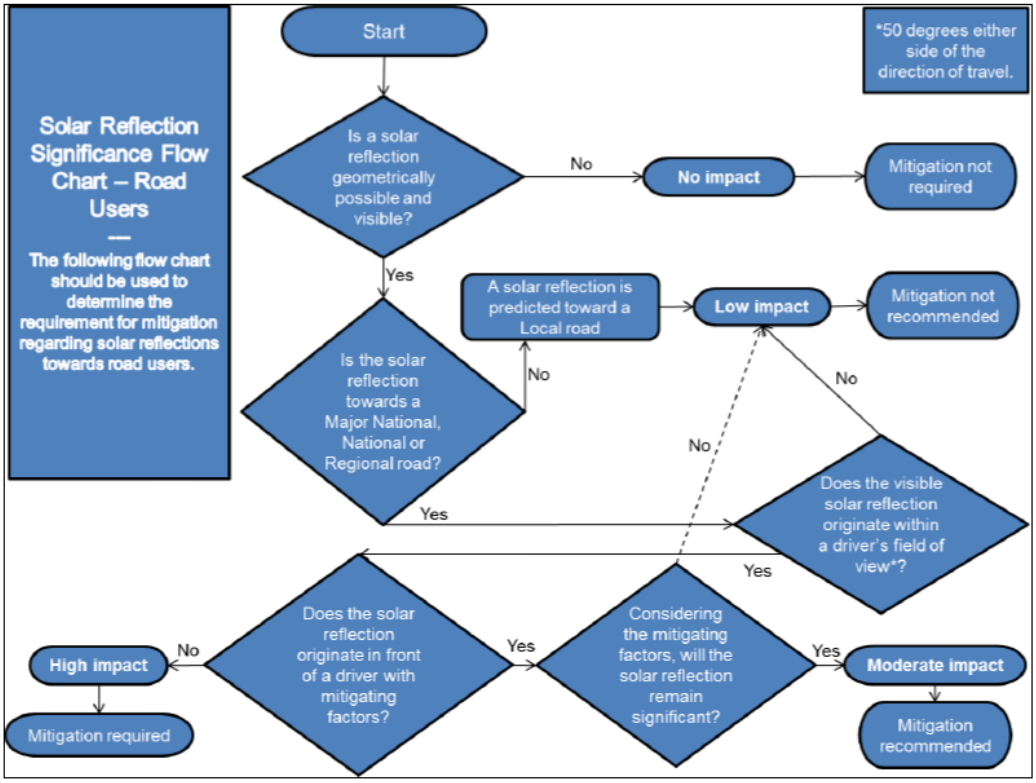
1.2.1. Paragraphs 2.10.158 and 2.10.159 of National Policy Statement for Renewable Energy Infrastructure (NPS EN-3 2025) lists roads (motorists) and dwellings in the types of receptors to be considered within a glint and glare assessment, but it does not provide a method of assessment nor any means of determining significance. In the absence of formal guidance, Pager Power's informal guidance (Solar Photovoltaic and Building Development – Glint and Glare Guidance[1]) is currently considered best

[1] Solar Photovoltaic and Building Development – Glint and Glare Guidance, Pager Power, September 2022

practice in the industry, and the vast majority of solar farm DCOs in the UK (if not all) refer to it.

1.2.2. Page Power's guidance is based on safety for roads, rail and aviation, and amenity for dwellings. Section 7 of the guidance details how road receptors should be identified and classified, how the assessment should be undertaken and how the significance of effects should be determined. The process for determining significance of effects is detailed in a flow chart in section 7 (Figure 1 below). This chart shows that effects to Local roads should be classified Low impact and that mitigation is not required.

Figure 1 – Impact classification for roads



1.2.3. During Issue Specific Hearing 3 (ISH3), the Applicant was asked to further consider what the impact to local roads would be if they were judged to be of high sensitivity (rather than low sensitivity), so the following assessment and discussion of impacts has been conducted on the basis that all of the roads considered are Major National, National or Regional roads as noted on the flow chart above.

1.2.4. The Pager Power guidance suggests that impacts to Major National, National or Regional roads should be considered based upon the angle within which glare is visible to a driver. If glare does not occur within a driver's field of view, then it would be of Low significance, and no mitigation would be required. If glare occurs in front of a driver, but there are mitigating factors, then the impact would be Moderate and further

mitigation may be necessary. If there are not mitigating factors, then the impact is High and some mitigation should be applied.

RD01 – School Hill

1.2.5. School Hill (receptor RD01) is a single carriageway road running east to west between Calvert and the junction with Addison Road. It operates at the national speed limit and is reduced thereafter to a 30mph speed limit when entering Calvert, on the HS2 bridge.

Travelling east along School Hill (receptor RD01E)

1.2.6. There is the potential for solar reflections to be present on PV panels in Parcel 1 for up to 30 minutes early in the morning (5am to 6:30am at 10-degree tilt and 6am to 6:30am at 30-degree tilt) from March to September. These reflections occur within 0-10 degrees of the viewer as they approach those panels for 400m around the HS2 bridge and before (these areas of the road are coloured orange and red in the diagrams at **Appendix 1**).

Figure 2 – View east along School Hill looking toward Parcel 1

Mitigating factors

1.2.7. Any potential reflections from the proposed Solar PV modules would occur only during a limited period in the early morning, when the sun is low in the sky and positioned broadly in the same direction as the reflections. Road users would already be looking towards the rising sun, which would be the dominant source of brightness within their field of view. Reflections from the Solar PV modules would be viewed at the same time as the sun itself. The reflected glare would not introduce a new or unexpected source of illumination and would be substantially less intense and less visually prominent than direct sunlight.

1.2.8. In addition, such reflections would be transient in nature, occurring only for a short duration as the sun rises and quickly changes position. The limited timeframe, the concurrence of the reflection with the sun's position, and the comparatively lower intensity are mitigating factors that lower the significance of the impact. The impact would therefore be Moderate (according to the Pager Power guidance) if these roads were categorised as Major National, National or Regional. The impact would be Low if these roads are classed as Local.

1.2.9. If these roads are categorised local then no mitigation would be required but if they are categorised as National or Regional roads then some mitigation is recommended.

RD02 - Addison Road

1.2.10. This receptor (RD02) is a single carriageway road with national speed limit running north-south between the junction of School Hill and Steeple Claydon. No solar reflections are visible from this receptor.

RD03 - Orchard Way

1.2.11. This receptor (RD03) is a single carriageway road running between Botolph Claydon and School Hill. It has a national speed limit and a 30mph limit when entering Botolph Claydon.

Figure 3 – View east along Orchard Way looking toward Parcel 1

Travelling east along Orchard Way (receptor RD03E)

1.2.12. There is the potential for solar reflections from solar PV modules in Parcels 1 and 3 for up to 25 minutes early in the morning (between 5am to 6:30am at a 10-degree tilt angle, 6am to 6:30am at a 30-degree tilt angle) from March to September. Some of these reflections occur within 0-10 degrees of the viewer as they approach those panels for 1500m before

Blackmore Hill Farm (these areas of the road are coloured orange and red in the diagrams at **Appendix 1**).

1.2.13. Reflections from the north edge of Parcel 1 are visible for 500m at a 10-degree tilt angle and slightly less at a 30-degree tilt angle. Reflections from Parcel 3 beyond that would be blocked by vegetation and houses, therefore no further mitigation is required.

Mitigating Factors

1.2.14. As noted for receptor RD01E, any potential reflections from the proposed Solar PV modules would only occur during a limited period in the early morning, when the sun is low in the sky and positioned broadly in the same direction as the reflections. The sun would be the dominant source of brightness within a road user's field of view, and the reflected glare would not introduce a new or unexpected source of illumination.

1.2.15. The limited timeframe, the concurrence of the reflection with the sun's position, the comparatively lower intensity and the likelihood for any reflection to be obscured by roadside hedges are mitigating factors that lower the significance of the impact. The impact would therefore be Moderate if these roads were categorised as Major National, National or Regional. The impact would be Low if these roads are classed as Local.

1.2.16. If these roads are categorised local, then no mitigation would be required but if they are categorised as National or Regional roads then some mitigation is recommended.

Travelling west along Orchard Way (receptor RD03W)

1.2.17. There is the potential for solar reflections from solar PV modules in Parcel 1 for up to 15 minutes late in the evening (between 5.30pm and 6.30pm) just around the equinoxes (21st March and September). Some of these reflections occur within 0-10 degrees of the viewer for approx. 1800m after passing Pond Farm.

1.2.18. The diagrams at **Appendix 1** show some potential for reflections visible to roads users as they leave Botolph Claydon travelling west, but these would be blocked by houses and vegetation, so present no impact.

Mitigating Factors

1.2.19. Any potential reflections from the proposed Solar PV modules would only occur during a limited period in the evening, when the sun is low in the sky and positioned broadly in the same direction as the reflections. The sun would be the dominant source of brightness within an onlooker's field of view, and the reflected glare would not introduce a new or unexpected source of illumination.

1.2.20. The limited timeframe, the concurrence of the reflection with the sun's position, the comparatively lower intensity and the likelihood for any reflection to be obscured by roadside hedges are mitigating factors that lower the significance of the impact. The impact would therefore be Moderate if these roads were categorised as Major National, National or Regional. The impact would be Low if these roads are classed as Local.

1.2.21. If these roads are categorised local, then no mitigation would be required but if they are categorised as National or Regional roads then some mitigation is recommended.

RD04 - Claydon Road

1.2.22. This receptor (RD04) is a single carriageway with national speed limit running north to south between Botolph Claydon and Hogshaw Farm.

Travelling north and west along Claydon Road (receptor RD04N)

1.2.23. There is the potential for solar reflections from Solar PV modules on the northern edge of Parcel 2 for up to 60 minutes late in the evening (between 6pm to 7:30pm at a 10-degree tilt angle, and 5:30pm to 6:30pm at a 30-degree tilt angle), when travelling west along this road between March and September. Some of these reflections occur within 0-10 degrees of the viewer for approx. 300m after the intersection with Hogshaw Road between May and August.

Figure 4 – View west along Claydon Road looking toward Parcel 2

Mitigating Factors

1.2.24. Any potential reflections from the proposed Solar PV modules would only occur during a limited period in the evening, when the sun is low in the sky and positioned broadly in the same direction as the reflections. The sun would be the dominant source of brightness within an onlooker's field of

view, and the reflected glare would not introduce a new or unexpected source of illumination.

1.2.25. The limited timeframe, the concurrence of the reflection with the sun's position and the comparatively lower intensity are mitigating factors that lower the significance of the impact. The impact would therefore be Moderate if these roads were categorised as Major National, National or Regional. The impact would be Low if these roads are classed as Local.

1.2.26. If these roads are categorised local, then no mitigation would be required but if they are categorised as National or Regional roads then some mitigation is recommended.

Travelling south and east along Claydon Road (receptor RD04S)

1.2.27. There is the potential for solar reflections from PV panels in Parcel 3 for up to 30 minutes early in the morning (between 5am to 6:30am at a 10-degree tilt angle, and 6am to 6:30am at a 30-degree tilt angle) between March to September.

1.2.28. Some of these reflections occur within 0-10 degrees of the viewer for approx. 300m as the viewer is moving east away from Botolph Claydon. As shown in Figure 5 below, the existing hedgerow is likely to obscure any view of these panels.

Figure 5 – View east along Claydon Road looking toward Parcel 3

Mitigating Factors

1.2.29. Any potential reflections from the proposed Solar PV modules would only occur during a limited period in the early morning, when the sun is low in the sky and positioned broadly in the same direction as the reflections. The sun would be the dominant source of brightness within an onlooker's

field of view, and the reflected glare would not introduce a new or unexpected source of illumination.

1.2.30. The limited timeframe, the concurrence of the reflection with the sun's position and the comparatively lower intensity are mitigating factors that lower the significance of the impact. The impact would therefore be Moderate if these roads were categorised as Major National, National or Regional. The impact would be Low if these roads are classed as Local.

1.2.31. If these roads are categorised local, then no mitigation would be required but if they are categorised as National or Regional roads then some mitigation is recommended.

RD05 – Botyl Road and St Marys Road

1.2.32. This receptor (RD05) is a single carriageway road running north to south between Botolph Claydon and East Claydon with varying speed limits of 30 and 40mph.

Travelling north along St Marys Road (receptor RD05N)

1.2.33. The diagrams in **Appendix 1** show that there is the potential for solar reflections from Solar PV modules in Parcel 3 for up to 20 minutes early in the morning (between 5am to 6am at a 10-degree tilt angle, and 6am to 6:30am at a 30-degree tilt angle). However, these reflections would only be visible at an oblique angle to the viewer and would be obscured by houses and vegetation along St Mary's Road (see Figure 6 below).

Figure 6 – View north along St Mary's Road

Mitigating Factors

1.2.34. Any potential reflections from the proposed Solar PV modules would only occur during a limited period in the early morning, when the sun is low in the sky and positioned broadly in the same direction as the reflections. The sun would be the dominant source of brightness if an onlooker were looking toward the Solar PV modules and the reflected glare would not introduce a new or unexpected source of illumination.

1.2.35. In addition, these reflections would not occur directly in front of the road user, and it is likely that houses and vegetation along St Mary's Road would obscure any view of panels in Parcel 3. The impact would therefore be Low and no mitigation is necessary.

RD06 - East Claydon Road

1.2.36. This receptor (RD06) is a single carriageway with national speed limit running between East Claydon and the junction with Granborough Road.

Travelling east along East Claydon Road (receptor RD06E)

1.2.37. The diagrams at Appendix 1 show that there is the potential for some brief solar reflections for up to 10 minutes per day from Solar PV modules in the northern section of Parcel 3 early in the morning (between 6.15am and 6.45am at both 10 and 30-degree tilt angles) in mid-March and the end of September.

1.2.38. As shown in Figure 7 below, any view of Solar PV modules at the northern end of Parcel 3 would be heavily obscured by the National Grid East Claydon Substation and hedgerows between fields.

Figure 7 – View northeast along East Claydon Road

Mitigating Factors

1.2.39. Any potential reflections from the proposed Solar PV modules would only occur during a limited period in the early morning, when the sun is low in the sky and positioned broadly in the same direction as the reflections. The sun would be the dominant source of brightness within a road user's field of view, and the reflected glare would not introduce a new or unexpected source of illumination.

1.2.40. It is also likely that any view of the Solar PV modules on the northern part of Parcel 3 would be obscured by the National Grid East Claydon Substation and hedgerows between fields, which would prevent any potential reflections. The impact would therefore be Low, and no mitigation should be necessary.

RD07 - Hogshaw Road

1.2.41. This receptor (RD07) is a single carriageway with national speed limit running between Granborough and Botolph Claydon.

Travelling east along Hogshaw Road (receptor RD07E)

1.2.42. There is the potential for some solar reflections from Solar PV modules on the southern edge of Parcel 3 for up to 20 minutes early in the morning (between 5am to 6am at a 10-degree tilt angle, and 6am to 6:30am at a 30-degree tilt angle) between April to August.

Mitigating Factors

1.2.43. Any potential reflections from the proposed Solar PV modules would only occur during a limited period in the early morning, when the sun is low in the sky and positioned broadly in the same direction as the reflections. The sun would be the dominant source of brightness if the onlooker were looking toward the panels and the reflected glare would not introduce a new or unexpected source of illumination.

1.2.44. In addition, these reflections would not occur directly in front of the viewer, so the impact would be Low, and no mitigation would be necessary.

Travelling west along Hogshaw Road (receptor RD07W)

1.2.45. There is the potential for some solar reflections from Solar PV modules on the northern edge of Parcel 2 for up to 30 minutes late in the evening (between 6pm to 7:30pm at a 10-degree tilt angle, and around 6pm at a 30-degree tilt angle) between March and September.

1.2.46. Some of these reflections occur within 0-10 degrees of the viewer for the last kilometre before the junction with Claydon Road (these areas of the road are coloured orange and red in the diagrams at **Appendix 1**).

Figure 8 – View west along Hogshaw Road

Mitigating Factors

1.2.47. Any potential reflections from the proposed Solar PV modules would only occur during a limited period in the evening, when the sun is low in the sky and positioned broadly in the same direction as the reflections. The sun would be the dominant source of brightness within an onlooker's field of view, and the reflected glare would not introduce a new or unexpected source of illumination.

1.2.48. The combination of the limited timeframe, the concurrence of the reflection with the sun's position and the comparatively lower intensity are mitigating factors that lower the significance of the impact. The impact would therefore be Moderate if these roads were categorised as Major National, National or Regional. The impact would be Low if these roads are classed as Local.

1.2.49. If these roads are categorised local, then no mitigation would be required but if they are categorised as National or Regional roads then some mitigation is recommended.

Summary and Conclusions

Receptor	Predicted impact from original report.	Impacts from technical assessment	
		Impact if Receptors are considered local roads	Impact if considered a Major National, National or Regional roads
RD 1 School Hill	Low No mitigation required	Low No mitigation required	Moderate Mitigation recommended
RD 2 Addison Road	None No mitigation required	None No mitigation required	None No mitigation required
RD 3 Orchard Way	Low No mitigation required	Low No mitigation required	Moderate Mitigation recommended
RD 4 Claydon Road	None No mitigation required	Low No mitigation required	Moderate Mitigation recommended
RD 5 St Marys Road	None No mitigation required	Low No mitigation required	Low No mitigation required
RD 6 East Claydon Road	None No mitigation required	Low No mitigation required	Low No mitigation required
RD 7 Hogshaw Road	Low No mitigation required	Low No mitigation required	Moderate Mitigation recommended

1.2.50. The assessment has considered potential solar reflections from the proposed Solar PV modules on surrounding roads (RD01 to RD07), using the Pager Power Guidance: Solar Photovoltaic and Building Development – Glint and Glare Guidance, September 2022.

1.2.51. In general, the potential for glint and glare to these Receptors is limited to short periods in the early morning or late evening, between March and September, when the sun is low and positioned in the same direction as the reflected light. Across all receptors, the key mitigating factors are that reflections coincide with direct sunlight, are temporary in duration, are less intense than the sun itself, and are often screened by existing vegetation, buildings, or infrastructure.

1.2.52. No impacts are predicted for Addison Road (RD02), while St Mary's Road (RD05), East Claydon Road (RD06), and eastbound Hogshaw Road (RD07E) are assessed as Low impact, so no further mitigation is required. The remaining receptors have the potential for Moderate impacts if classified as Major, National, or Regional roads, reducing to Low impacts if classified as Local roads.

1.3. Assessment of Preston Farm/TCS Biosciences

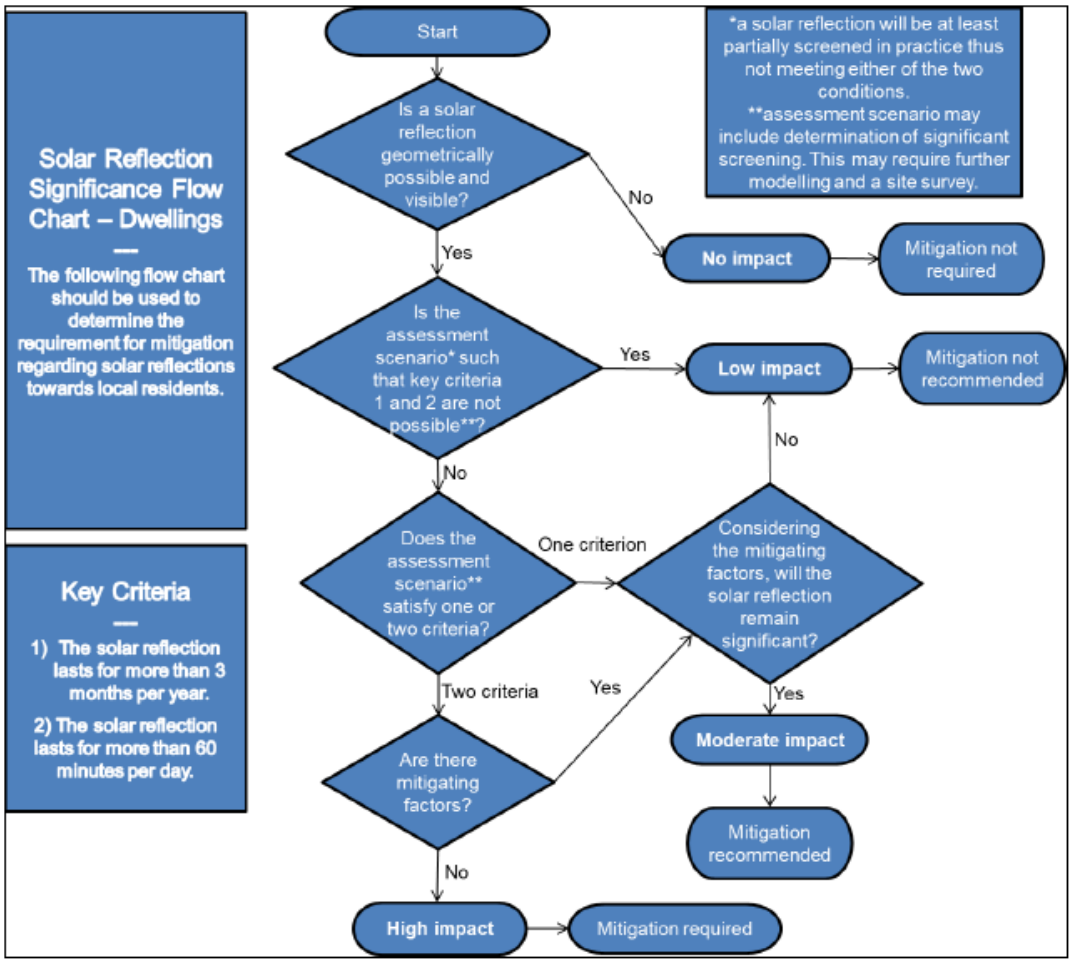
1.3.1. The submitted glint and glare report **ES Volume 4, Appendix 5.4: Glint and Glare Assessment [EN010158/APP/6.4.2]** considers the impact to residential dwellings within 1km of the Proposed Development and applies the guidance provided by Pager Power (Solar Photovoltaic and Building Development – Glint and Glare Guidance) September 2022.

1.3.2. Section 6 of this guidance details how the assessment of dwellings should be undertaken and how the significance of impacts should be determined. The process for determining significance of impacts is detailed in a flow chart shown at Figure 9 below. This chart shows that impacts to dwellings can be categorised as follows: -

- Reflections significantly screened or mitigated: Low impact.
- Reflections not screened / mitigated:
  - Frequency < 90 hours/year and <60 min/day: Low impact;
  - Frequency < 90 hours/year or <60 min/day: Moderate impact; and
  - Frequency > 90 hours/year and >60 min/day: High impact.

N.b. 90 hours per year equates to three months (90 days) of 60 minutes per day.

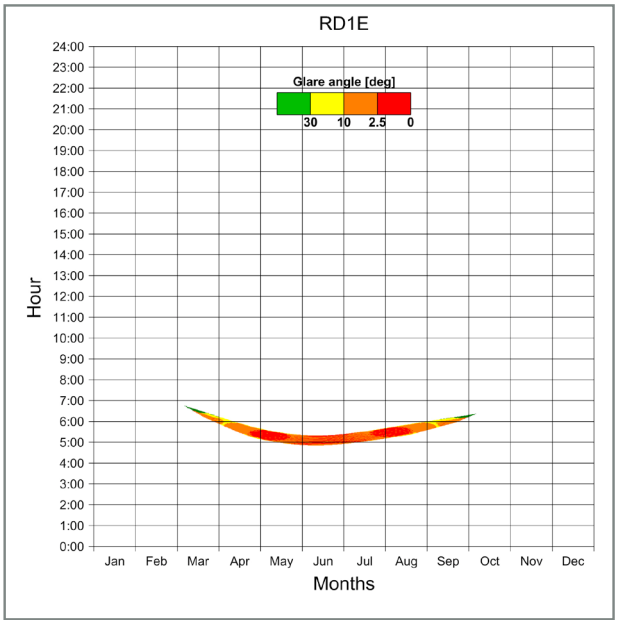
Figure 9 – Impact classification for dwellings



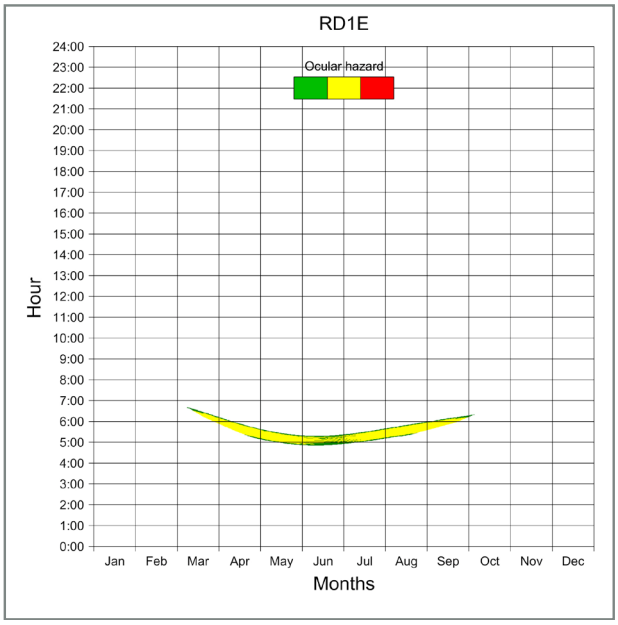
1.3.3. Whilst buildings at Preston Farm/TCS Biosciences are not residential dwellings, the potential glint and glare impact has been assessed at receptor BL27 within **ES Volume 4, Appendix 5.4: Glint and Glare Assessment [EN010158/APP/6.4.2]**. The results of the assessments show that this Receptor will potentially receive reflections from panels at a 10-degree tilt angle for a maximum of 64.3 hours per year and up to 30 minutes per day. For panels at a tilt angle of 30-degrees this receptor will potentially receive reflections for a maximum of 65.6 hours per year and up to 22 minutes per day. As such, the impact will be Low.

Appendix 1 – Technical Assessment of Roads

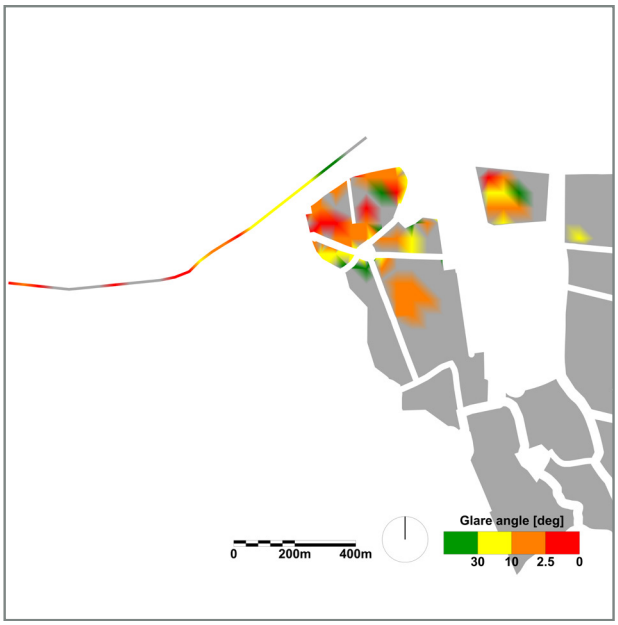
Receptor RD01E
Scenario 1 (10deg tilt)



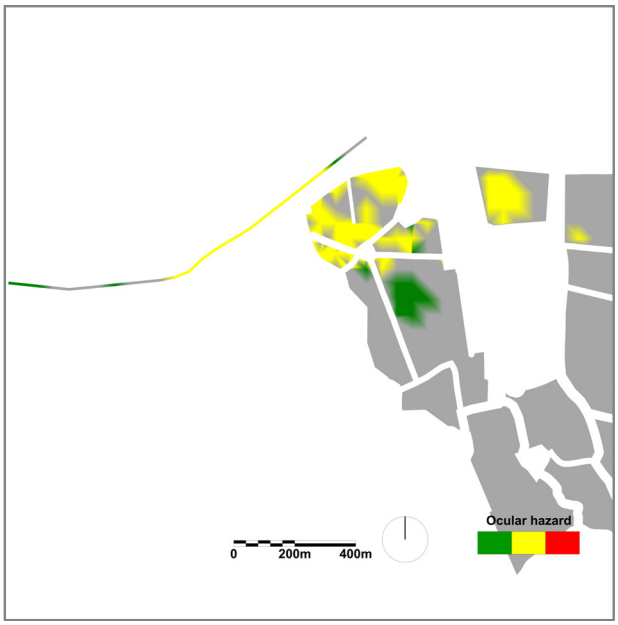
Img. 1: Gare angle frequency



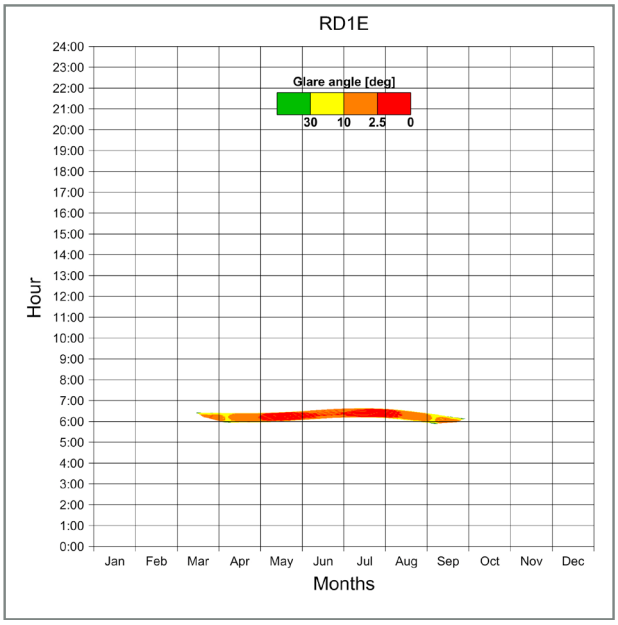
Img. 2: Ocular hazard graph



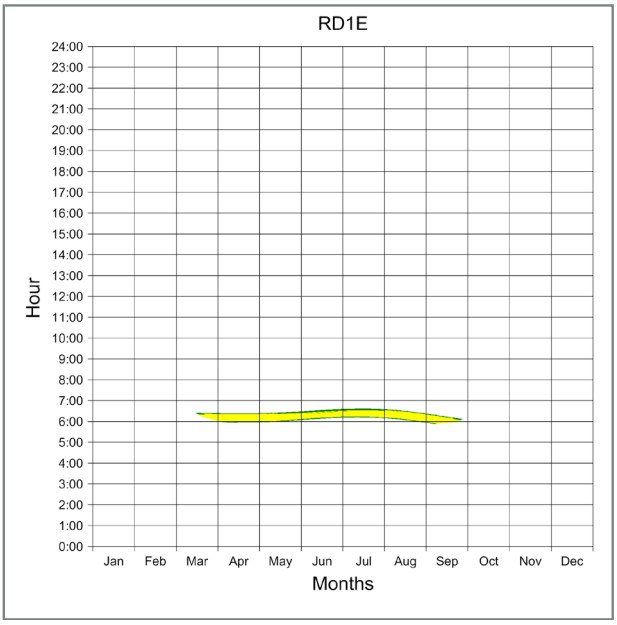
Img. 3: Glare angle map



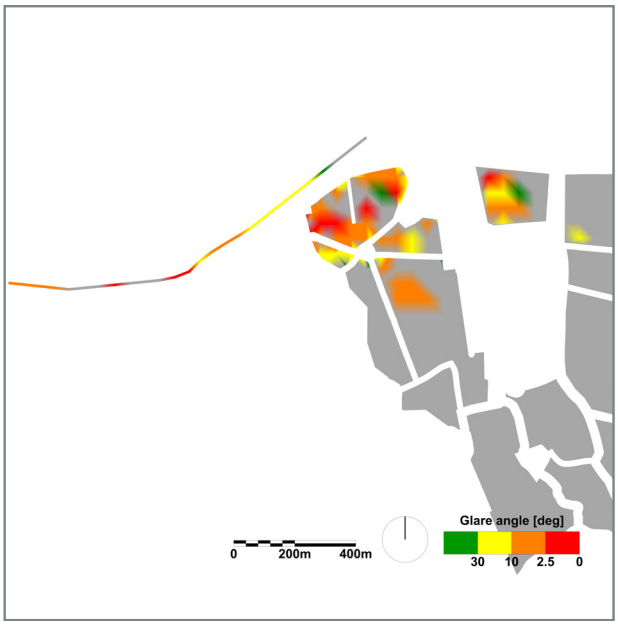
Img. 4: Ocular hazard map



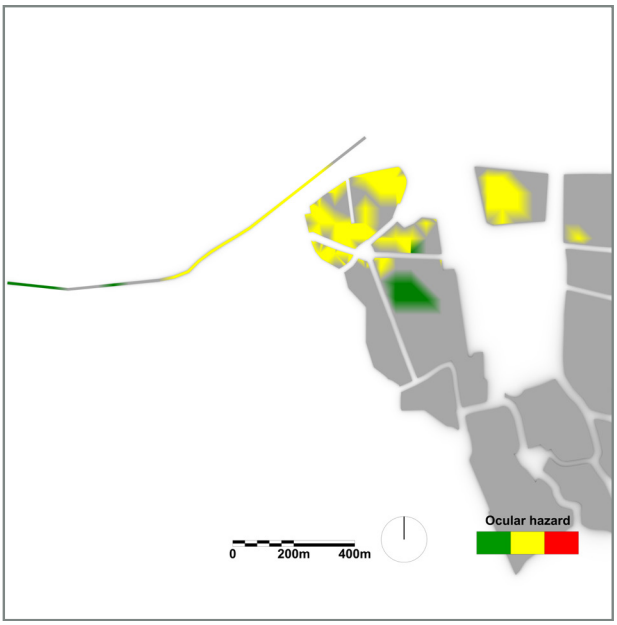
Img. 5: Gare angle frequency



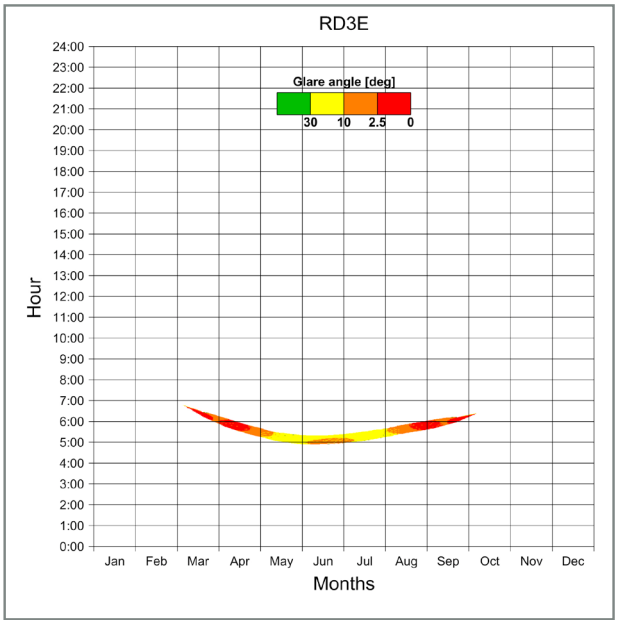
Img. 7: Ocular hazard graph



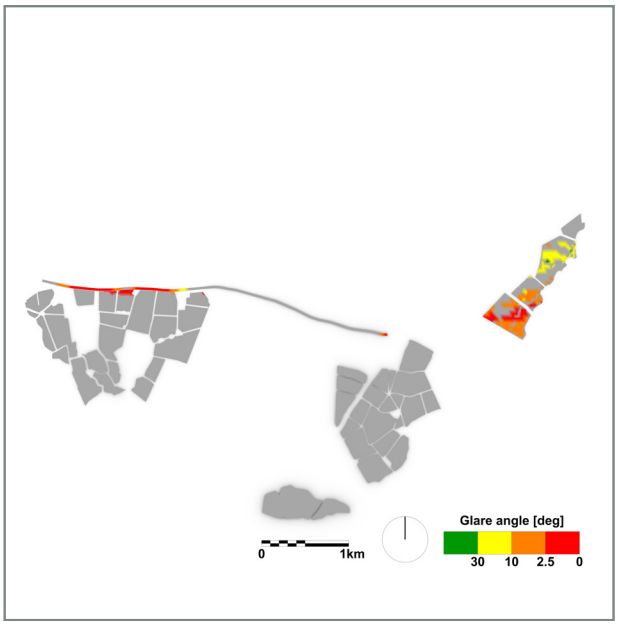
Img. 6: Glare angle map



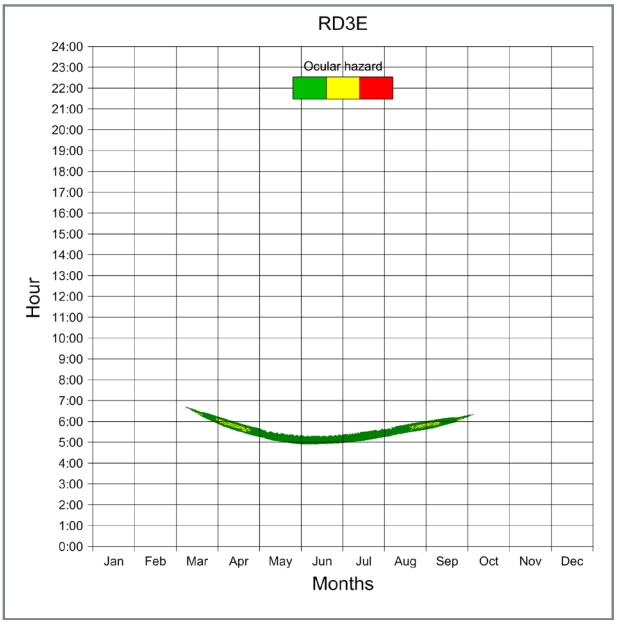
Img. 8: Ocular hazard map



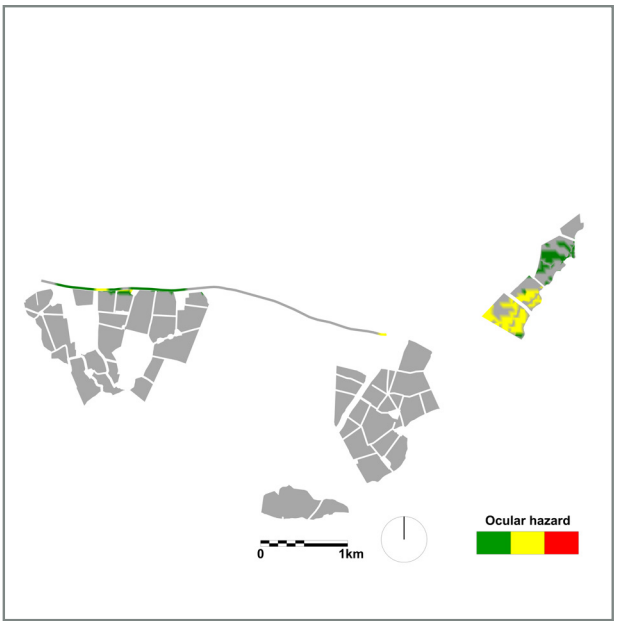
Img. 9: Gare angle frequency



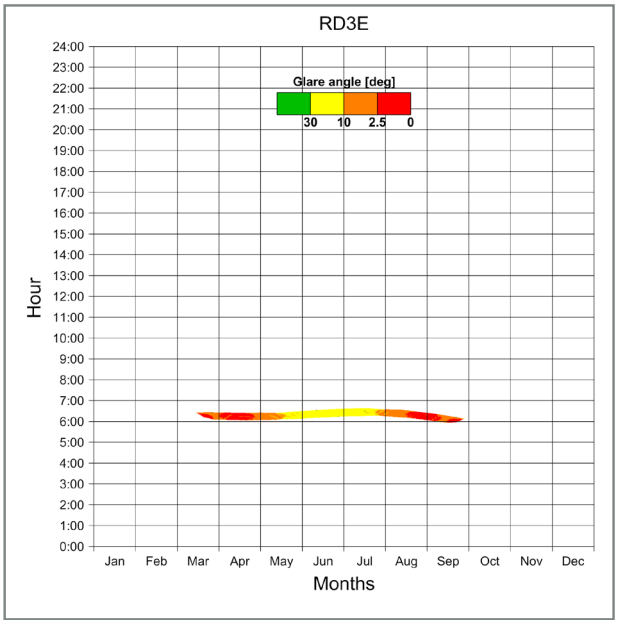
Img. 10: Glare angle map



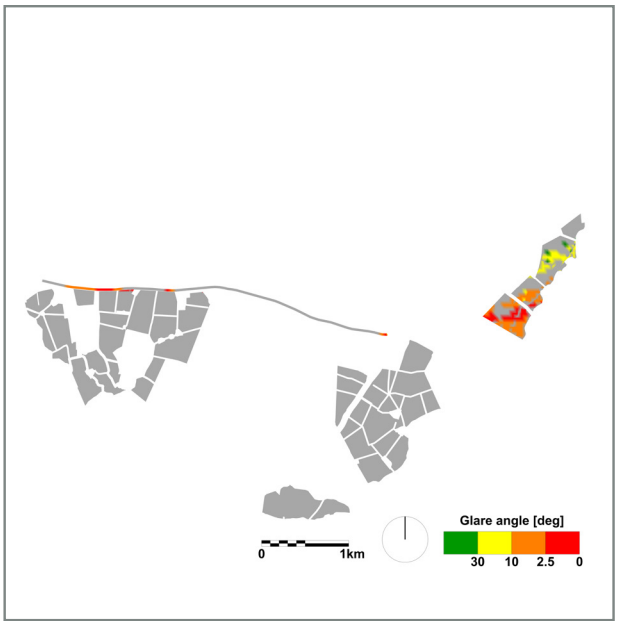
Img. 11: Ocular hazard graph



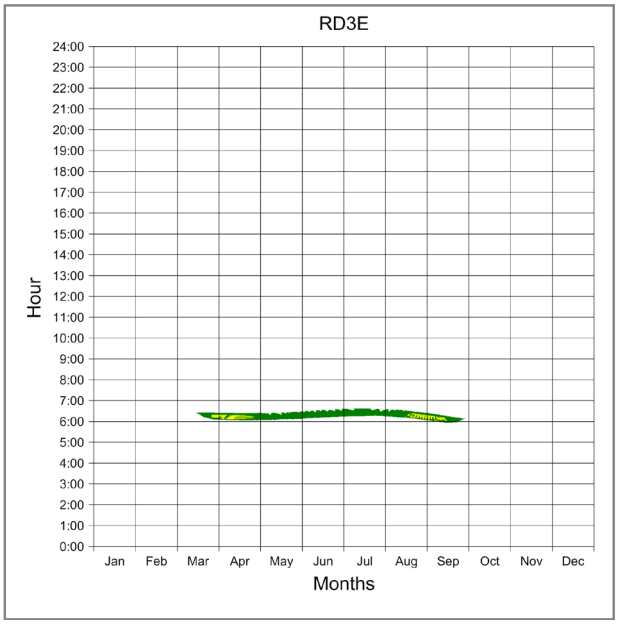
Img. 12: Ocular hazard map



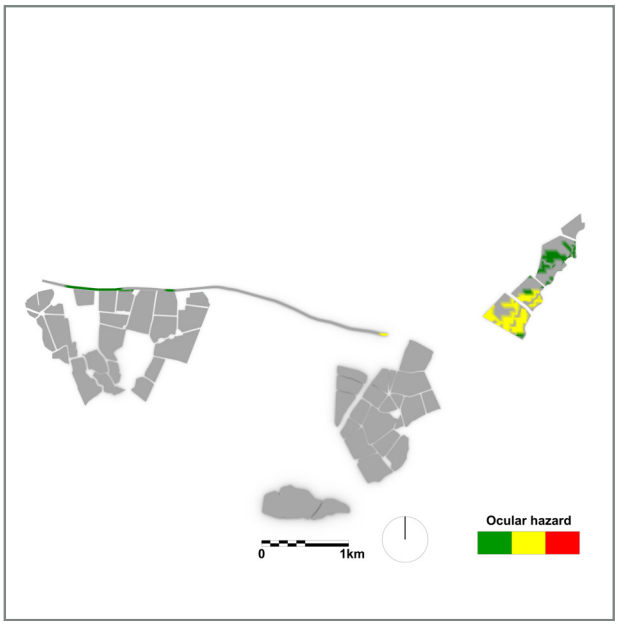
Img. 13: Gare angle frequency



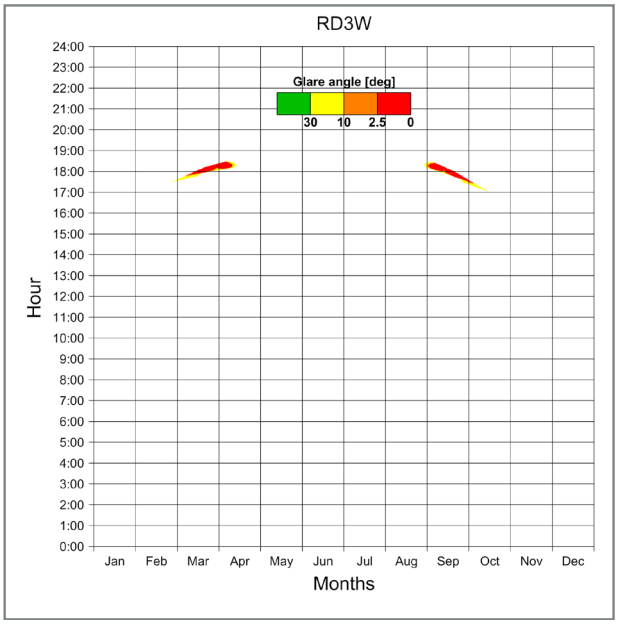
Img. 14: Glare angle map



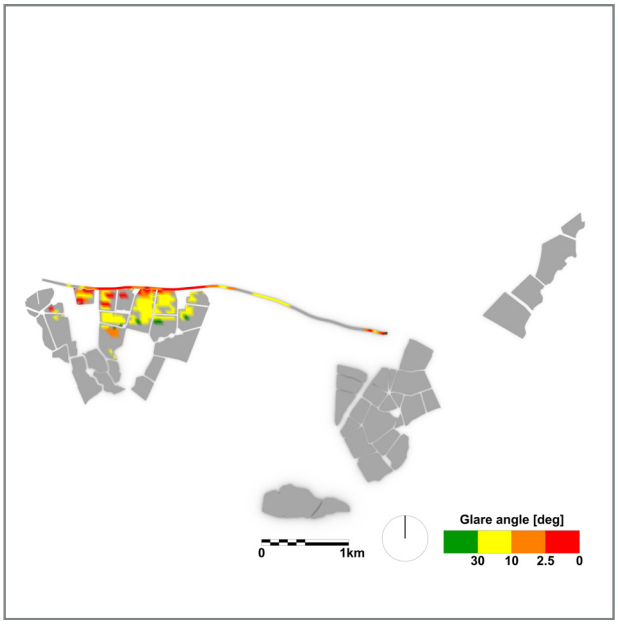
Img. 15: Ocular hazard graph



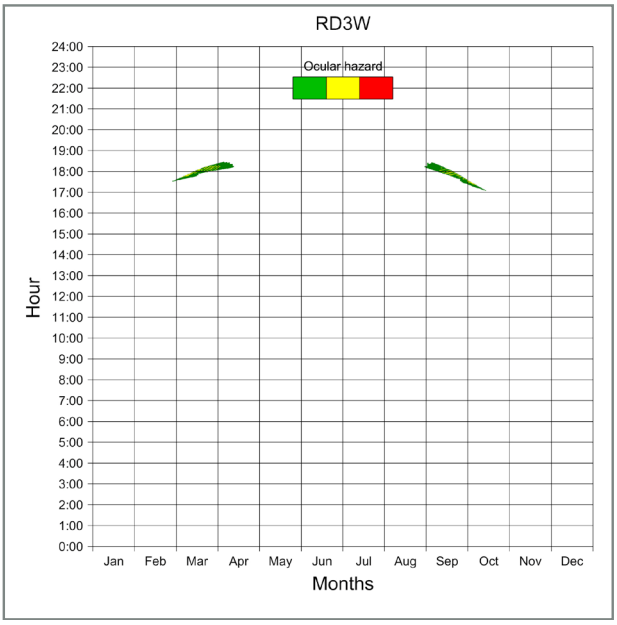
Img. 16: Ocular hazard map



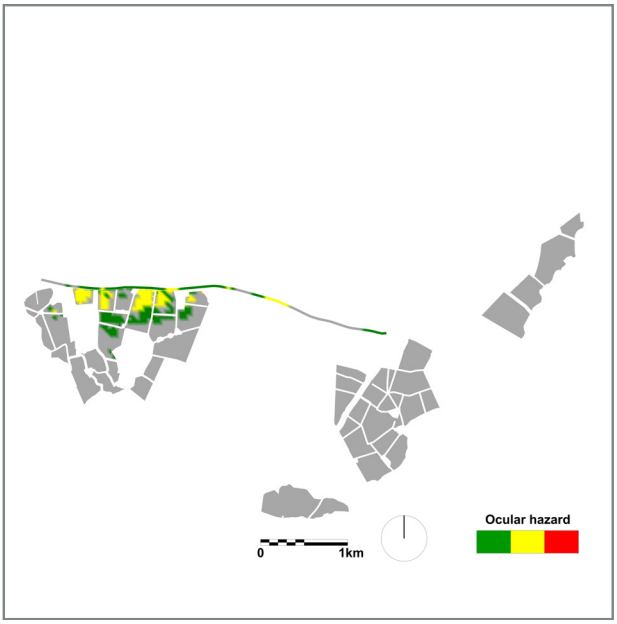
Img. 17: Gare angle frequency



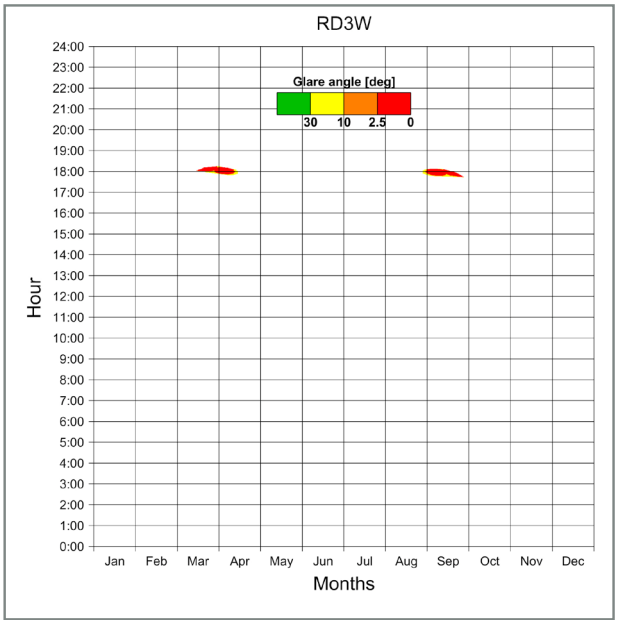
Img. 18: Glare angle map



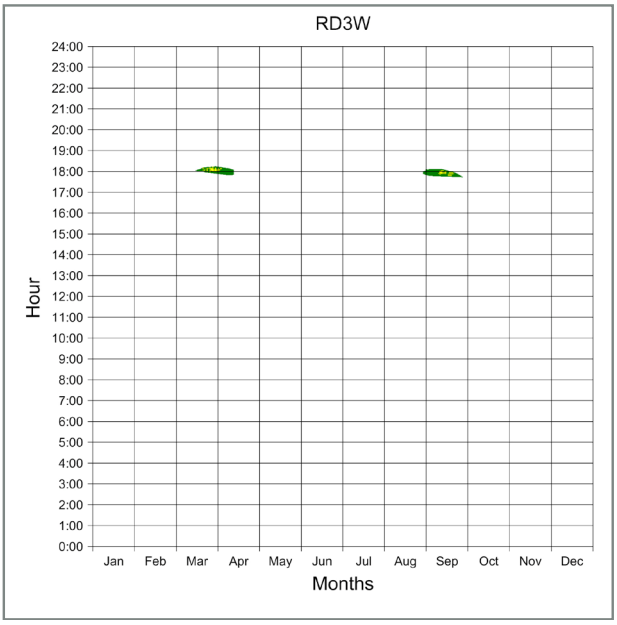
Img. 19: Ocular hazard graph



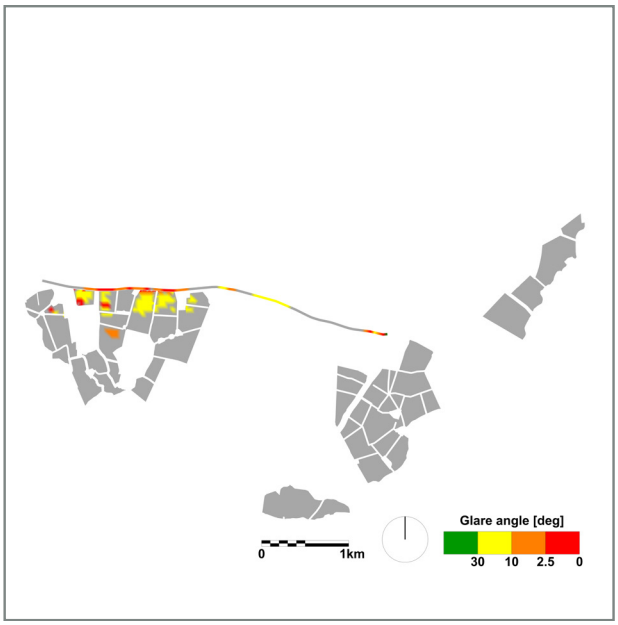
Img. 20: Ocular hazard map



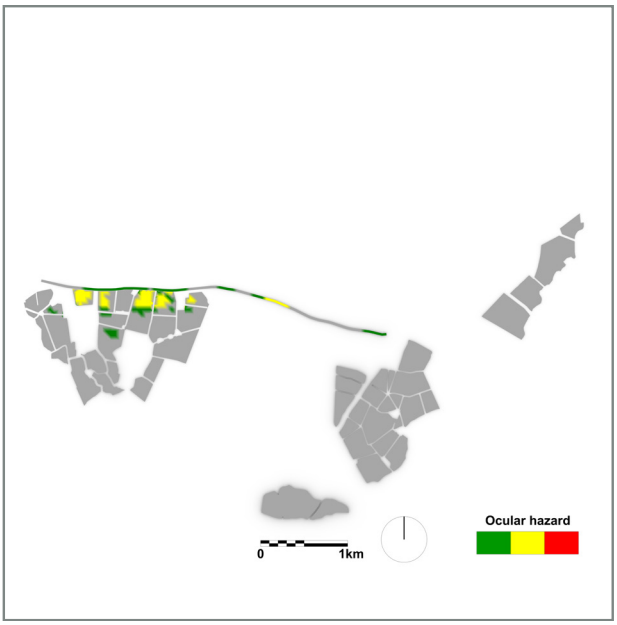
Img. 21: Gare angle frequency



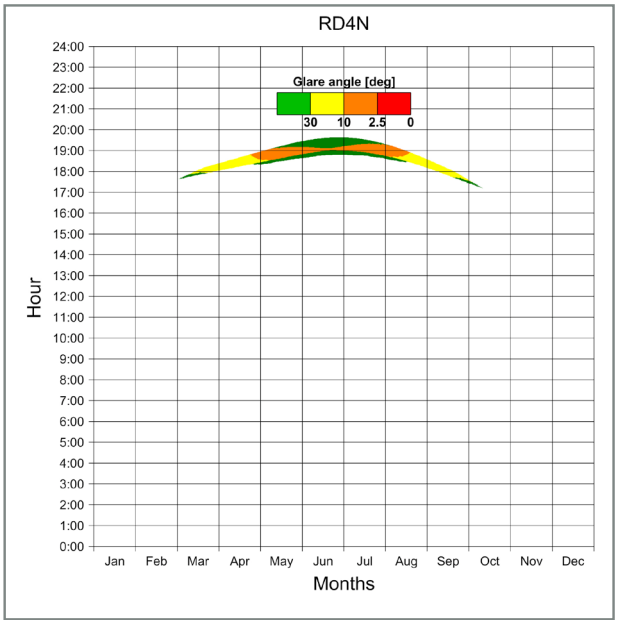
Img. 23: Ocular hazard graph



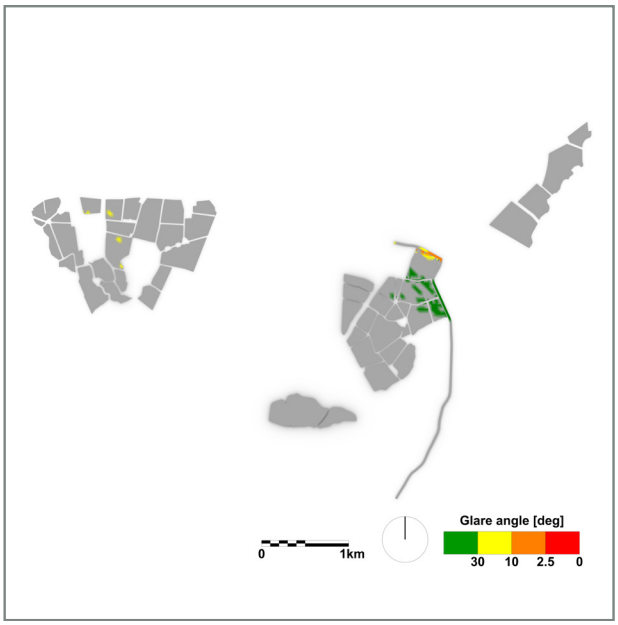
Img. 22: Glare angle map



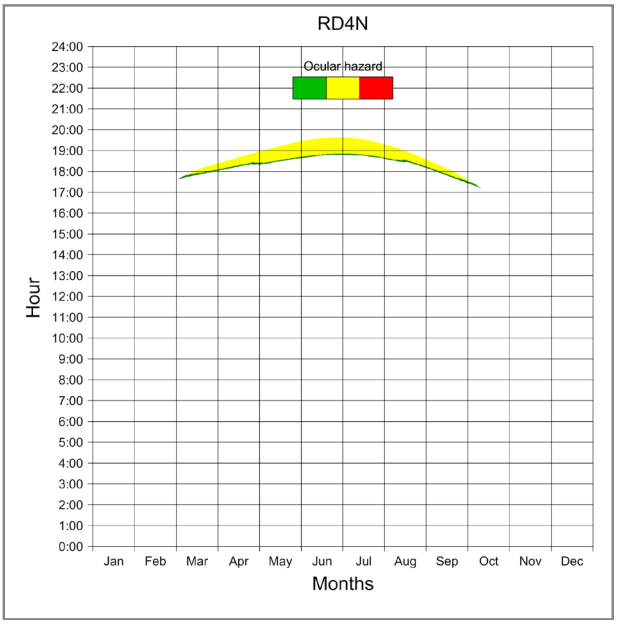
Img. 24: Ocular hazard map



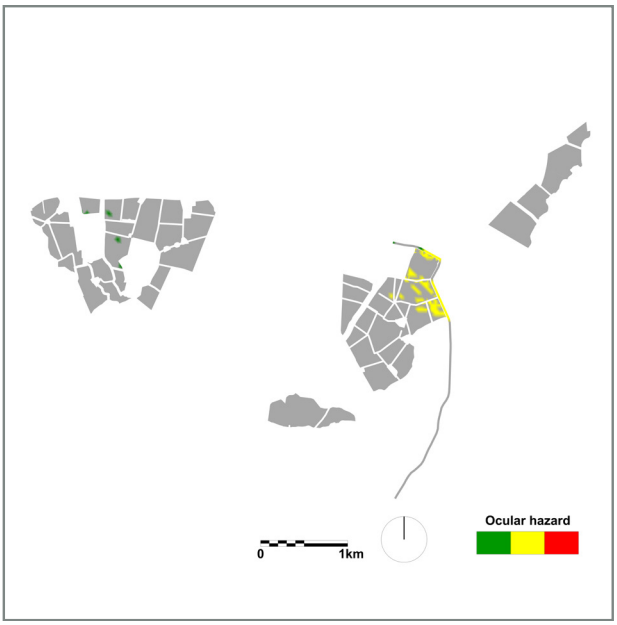
Img. 25: Gare angle frequency



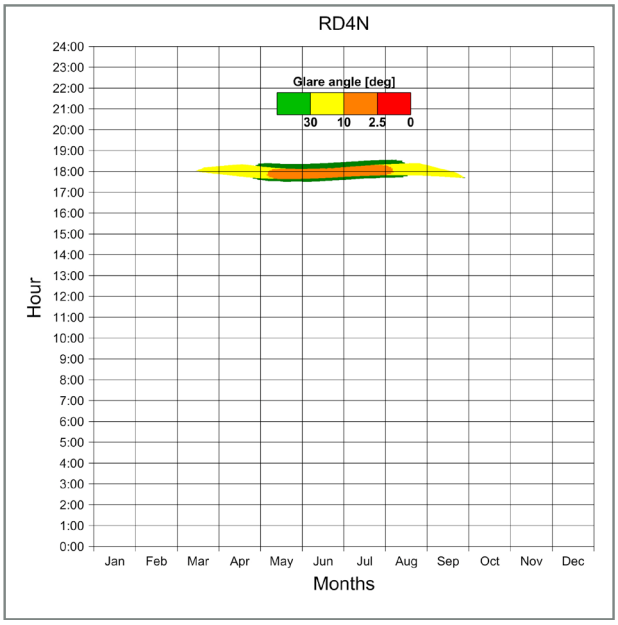
Img. 26: Glare angle map



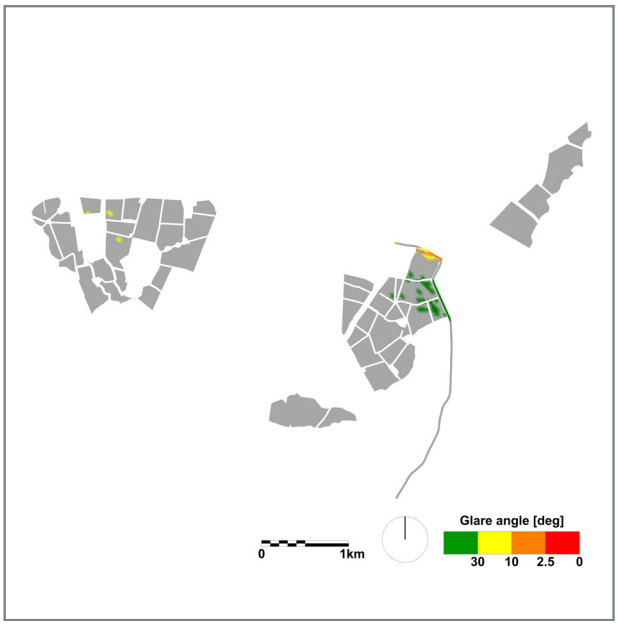
Img. 27: Ocular hazard graph



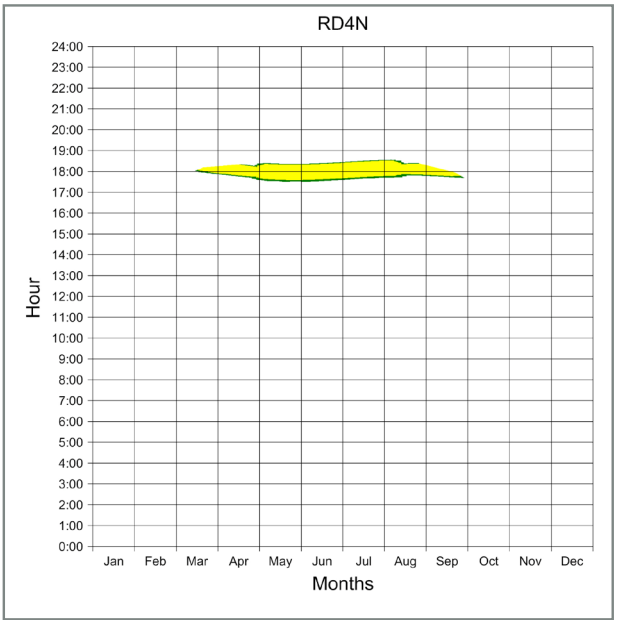
Img. 28: Ocular hazard map



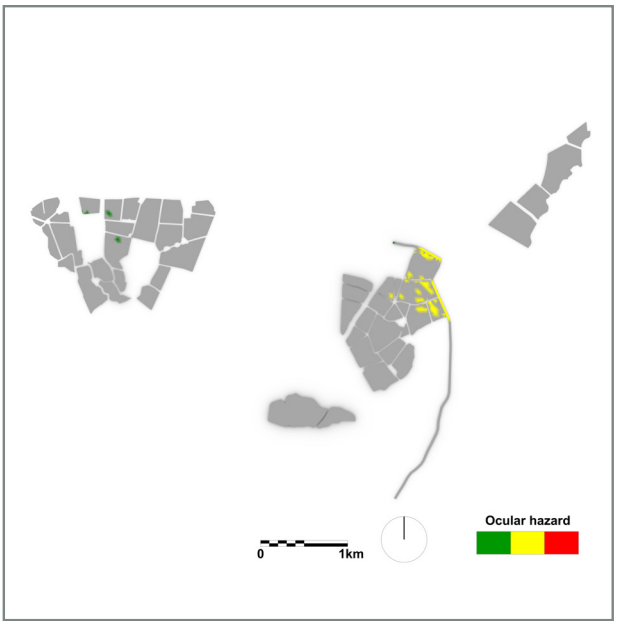
Img. 29: Gare angle frequency



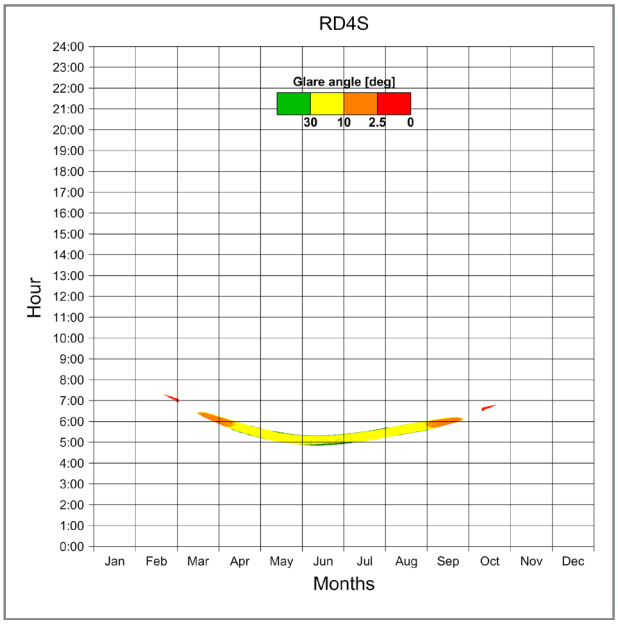
Img. 30: Glare angle map



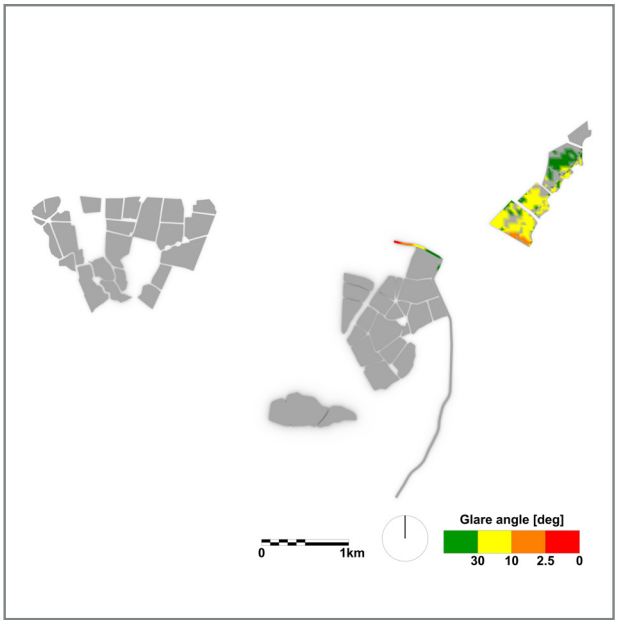
Img. 31: Ocular hazard graph



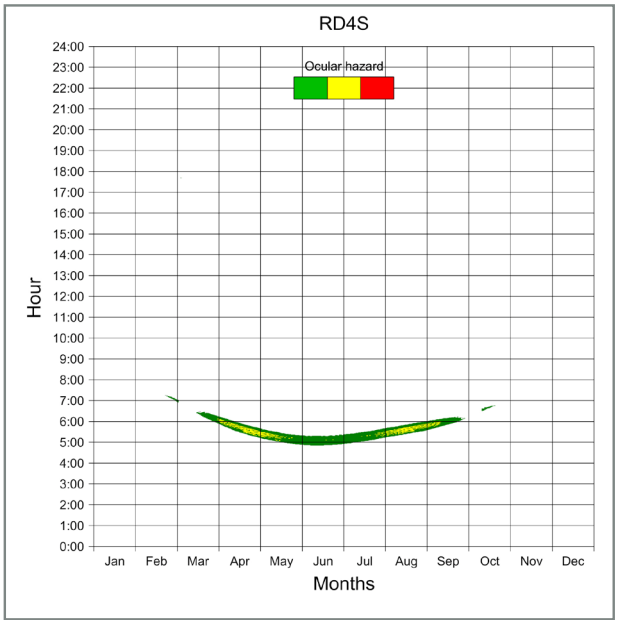
Img. 32: Ocular hazard map



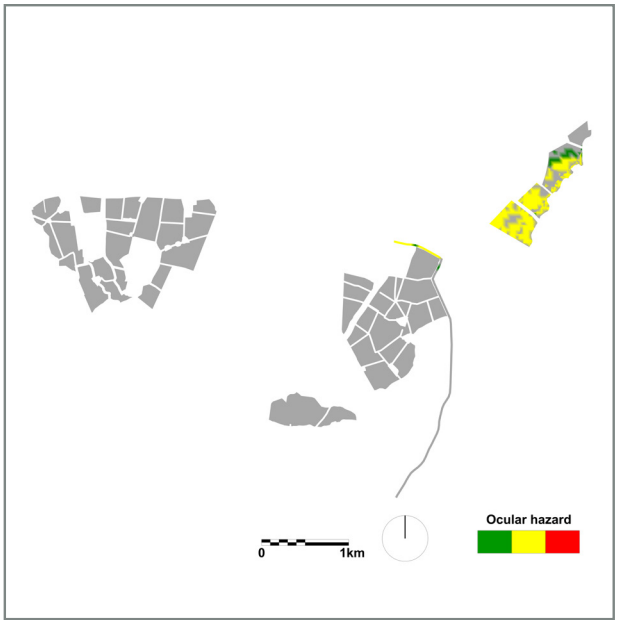
Img. 33: Gare angle frequency



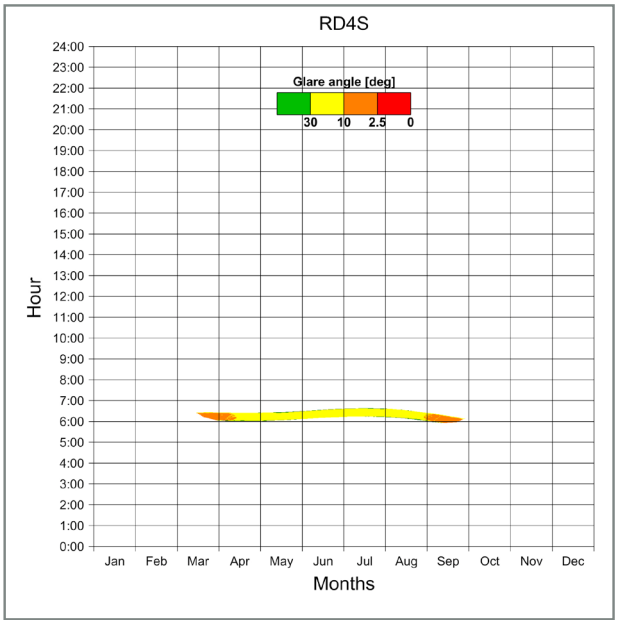
Img. 34: Glare angle map



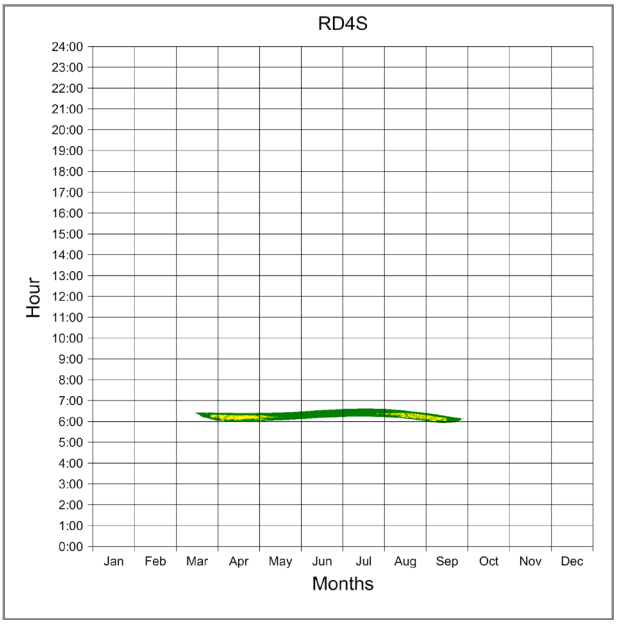
Img. 35: Ocular hazard graph



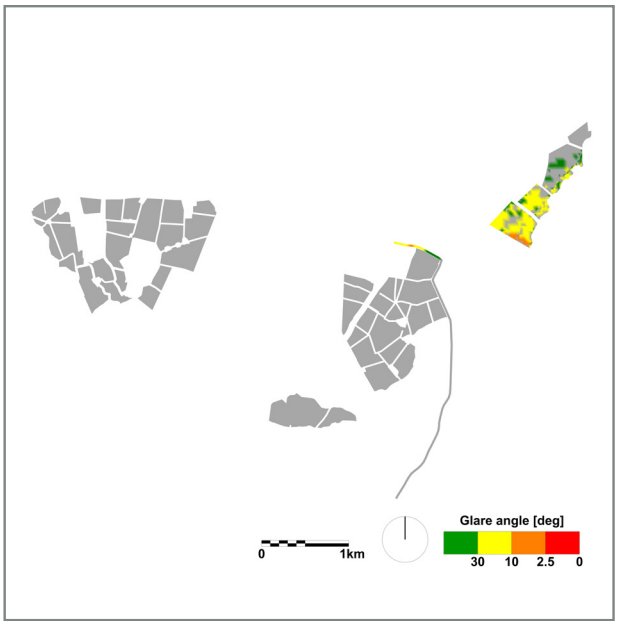
Img. 36: Ocular hazard map



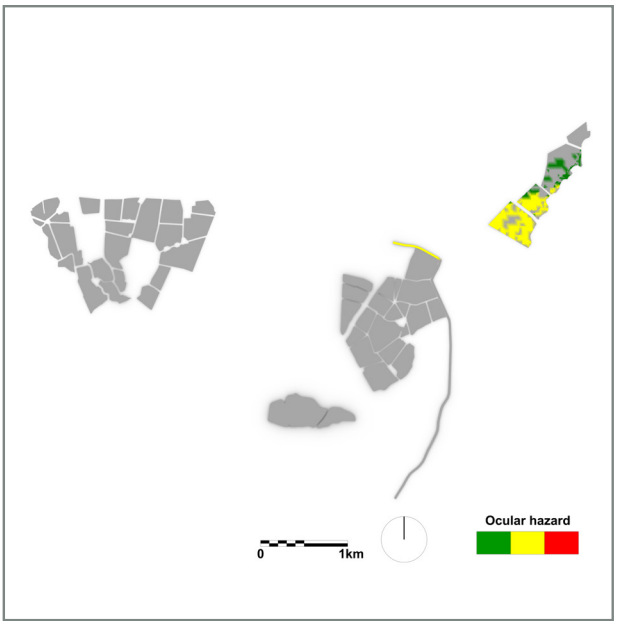
Img. 37: Gare angle frequency



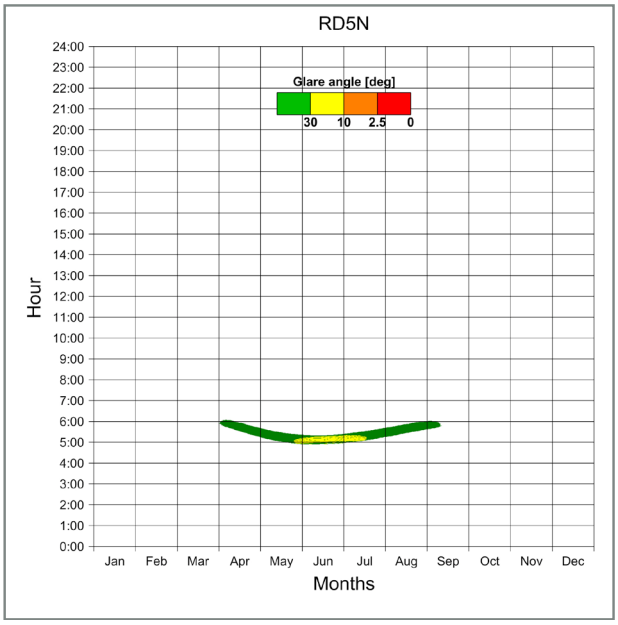
Img. 39: Ocular hazard graph



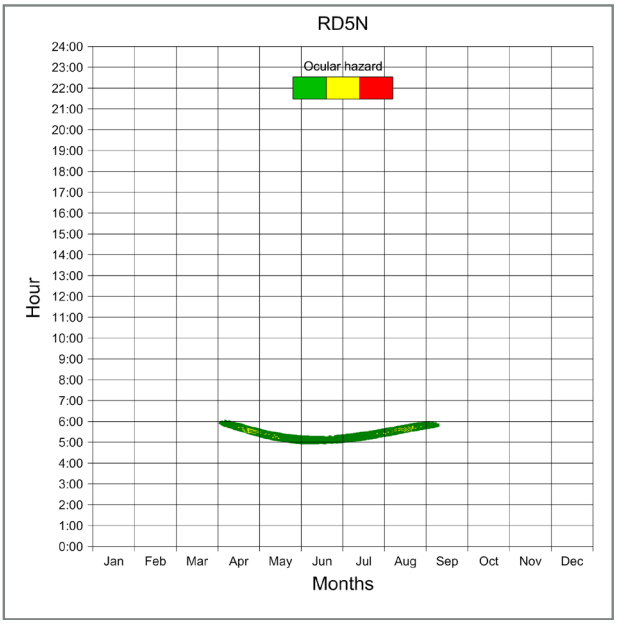
Img. 38: Glare angle map



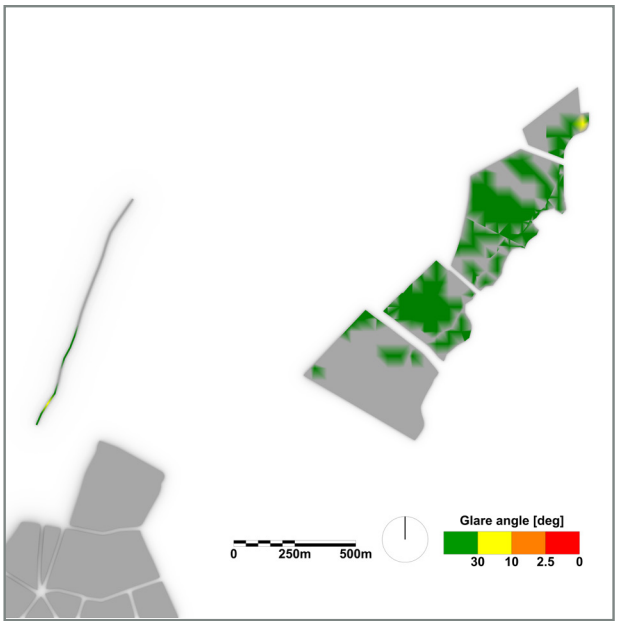
Img. 40: Ocular hazard map



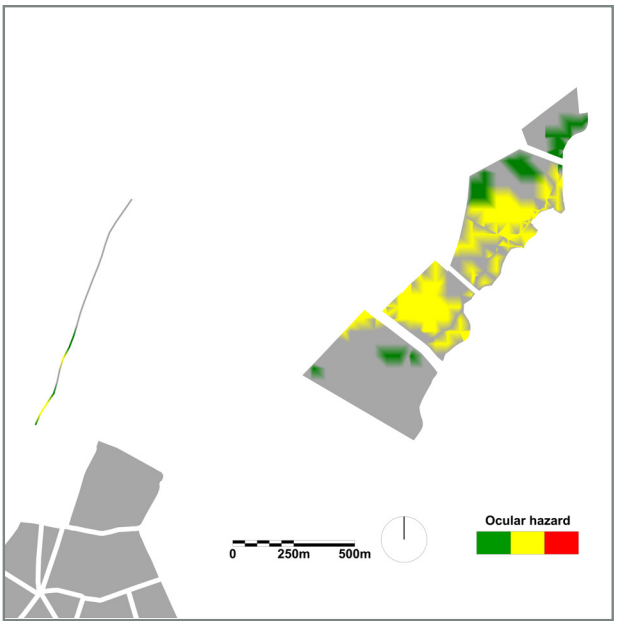
Img. 41: Gare angle frequency



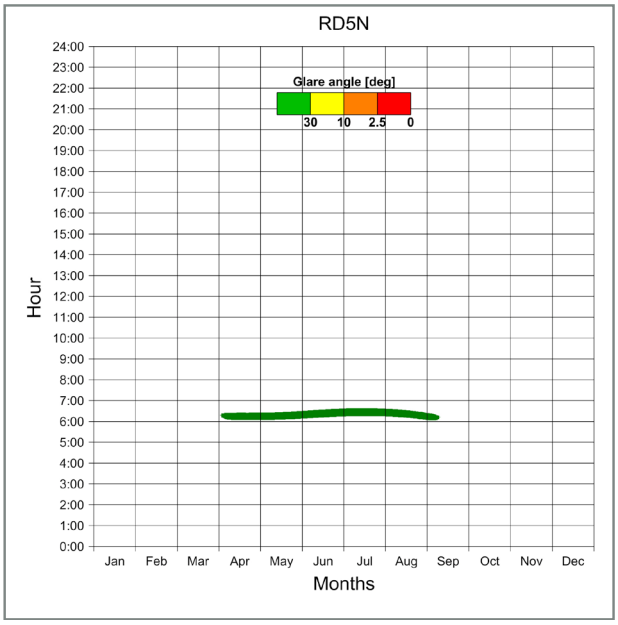
Img. 43: Ocular hazard graph



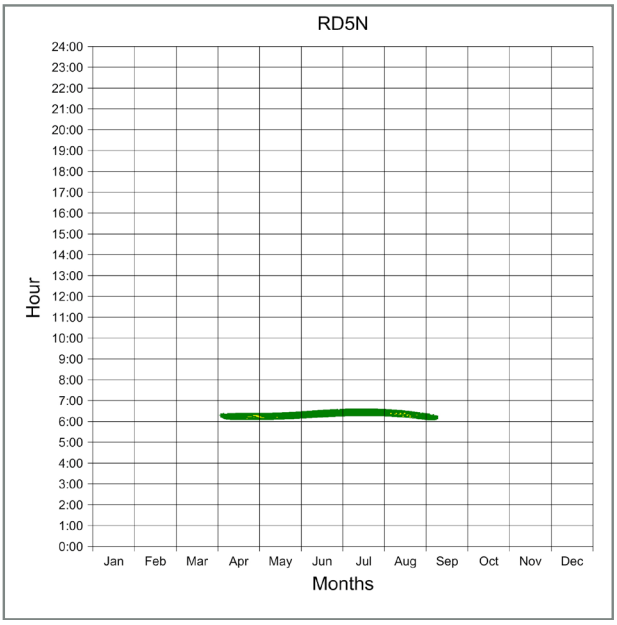
Img. 42: Glare angle map



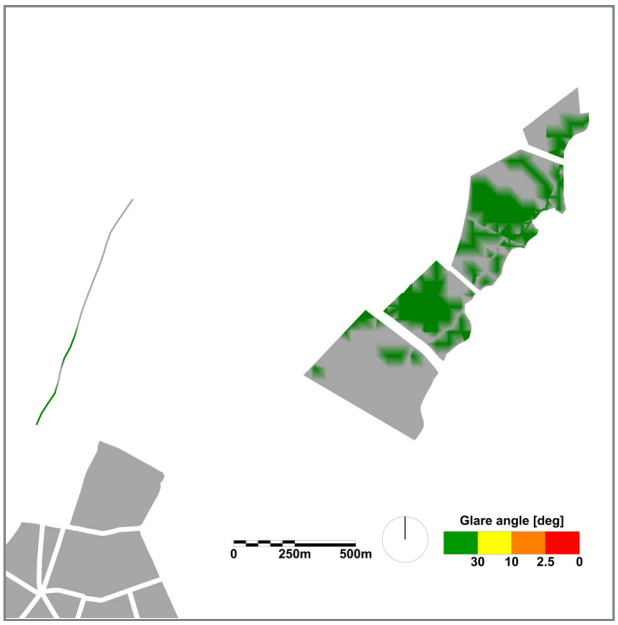
Img. 44: Ocular hazard map



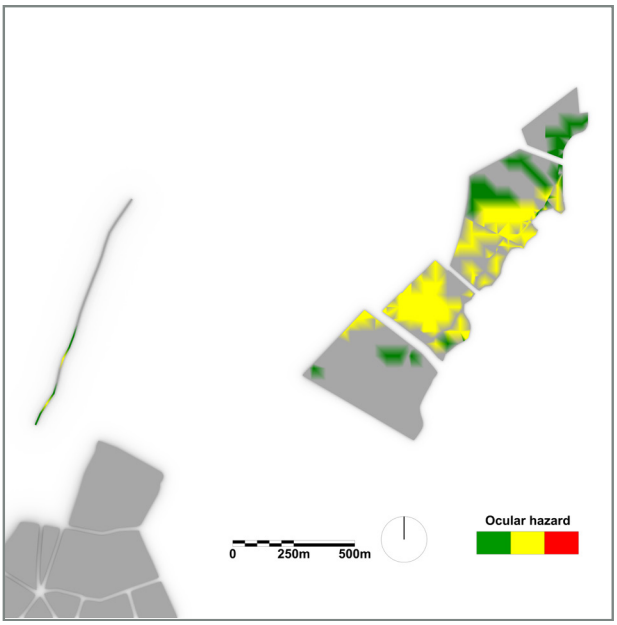
Img. 45: Gare angle frequency



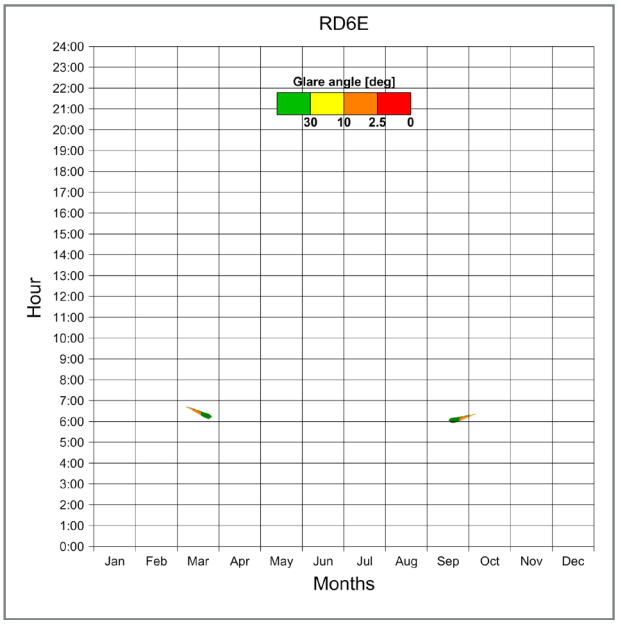
Img. 47: Ocular hazard graph



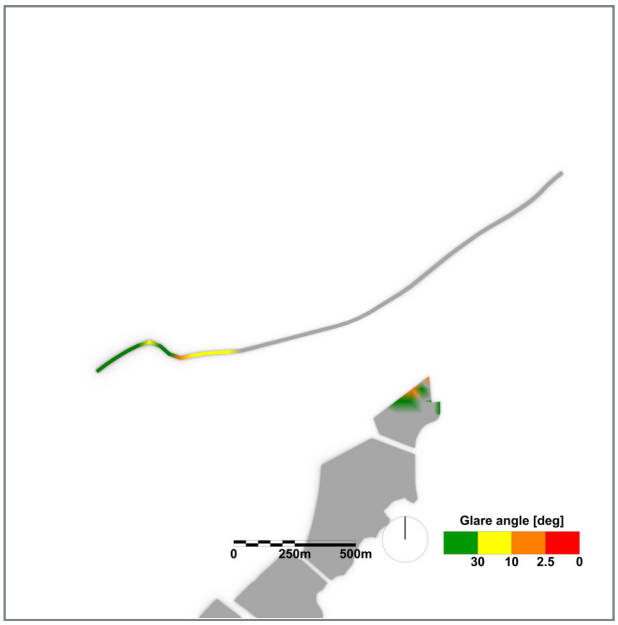
Img. 46: Glare angle map



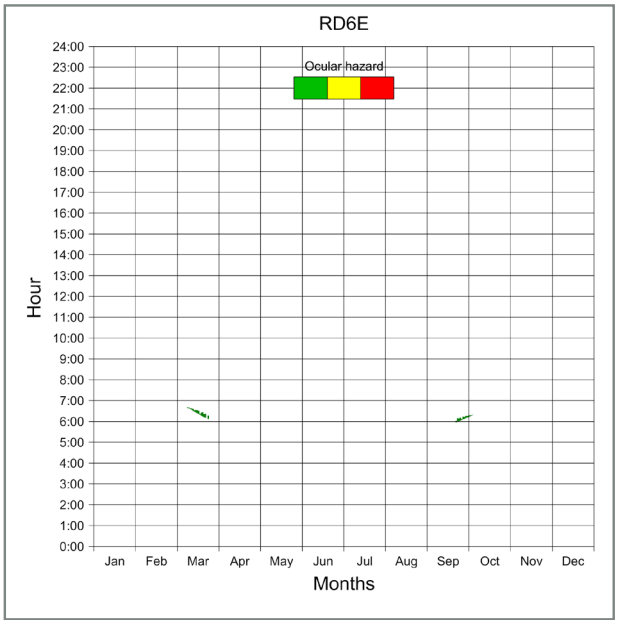
Img. 48: Ocular hazard map



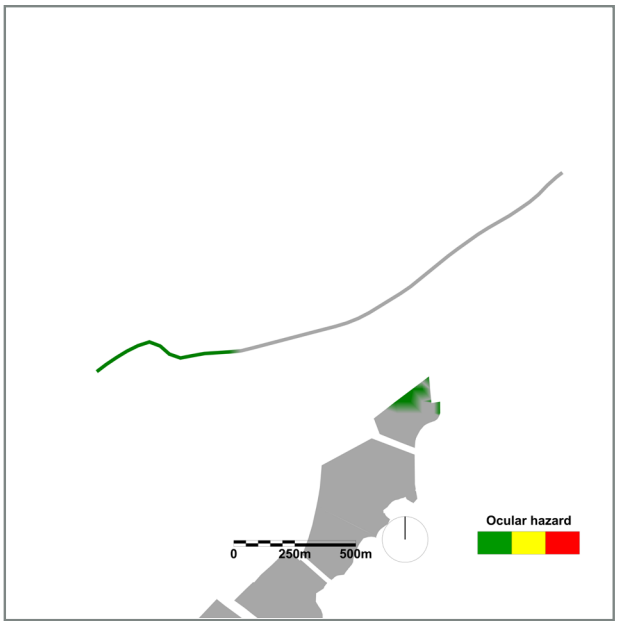
Img. 49: Gare angle frequency



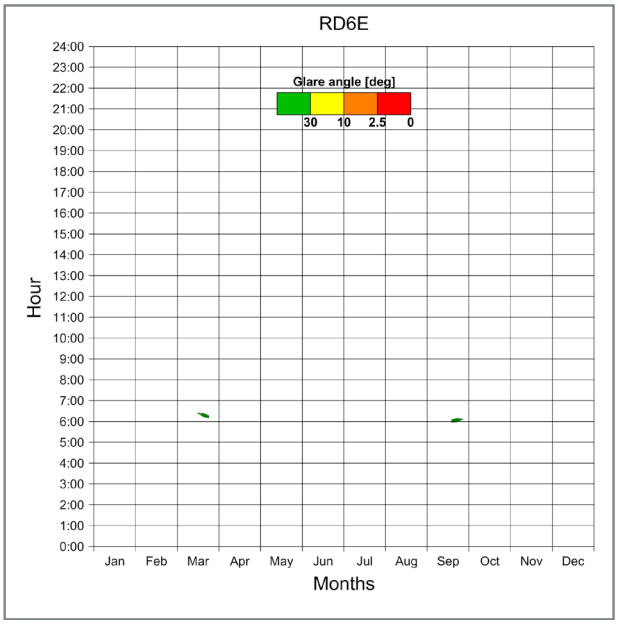
Img. 50: Glare angle map



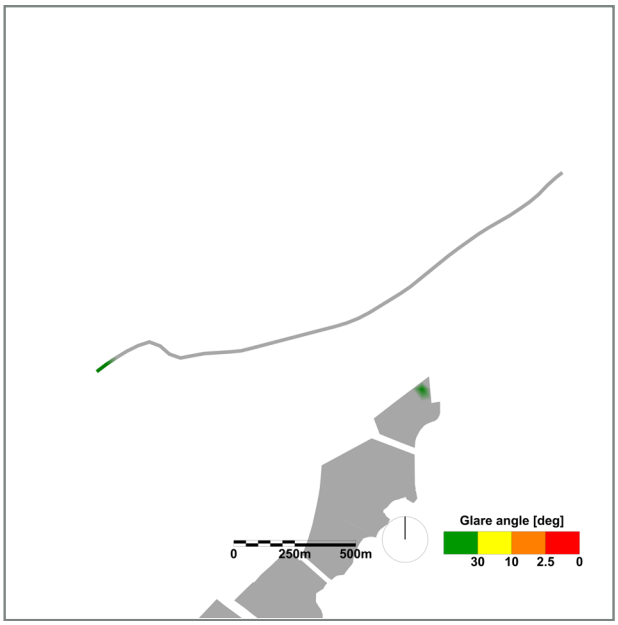
Img. 51: Ocular hazard graph



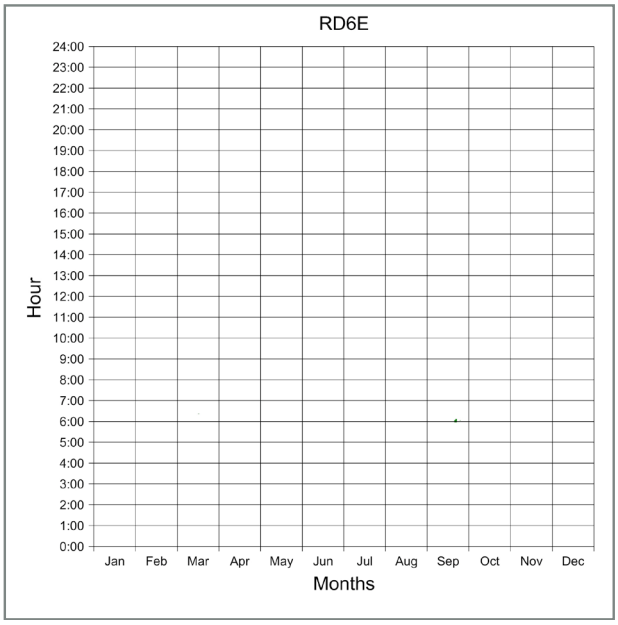
Img. 52: Ocular hazard map



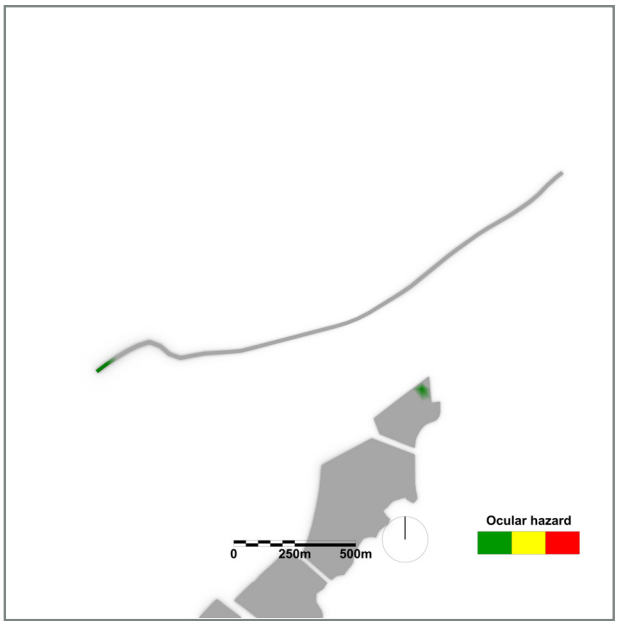
Img. 53: Gare angle frequency



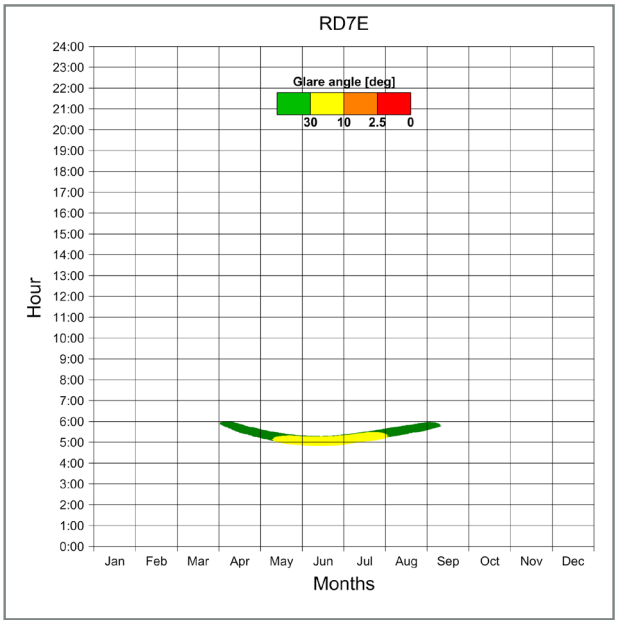
Img. 54: Glare angle map



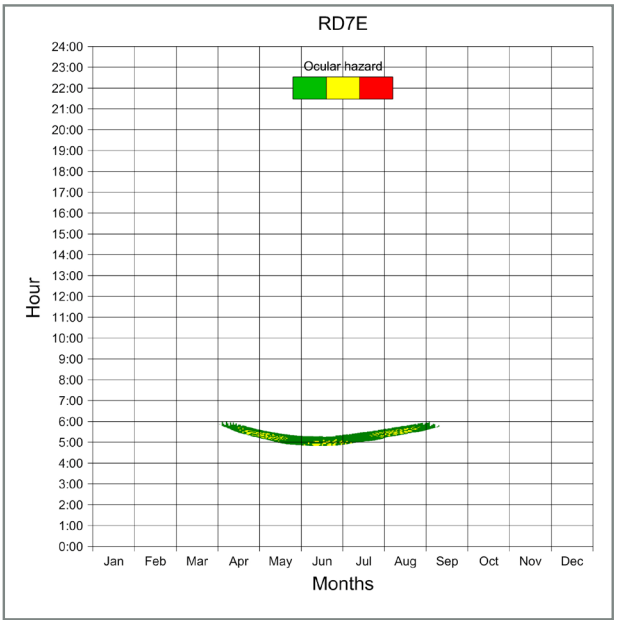
Img. 55: Ocular hazard graph



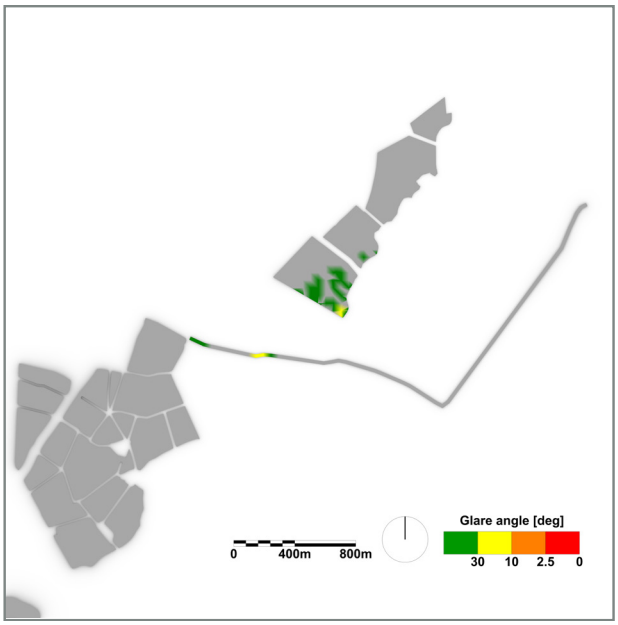
Img. 56: Ocular hazard map



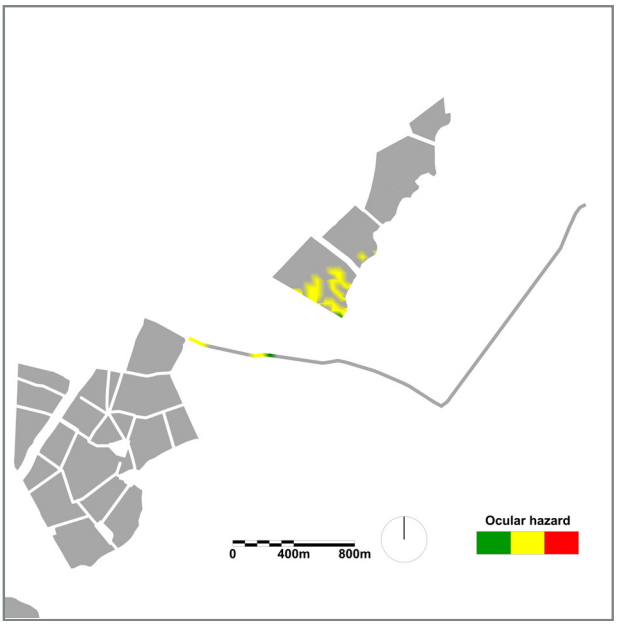
Img. 57: Gare angle frequency



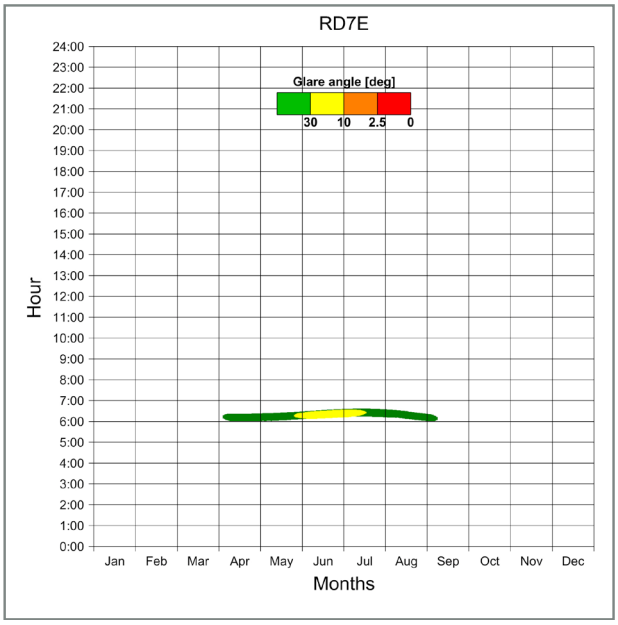
Img. 59: Ocular hazard graph



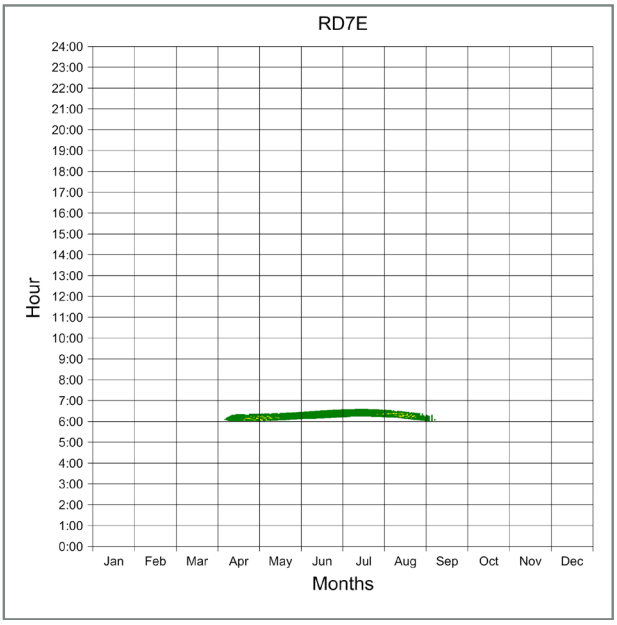
Img. 58: Glare angle map



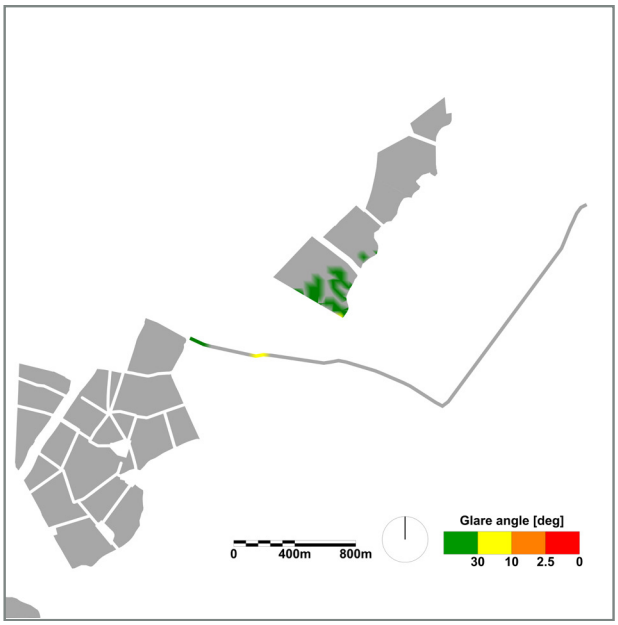
Img. 60: Ocular hazard map



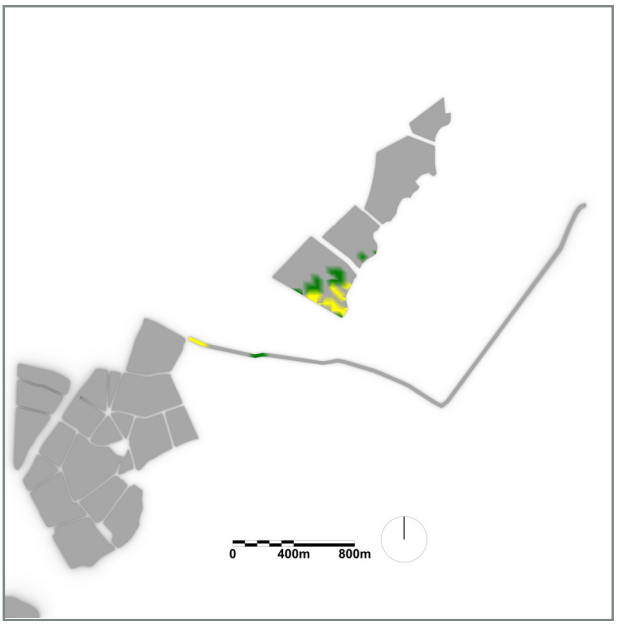
Img. 61: Gare angle frequency



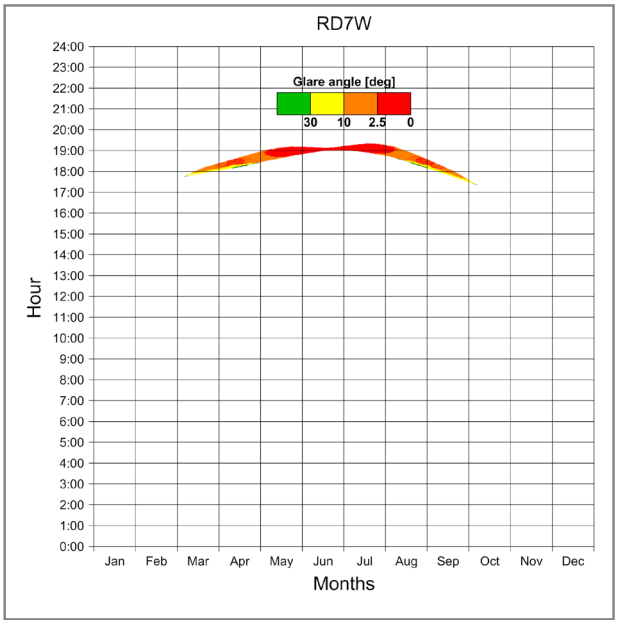
Img. 63: Ocular hazard graph



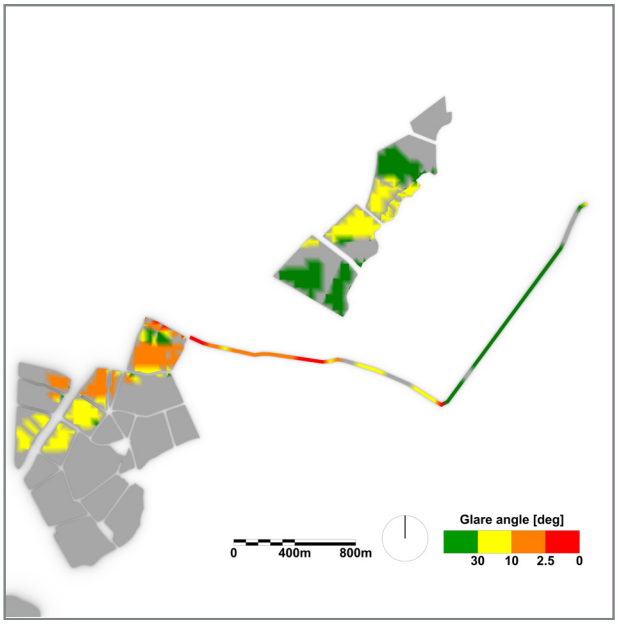
Img. 62: Glare angle map



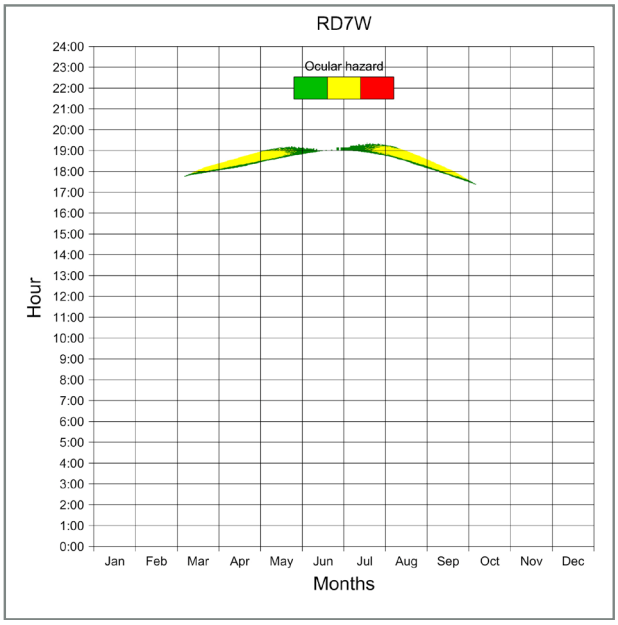
Img. 64: Ocular hazard map



Img. 65: Gare angle frequency

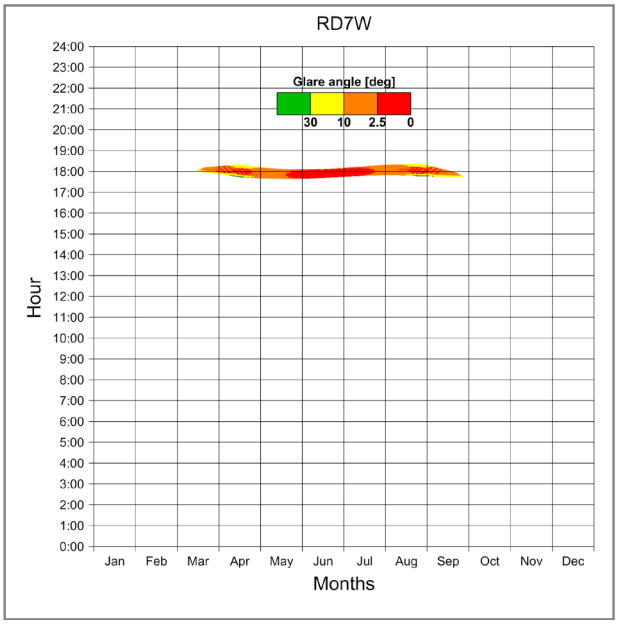


Img. 66: Glare angle map

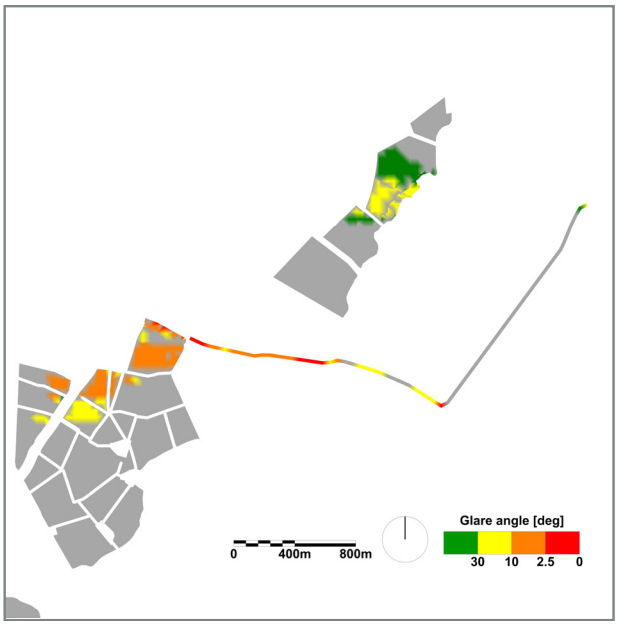


Img. 67: Ocular hazard graph

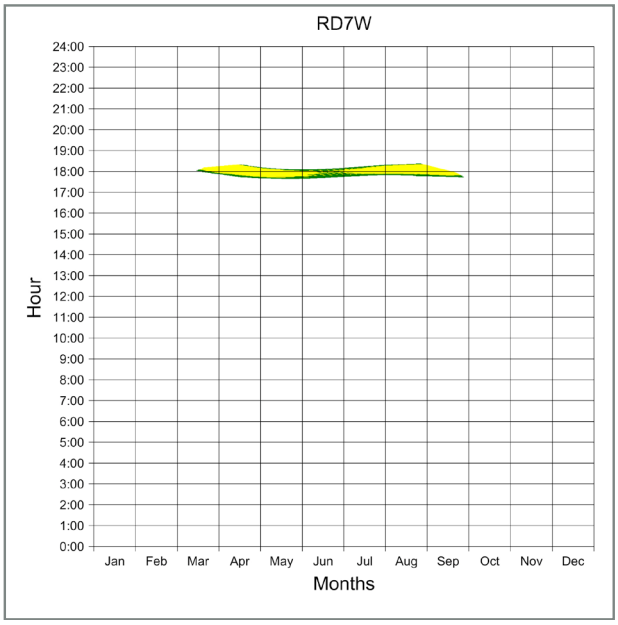
Img. 68: Ocular hazard map



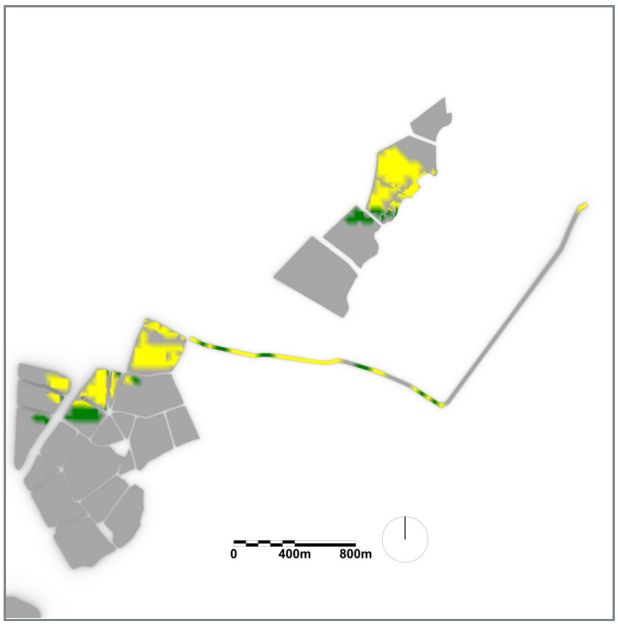
Img. 69: Gare angle frequency



Img. 70: Glare angle map



Img. 71: Ocular hazard graph



Img. 72: Ocular hazard map

Rosefield
Solar Farm

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Application Document Ref: EN010158/APP/8.41
Planning Inspectorate Scheme Ref: EN010158