Appendix M

Landscape

Appendix M1

Visual Impact Appraisal at Viewshed Reference Points (VRPs)

M.1 (a) – Appraisal of Visual Receptor Sensitivity

M.1 (b) – Appraisal of Visual Impact Magnitude

Appendix M.1(a)

Appraisal of Visual Receptor Sensitivity

Degree of Association within each Criterion

Strong association	Moderate association	Mild association	Negligible association

Receptor Sensitivity Criterion and Analysis at each Viewshed Reference Point (VRP)

Susceptibility / Values associated with the view	KEDR2	KEDR3	KEDR4	KEDR7	KEDR10	KEDR11	KEDR13	KEDR14	KEDR15	KEDR21	KEDR24	KEDR30	KEDR31	KEDR38	KEDR39	KEDR40	KEDR41	KEDR42
Susceptibility of receptor group to changes in view																		
Recognised scenic value of the view																		
Views from within highly sensitive landscape areas																		
Intensity of use, popularity (number of viewers)																		
Provision of vast, elevated panoramic views																		
Sense of remoteness/tranquillity at the viewing location																		
Degree of perceived naturalness																		
Presence of striking or noteworthy features																		
Sense of Historical, cultural and / or spiritual significance																		
Rarity or uniqueness of the view																		
Integrity of the landscape character within the view																		
Sense of place at the viewing location																		
Sense of awe																		
Visual Receptor Sensitivity	H	M	M	M	H	M	H	M	M	M	H	H	H	M	M	H	M	M

Susceptibility / Values associated with the view	08MHDR17	09MHDR1	09MHDR3	14MHDR3	15MHDR3	16MHDR3	19MHDR3	20MHDR4	SDDR1	1WWDR	06LC17	06LC32	07LC30	10LC12	10LC13	10LC14
Susceptibility of receptor group to changes in view																
Recognised scenic value of the view																
Views from within highly sensitive landscape areas																
Intensity of use, popularity (number of viewers)																
Provision of vast, elevated panoramic views																
Sense of remoteness/tranquillity at the viewing location																
Degree of perceived naturalness																
Presence of striking or noteworthy features																
Sense of Historical, cultural and / or spiritual significance																
Rarity or uniqueness of the view																
Integrity of the landscape character within the view																
Sense of place at the viewing location																
Sense of awe																
Visual Receptor Sensitivity	VH	M	M	M	HM	M	H	H	HM	ML	ML	ML	ML	L	L	

Susceptibility / Values associated with the view	10LC16	10LC32	06CP5	06CP10	06CP12	06CP13	06CP30	07CP1	10CP7	10CP9	10CP15	10CP17	10CP30	11CP1	11CP30	11CP32	11CP33
Susceptibility of receptor group to changes in view																	
Recognised scenic value of the view																	
Views from within highly sensitive landscape areas																	
Intensity of use, popularity (number of viewers)																	
Provision of vast, elevated panoramic views																	
Sense of remoteness/tranquillity at the viewing location																	
Degree of perceived naturalness																	
Presence of striking or noteworthy features																	
Sense of Historical, cultural and/or spiritual significance																	
Rarity or uniqueness of the view																	
Integrity of the landscape character within the view																	
Sense of place at the viewing location																	
Sense of awe																	
Visual Receptor Sensitivity	**ML**	**ML**	**ML**	**L**	**ML**	**L**	**ML**	**ML**	**HM**	**M**	**ML**	**L**	**ML**	**ML**	**H**	**L**	**L**

Susceptibility / Values associated with the view	06MR7	06MR14	07MR30	10MR31	10AH3	10AH4	10AH5	10AH31	10AH32	10AH33	10AH34	11AH1	14AH1	07KV5
Susceptibility of receptor group to changes in view														
Recognised scenic value of the view														
Views from within highly sensitive landscape areas														
Intensity of use, popularity (number of viewers)														
Provision of vast, elevated panoramic views														
Sense of remoteness/tranquillity at the viewing location														
Degree of perceived naturalness														
Presence of striking or noteworthy features														
Sense of Historical, cultural and/or spiritual significance														
Rarity or uniqueness of the view														
Integrity of the landscape character within the view														
Sense of place at the viewing location														
Sense of awe														
Visual Receptor Sensitivity	**L**	**L**	**L**	**ML**	**H**	**M**	**M**	**HM**	**HM**	**M**	**M**	**H**	**H**	**VH**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR2	Local Road at Grange	SW	4.39	37

Representative of:	• A designated scenic route • Local community views		
Receptor Sensitivity	**High-medium**		
Existing View	This is an elevated panoramic vista from a local Road looking to the south-west over a rolling landscape of pastoral farmland. The foreground is defined by low scrubby hedgerows above which can be seen a more distant slope of fields and hedgerows. Further to the south-west is a planar landscape where hedgerow vegetation has become stacked by perspective to form a vegetated plinth below the flat horizon. One of the most notable features of this view is the large electricity pylon in the foreground at the top of this hill.		
Visual Impact of Maighne Wind Farm	Most of the proposed turbine clusters will be visible from here and the nearest of these is the Drehid-Hortland cluster with the turbines from the Derrybrennan and Cloncumber clusters further beyond in direct alignment. The Ballynakill turbines are screened by the slope on the right hand side of the viewer. The nearest cluster of about eight turbines are seen at a noticeable but not prominent scale across the middle ground of the view. The remaining turbines are all seen at a variety of reducing scales as the distance to the increases. The furthest turbines from the Cloncumber site are seen at a small scale and would be only faintly visible in silhouette against the sky. The combined clusters occupy a relatively broad lateral extent within the context of this vista and is considered that they represent a co-dominant visual presence. In terms of aesthetics, the proposed wind farm clusters are seen in a clear and legible manner spread throughout the rural landscape of the plains. Although there is some overlap between turbines from different clusters, there is enough of a scale disparity between them that there will be little confusion as to their actual spatial separation. There will also be little sense of visual clutter as a result. Instead, the varying perceived scales of the turbines provides a strong sense of perspective and an understanding of the dispersed nature of the development. Even though the turbines occupy much of the lateral extent of this Vista it is clear that they occupy a more modest extent of the overall landscape of the plains. Nonetheless, there is little relief from the view of turbines in this south-westerly view. On balance of the factors outlined above it is considered that the magnitude of visual impact is medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR3	Local road at Knockcor	W	0.89	3

Representative of:	• A designated scenic route • Local community views		
Receptor Sensitivity	**Medium**		
Existing View	This is a relatively open at short distance vista across the flat landscape containing some pastoral farmland in front of a cluster of houses that then back onto Carbury bog. The view beyond is contained by dense band of scrubby woodland at the edge of the bog. The most notable aspect of the vista is view of Carbury Castle on top of Carbury Hill just to the right of the road alignment. This is a relatively small scale feature when viewed from this distance and does not strongly influenced the character of the view. However, it is noted that the presence of Carbury Castle is most likely the reason for this scenic route designations as the view in question is otherwise relatively unremarkable.		
Visual Impact of Maighne Wind Farm	The three turbines from the 'Windmill' cluster will be visible from here at relatively close range against the sky. They are seen at a prominent, but not imposing scale within the context of the bog. They also occupy a relatively small proportion of the overall lateral extent of the vista. The turbines are seen in an unambiguous manner within this scene and they will not conflict in terms of scale with other landscape elements. They are viewed at widely disparate viewing angle to Carbury Castle and they will not intrude on the view of this heritage feature. The turbines are not considered to be incongruous in this anthropogenic landscape setting as they are well assimilated in terms of both scale and function. For the reasons outlined above the magnitude of visual impact is deemed to be medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR4	Local road at Teelough	NE	1.78	8

Representative of:	• A designated scenic route • Local community views		
Receptor Sensitivity	**Medium**		
Existing View	This view to the north-east across a large open field from a gateway on an otherwise enclosed section of road near Williamstown House and demesne. On the far side of the field is a dense and narrow horizontal band of vegetation generated by hedgerow vegetation backed by scrubby woodland that surrounds Carbury bog.		
Visual Impact of Maighne Wind Farm	The three turbines from the Windmill cluster are clearly visible from here above the middle ground vegetation. They will rise in silhouette at a modest, but noticeable scale and they will occupy a relatively small proportion of the available vista. Nonetheless, they are a prominent feature of this otherwise homogenous view. Thus, the visual presence of the turbines is considered to be co-dominant. The turbines are seen in a clear and legible manner within the context of a broad and open rural vista. They are well accommodated in terms of scale and extent within this view and they will also not conflict with it in terms of character. There will be a minor degree of overlap between two of the turbines, but one is clearly to the fore of the other and will be little sense of visual clutter as a result. Overall, it is considered that the magnitude of visual impact is low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR7	Local road north of Prosperous	W	6.27	1

Representative of:	• A designated scenic route • Local community views		
Receptor Sensitivity	**Medium**		
Existing View	Although this is designated as a scenic vista in respect of views towards Ballynafagh Lake a short distance to the west, this is not a highly evident landscape feature from this local road given the degree of screening at the roadside by hedgerows and dwellings. Nonetheless, it is an open rural landscape of broad landscape patterns hinting at the bog context a short distance to the east and west, which is further evidenced by blocks of plantation forestry commonly found at bog fringes.		
Visual Impact of Maighne Wind Farm	Several blade tips of the nearest turbines of the Derrybrennan or Cloncumber cluster are just discernible through sections of foreground hedgerows. They are likely to be noticed only due to the rotation of the blades and, even so, the visual presence of the turbines is considered to be minimal in the context of this view. Although the view of blade tips rotating amongst sections of foreground vegetation is not ideal in an aesthetic sense, due to the very low degree of visibility, there is not considered to be discernible impact on visual amenity. Thus, the magnitude of visual impact is considered to be Negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR10	Local road at Oughterard	NW	16.44	47

Representative of:	• A designated scenic route		
Receptor Sensitivity	**High-medium**		
Existing View	This is a slightly elevated and vast panoramic vista across a broad lowland landscape contained predominantly in pastoral farming and tillage within the fore–to-middle ground context. The vegetation structures within the view, which consist of hedgerows, patches of woodland and conifer plantations all become stacked together in perspective to form a dark band of vegetation below the distant flat horizon. Although there are no remarkable features of this view other than its extent, there is a strong degree of integrity terms of the landscape character in view.		
Visual Impact of Maighne Wind Farm	All of the proposed turbines will be visible from this location, but at a long distance. Consequently, the turbines are seen as very small scale features sprinkled throughout the dense band of vegetation on the horizon. Although the turbines are seen at a small scale and will only be faintly visible in silhouette, they occupy a reasonable portion of the distant landscape in view. They will also be a notable distinctive feature within the view and, on balance, the visual presence is considered to be in the order of sub-dominant to minimal. At such a long distance the turbines will have little effect on the amenity of the view from this location. They will be a distinctive feature in the context of the plains, but they are not considered to be out of keeping with the productive rural character of the view. For the reasons outlined above, the magnitude of visual impact is considered to be low-negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Low-negligible**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR11	Allen Cross roads	NW	3.61	20

Representative of:	• A designated scenic route • Local community views		
Receptor Sensitivity	**Medium**		
Existing View	The northward view from Allen crossroads is a relatively complex one consisting of pastoral farmland and hedgerows, residential development, a village context with a church spire and a series of utility structures and lines that cross the view as well as a clutter of roadside signage. Immediately to the south is the forest clad Hill of Allen, which contains the view at a short distance and provides some sense of place to the locality.		
Visual Impact of Maighne Wind Farm	Most of the turbines from the Cloncumber cluster will be visible from here at relatively close range. They are seen at a noticeable scale between other elements in the foreground such as signs and utility poles. Together with a couple of turbines from the Derrybrennan cluster the proposed development will occupy a considerable portion of the north-west of the Vista. For these reasons the visual presence is considered to be co-dominant. In terms of aesthetics, the turbines are seen at a relatively legible manner rising at a variety of scales above foreground vegetation. There is some sense of perspective generated between the nearest and furthest turbines, which aids in the comprehension of the depth of the proposed layout. Although the turbines are not seen to overlap with each other, they will add to the visual clutter that already exists at this location when viewed in combination with other foreground structures. On balance of the factors outlined above is considered that the magnitude of impact is medium at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR13	Local road at Bostoncommon	N	1.71	36

Representative of:	• A designated scenic route • Local community views		
Receptor Sensitivity	**High-medium**		
Existing View	This is a vast panoramic view to the north and northwest across the plains of County Kildare, County Meath and County Offaly from an elevated section of road on the northern slopes of Boston Hill. The foreground of the vista is dominated by a large quarry near the base of the Hill which is surrounded by broad scale farmland. Beyond can be seen a rural landscape contained in cutaway peatland and pastoral farmland with transitional zones of scrubland and conifer forests between these principal forms of land cover. The horizon to the north is flat and the Lagan cement factory near Kinnegad can be seen in the distance to the northwest.		
Visual Impact of Maighne Wind Farm	This is a dramatic view of the proposed wind farm with the turbines from the Cloncumber cluster visible at a prominent scale spanning across the middle ground context. Between and beyond these turbines are the other clusters of the development seen at diminishing scales within a relatively contained viewing arc directly North. In the context of this vast vista and the range of land uses that are visible, the proposed wind farm is considered to have a visual presence in the order of dominant to co-dominant. Aesthetically, this is a highly legible view of the proposed wind farm that allows a clear comprehension of where the turbines are placed within the landscape context. There is a strong degree of perspective generated between the turbines of the Cloncumber cluster and those of the more distant clusters. This affords a sense of the dispersion of the turbines throughout this landscape and it also reduces the sense of visual clutter that might otherwise be associated with the view of so many turbines within a condensed viewing arc. In a thematic sense the turbines will complement rather than conflict with the variety of productive and extractive land uses within view. In the spatial sense they will not dominate the underlying land use patterns, but they are seen to occupy a considerable extent of the plains. On balance of the factors of visual presence and visual amenity described above the magnitude of visual impact is considered to be Medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR14	R414 at Lullymore East	360°	1.82	27

Representative of:	• A designated scenic route • Local community views • A major route		
Receptor Sensitivity	**Medium**		
Existing View	This is a vast and strongly horizontal vista across the bog landscape in all directions. This is one of the few locations within the central study area where roadside screening does not limit views across the bog landscape to integrate degree. To the South can be seen several low hills in the middle distance. These are the Hills of the chair of Kildare landscape character area consisting of the Hill of Allen, Dunmurray Hill and Red Hill. Although these are not of the significant scale they are the only vertical landscape elements within view.		
Visual Impact of Maighne Wind Farm	The nearest of the proposed turbines is a short distance to the North West and is part of the small Derrybrennan cluster. Two other turbines from this cluster are seen at a more modest scale to the north with the larger Drehid-Hortland cluster seen in the distance beyond. The blade sets of the Ballynakill cluster would also be faintly visible at a very small scale on the northern skyline. The Cloncumber cluster will be seen at a relatively prominent scale in a southward direction to the fore of the 'Chair of Kildare Hills'. Although none of the turbines is considered to be of an overbearing scale within this broad peatland vista, the viewer is surrounded by turbines though most aspects. Therefore, the visual presence is considered to be in the order of dominant to co-dominant. The turbines are considered to be comfortably assimilated in terms of both scale and function within this broad peatland vista. Although they are tall built structures in a relatively undeveloped landscape, they provide some vertical relief to this strongly horizontal and otherwise homogenous vista. The Cloncumber turbines will intrude on the view of the Chair of Kildare Hills. However, they are a loosely spaced, permeable form of development that does not represent a visual obstruction. They are also clearly contained within the lowland landscape that surrounds this crest of Hills giving a strong sense of separation. On balance of the factors outlined above, the magnitude of visual impact is considered to be medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR15	R414 at Barneran	S	0.84	10

Representative of:	• A designated scenic route • Local community views • A major route		
Receptor Sensitivity	**Medium**		
Existing View	This is a broad lowland vista across a large grassland field with a low degree of containment by scrubby hedgerows and its perimeter. Rising just above the hedgerow vegetation are the hills that form the chair of Kildare landscape character area, most notably the Hill of Allen. These Hills are the only visible aspect of the skyline beyond the hedgerow vegetation in what is a strongly horizontal Vista. Although the scenic designation attached to this section of road is understood to relate to the view towards the Hill of Allen, this hilltop is not a prominent backdrop to this lowland view. Furthermore, the large quarry, communications mast and conifer plantations that occupy the hill are clearly evident from here.		
Visual Impact of Maighne Wind Farm	The proposed turbines from the Cloncumber cluster will rise at a prominent scale above the horizon to be viewed almost fully in silhouette. Whilst the turbines are not spatially dominant or overbearing in terms of vertical scale within this broad open vista, they are by far the most noticeable feature of the view and would be the defining element of it. For these reasons the proposal is considered to have a dominant visual presence within this scene. In terms of aesthetics, the proposed turbines are seen in a clear and unambiguous manner with a strong degree of perspective generated between the nearest and furthest machines. This aids the comprehension of the depth of the layout and the generous spacing between turbines. Within this productive lowland context the proposed turbines are considered to be comfortably accommodated in terms of their scale and function. The main aesthetic issue in terms of this vista is the intrusion on the view of the Hill of Allen and the fact that they will draw attention away from this landscape feature. Whilst the Hill of Allen is not a prominent feature within the vista anyway, this is one of few locations where it is clearly visible above the apron of lowland farmland and bogs. The main ameliorating factor is that the turbines represent a permeable form of development and will not obstruct the view of the Hill. Although they will rise far above the undulating skyline this allows the blade sets to rotate freely above it. There will not be a perception that the turbines dwarf the hill as they are obviously much nearer to the viewer. Furthermore, there is a clear distinction between the lowland landscape context containing the turbines and the elevated crest of hills that rises out of this. This reinforces the sense that the turbines are contained within a separate landscape character unit. Another ameliorating factor is that the Hill of Allen currently accommodates plantation forestry, quarries, communications masts and a reservoir. Other than its associated heritage value it does not stand out as a particularly revered landscape feature in a visual sense. Overall, it is considered that the magnitude of visual impact at this location is High-medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**High-medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR21	R415 at Rathbride	W	7.15	31

Representative of:	• A designated scenic route • A major route		
Receptor Sensitivity	**Medium**		
Existing View	This is a relatively broad westerly vista from near Pollardstown Fen overlooking a hay field in the foreground and pastoral farming context beyond. This view is contained in the middle ground by a low undulating ridgeline that contains Dunmurry Hill and the Hill of Allen.		
Visual Impact of Maighne Wind Farm	A considerable number of turbines would be visible above the saddle between the two Hills. These consist of turbines from the Cloncumber cluster, which are seen at a noticeable but modest scale from this distance. Between the Cloncumber turbines can be seen clusters of more distant turbines from the various clusters to the North. These will be seen at a slightly smaller scale and they are also likely to be less obvious within the view due to the effects of atmospheric perspective, which is the fading of distant objects. It is considered that the proposed turbines will have a visual presence in the order of co-dominant to sub-dominant within this vista. In terms of visual amenity, the nearest turbines from the proposed Cloncumber cluster are seen in an unambiguous manner with the blade sets rotating freely above the skyline Ridge. However, there will be some visual clutter associated with the view of the more distant turbine clusters between them. This could also lead to a degree of visual confusion in relation to scale and relative distances. Whilst there may be some visual irritation caused by the rotation of the more distant turbine blade sets on the skyline ridge, this is ameliorated to some degree by the clearer view of the Cloncumber turbines, which would draw most of the attention. The proposed turbines are all contained within the saddle between Dunmurry Hill and the Hill of Allen and will not compete with these landscape features in terms of vertical height. On balance of the reasons outlined above the magnitude of visual impact is considered to be medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR24	R418 at Moortown	N	18.76	36

Representative of:	• A designated scenic route • A major route		
Receptor Sensitivity	**High**		
Existing View	This is an elevated, vast, panoramic vista across the midlands from a location on the R418 that affords a view of the important heritage hilltop at Dún Ailinne which is understood to be the inauguration site of the Kings of Leinster. Further to the West can be seen various undulations on the skyline including the Slieve Bloom Mountains and the crest of Hills containing the rock of database. The landscape in view is that a rolling pastoral farmland that spreads across the plains from the middle ground into the far distance.		
Visual Impact of Maighne Wind Farm	Almost all of the proposed turbines will be visible from here but at a long distance. They will be faintly visible as small scale features rising just above the distant skyline in silhouette. Whilst they occupy a relatively broad lateral extent, in the context of this Vista the proposed turbines are still considered to have a visual presence in the order of subdominant to minimal. In terms of aesthetics, some of the nearer turbines from the Cloncumber cluster will be seen in a relatively unambiguous manner with blade sets rotating freely above the skyline. Some of the more distant clusters to the North would be seen in a slightly cluttered arrangement with turbines overlapping with each other and blades sets rotating against intervening skyline Ridge. However, it is these more distant turbines that will be less noticeable in the context of the overall Vista and the slightly nearer Cloncumber cluster. The turbines are all seen at a disparate viewing angle to the nearby hilltop at Dún Ailinne and will not intrude or detract from the view of it. On the basis of the reasons outlined above the visual impact is considered to be low to negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High	**Low-negligible**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR30	Local road at Newtown	SW	2.87	18

Representative of:	• A designated scenic route • Local community views		
Receptor Sensitivity	**High-medium**		
Existing View	This is a slightly elevated view from within the Newtown Hills that takes in a rolling landscape of pastoral farmland contained within the network of geometric hedgerows. In this respect it has something of a classical pastoral aesthetic which is detracted from slightly by a line of pylons that crosses the brow of the hill in the middle ground. Between foreground hills, a more distant view of the plains opens up to the south-west. This is seen as a horizontal band of vegetation generated by hedgerows that have become stacked in perspective. This view is enjoyed by a number of houses that line this section of road.		
Visual Impact of Maighne Wind Farm	Most of the turbines from the Drehid-Hortland cluster are visible from here at diminishing scales is as they run away from the viewer. The nearest turbines are seen at a reasonable scale, but with their bases partially screened by terrain and vegetation which tends to diminish their perceived height. The furthest turbines are seen at a much reduced scale and all will be seen with low contrast against a backdrop of sky. Overall, the proposed turbines are considered to have a co-dominant visual presence within this scene. Aesthetically, this is a legible view of the proposed turbines spreading across the planar landscape to the southwest of the Newtown Hills. There is a good degree of perspective generated between the nearest and furthest turbines, which reinforces the sense of dispersion in the layout. There will be some minor instances of visual clutter generated by turbines overlapping with each other and blades sets rotating amongst skyline treetops. However, the turbines do not appear out of place in this productive rural scene and there is a clear comprehension that they are contained within the plains beyond this crest of hills. On the basis of the reasons outlined above the magnitude of visual impact is considered to be Medium-low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Medium-low**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR31	M7/R445 at the Curragh	N	11.11	1

Representative of:	• A designated scenic route • A major route • A popular recreation feature		
Receptor Sensitivity	**High-medium**		
Existing View	This is a slightly elevated vista from the M3 motorway overlooking the R445 regional road with the Curragh Racecourse just beyond. The racecourse slopes gently away from the viewer and forms a low Ridge towards the grandstand on the opposite side. This limits the view of the landscape beyond except for a couple of distant hilltops, which rise just above it. These include Red Hill and Dunmurry Hill, which are part of the 'Chair of Kildare Hills' LCA.		
Visual Impact of Maighne Wind Farm	At most a couple of distant blade tips from the proposed Cloncumber turbine cluster may be visible amongst the treetops and buildings on the near middle ground Ridge. However, these are likely to be barely discernible in the context of this richly varied and dynamic Vista from the M7 motorway, which takes in a view of the Curragh landscape in all directions. For this reason the magnitude of the visual impact is considered to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR38	Harberton Bridge on the Barrow Line	360°	2.53	21

Representative of:	• A designated canal view • A major route • Local Community views
Receptor Sensitivity	**Medium**
Existing View	This is an intermittent 360° view from a slightly elevated location on top of Harberton Bridge as it crosses the Barrow Line Canal. The foreground consists of canal-side dwellings and a pub with glimpses of pastoral farmland and scrubby woodland surrounding the bogs. The principal aspects of this view are along the canal in both directions.
Visual Impact of Maighne Wind Farm	The proposed turbines will be intermittently visible between the elements of foreground screening, particularly mature trees along the canal site. Indeed, the nearest cluster of turbines (Cloncumber) is almost fully screened from view by foreground trees. An open section of the view across bogland to the north reveals a number of turbines from the Derrybrennan cluster with the Drehid-Hortland cluster of turbines seen beyond at a greater distance. All of these turbines are seen at a relatively modest scale within the bog context. For these reasons the visual presence is considered to be sub-dominant in the context of this scene. Aesthetically, it is not an ideal scenario to be viewing turbine blades rotating within the branches of foreground trees as this can lead to a degree of visual clutter and ambiguity. However, the clearer view of turbines to the north provides greater legibility to the scene. The turbines are not considered to be incongruous within this setting and embrace the spirit of industry, which is synonymous with the creation of the canal network. It is not considered that the occasional view of turbines from the canal or canal bridges is in any way a detraction from the experience of these man-made waterways. For the reasons outlined above, the magnitude of visual impact is considered to be medium-low.
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium-low**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR39	Hamilton's Bridge on the Grand Canal	360°	1.64	15

Representative of:	• A designated canal view • A major route • Local Community views		
Receptor Sensitivity	**Medium**		
Existing View	This is a slightly elevated view from the top of Hamilton's Bridge over the Grand Canal. The principal view is to the north and south along the canal. There are also open views over a landscape of marginal farmland and bogs to the west and a small cluster of houses in the foreground to the east. This is a relatively tranquil setting away from the main road.		
Visual Impact of Maighne Wind Farm	A pair of turbines from the Derrybrennan cluster can be seen to the west rising within the bog landscape context behind a foreground utility pole. Several turbines from the Cloncumber cluster can also be seen in direct alignment with the canal to the south. These are seen at a more modest scale than the Derrybrennan turbines. Neither of these clusters of turbines are particularly prominent within the view and overall, their visual presence is considered to be sub-dominant. The pair of turbines to the west will overlap with each other and the foreground utility pole generating a degree of visual clutter from this precise location. Similarly, the Cloncumber turbines will be seen to rotate amongst the treetops of canal-side vegetation. These are relatively minor aesthetic issues in the context of this view as the view of the turbines is otherwise fairly legible within this robust landscape context. It is, therefore, not considered that the 'canal view' is significantly detracted from by the presence of wind turbines. Overall, it is considered that the magnitude of visual impact is Low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR40	Local road at Furryhill	NW	21.38	46

Representative of:	• A designated scenic view		
Receptor Sensitivity	**High-medium**		
Existing View	This is a vast panoramic vista to the northeast from a low ridge at the southern perimeter of the midland plains. The immediate foreground consists of a gently rolling landscape of large scale pastoral fields loosely defined by sporadic tree-lined hedgerows. A line of electricity pylons also crosses the view in the near middle ground. This rolling landscape gives way to a broad planar landscape in the distant middle ground that is read as an ever tightening pattern of fields and hedgerows, which extends to a flat horizon in the far distance. This pattern is briefly disrupted on occasion by settlements and conifer plantations.		
Visual Impact of Maighne Wind Farm	All of the proposed turbines will be visible from here, but at a long distance so that they are seen as very small scale features, faintly revealed in silhouette above the distant skyline. Nonetheless the proposal is seen to have a relatively broad lateral extent from this viewing angle and will occupy much of the visible horizon. On balance of these factors, the visual presence is considered to be sub-dominant to minimal. Aesthetically, the proposed turbines will be perceived as a series of linear clusters above the horizon. Given the condensing effects of perspective and distance, there is surprisingly little overlap between turbines and though there is some degree of visual clutter on the horizon, this is considered to be a minor aesthetic issue given the low degree of visibility overall. The proposed turbines will not appear out of place within this anthropogenic landscape context. For the reasons outlined above the magnitude of visual impact is considered to be Low-negligible from here.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Low-negligible**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR41	Tower on the Hill of Allen	360°	4.04	47

Representative of:	• A designated hilltop view • A heritage feature • A recreational amenity feature		
Receptor Sensitivity	**Medium**		
Existing View	This is a remarkable elevated panoramic view from the top of the tower on the Hill of Allen. However, these attributes do not translate directly to sensitivity as this vantage point affords a view of the full gamut of land uses contained within the central study area. These include a vast quarry and a communications mast in the immediate foreground, surrounded by plantation forestry, which then gives way to a broad scale field pattern within the lowland context at the base of the hill. In the middle distance can be seen vast areas of cutaway peatland surrounded by transitional scrubland and conifer plantations. At greater distances, the land use pattern become tightened by perspective to form a dark band of vegetation below the skyline. Rising from this dark plinth to the northwest is the Lagan cement factory, which is seen at a fairly small scale, but tends to be highlighted by its plume. To the northeast in the near middle distance can be seen the settlements of Allen and Kilmeage.		
Visual Impact of Maighne Wind Farm	From this elevation and viewing distance the turbines of the nearest turbine cluster (Cloncumber) can be seen at a modest, but eminently noticeable scale within the middle ground bog and transitional farmland context. They are also contrasted against a dark backdrop of terrain. All of the remaining turbines can be seen at diminishing scales in a meandering pattern that runs away to the northeast. The more distant turbines of the Drehid-Hortland and Ballynakill clusters are also seen more faintly above the distant horizon. The proposed wind farm is a distinctive element, even within this diverse and dynamic landscape setting and the proposed turbines will occupy a broad viewing arc. Within this arc they also have a considerable intensity with few significant gaps. Overall, It is considered that the proposed turbines will have a co-dominant visual presence within the context of the complex 360° vista afforded from here. This is a striking view of the proposed wind farm in both a compositional and thematic sense. The dispersed layout of the clusters and of the individual turbines is clearly apparent in this three dimensional view of the scheme. There is a desirable sense of perspective generated between the nearest and furthest of the turbine clusters, which highlights the physical separation between them. The turbines occupy or lie adjacent to sections of cutaway peatland, highlighting a potential new era in energy production for this landscape. The turbines can also be read as a complementary additional layer of productivity above the existing working rural landscape. The only aspects of the proposal that are considered to detract from this scene to a minor degree is the overall extent and intensity of turbines within the northern quarters. The latter giving rise to a degree of visual clutter, but only in relation to the more distant turbine clusters. On balance of these reasons the magnitude of visual impact is considered to be Medium-low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium-low**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
KEDR42	Barrow Canal Bridge at Glenaree	NE	0.56	7

Representative of:	• A designated canal view • Local community views
Receptor Sensitivity	**Medium**
Existing View	This is a slightly elevated view from the canal bridge and Lough at Glenaree. Whilst the view along the canal to the southwest takes in a broad and open landscape of marginal farmland and forestry, the view to the northeast is more strongly contained by mature canal-side vegetation. Another prominent feature of the view is the lock keeper's house in the immediate foreground on the southern side of the canal.
Visual Impact of Maighne Wind Farm	Approximately half of the turbines from the Cloncumber cluster will be seen from here at a prominent scale rising above the canal-side vegetation on alignment with the canal view to the northeast. They will be a defining feature of this canal view and are considered to have a dominant visual presence. This is a dramatic view of the turbines principally due to the perceived scale of the nearest turbine, which creates a strong degree of perspective in conjunction with the smaller scale of the turbines beyond. This sense of perspective and the linear arrangement of the turbines are complementary to the view of the canal. Indeed, it appears that the turbines have been deliberately arranged to hug the alignment of the canal in an unapologetic manner. Rather than detracting from the view of the canal, it is considered that the turbines will provide a distinctive feature of variation for this short section of the canal journey. The fact that turbines will not be a constant feature of the view from the canal is evidenced by the degree of screening of the remainder of the Cloncumber cluster, which lies only a short distance beyond. A minor detraction from the view of the turbines at this locality is the rotation of some of the blade sets along the top of the tree line. Although this can cause visual irritation or ambiguity in some instances, the potential for this to occur is strongly diminished by the clearer view of the most prominent turbines. On balance of the factors outlined above the magnitude of visual impact is considered to be medium at this location.
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MHDR17	Hill of Tara	360°	25.34	42

Representative of:	• A candidate world heritage site • A designated scenic view
Receptor Sensitivity	**Very High**
Existing View	This internationally renowned heritage location affords 360° of the surrounding landscape for vast distances due to the prominent nature of Tara Hill and the lack of containment by significantly elevated terrain for long distances. The commanding view and visual connection to other prominent hills in the surrounding landscape is understood to be central to its heritage value. Beyond the heritage features on the hilltop, the vista takes in the flat to mildly undulating rural landscape of the east midlands with few prominent landscape features. On the distant skyline, the most distinctive upland area is the Wicklow Mountains to the south. To the north and northwest are several slightly elevated undulating sections of skyline. The most notable being Loughcrew to the northwest and Lough an Leagh further to the north. The intervening landscape is read as a pattern of fields and hedgerows that tightens with distance to form a dark band of vegetation below the distant skyline. Some mature foreground trees surrounding the church and lower slopes of Tara Hill screen small sections of the landscape beyond.
Visual Impact of Maighne Wind Farm	The proposed turbines will be visible in a series of clusters at a very small scale above the flat skyline to the southwest. Whilst they will occupy a reasonable lateral extent this represents a small proportion of the 360° view afforded from here. The turbines will have a low degree of contrast against the sky and will only be faintly visible even in clear viewing conditions as a consequence. The perceived scale of the turbines diminishes marginally from right to left due to the relative proximity of the clusters. The nearest cluster is Ballynakill at the northern end of the proposal, which is 26km away. Whereas, the most distant cluster is Cloncumber at the southern end of the development, nearly 42 km away. In the right atmospheric conditions the turbines may be a noticeable feature rising above the otherwise homogenous land cover of the plains to the south-west. On balance of these reasons the visual presence is considered to be sub-dominant to minimal. In terms of layout, the nearest clusters have a regular spacing that avoids turbine overlap and the turbines are fully revealed above the skyline. The more distant clusters become more tightly spaced due to perspective and some of them will only display blade sets on the skyline due to the intervening terrain and vegetation. Whilst this can give rise to a sense of visual clutter this effect is unlikely to occur at such a vast distance and in the context of the clearer view of the turbine clusters to the north. The turbines are not considered to be out of place in the anthropogenic, productive rural landscape that entirely surrounds the Hill of Tara. There is a minor degree of discord between the scale and extent of the proposed turbines and that of the finer grained pattern of the rural landscape below them. On the basis of the factors outlined above, it is considered that the magnitude of visual impact from the Hill of Tara is Low-negligible.
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.

	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Very high	**Low-negligible**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MHDR18	Bridge over the River Boyne at Donore	S	5.62	0

Representative of:	• A designated scenic view • A major route		
Receptor Sensitivity	**Medium**		
Existing View	This is a relatively contained view across the floodplain of the River Boyne near Donore. The main aspect of the view is the river itself, which is surrounded on all sides by a low level of riparian vegetation, which quickly gives way to fields of marginal pasture and cropping. The southerly view is contained by a band of hedgerow vegetation in the middle distance.		
Visual Impact of Maighne Wind Farm	Only the blade tips of a couple of turbines from the proposed Ballynakill cluster will be visible from here rising amongst the treetops in the dense hedgerows and vegetation to the South. Whilst they are on direct alignment with the River they will be barely discernible in the context of the overall view. Consequently, the turbines are considered to have been negligible impact on the amenity of the scene.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MHDR30	Local road at Coole	W	8.72	14

Representative of:	• A designated scenic view • A major route		
Receptor Sensitivity	**Medium**		
Existing View	This is a slightly elevated panoramic view to the west taking in a foreground of generous sized pastoral fields defined by clipped hedgerows. Beyond can be seen further glimpses of pastoral farmland within an increasingly dense matrix of hedgerows and woodlands due to the effects of perspective. The view is framed on either side by large mature trees at the roadside, which give it something of a picturesque and classical pastoral character.		
Visual Impact of Maighne Wind Farm	The proposed turbines from the northernmost Ballynakill cluster will be seen to rise at a relatively modest scale above the skyline vegetation to the west. They are partially screened so that only their blade sets can be seen above the skyline. The blade tips of some of the other central clusters of proposed turbines can just be seen within the tops of intervening vegetation to the southwest. These will be barely noticeable in the context of the view of the Ballynakill turbines. In terms of visual presence, the development is considered to be sub-dominant within this view This is a relatively unambiguous view of the Ballynakill turbines although their precise placement within the landscape is not readily interpreted due to the screening provided by intervening terrain and vegetation. Nonetheless, the blade sets of these turbines will rotate freely above the skyline and there are few instances of turbine overlap. Whilst some of these effects will occur in relation to the more distant turbine clusters, these turbines are barely discernible in this view and they will not detract from visual amenity to any significant degree. For the reasons outlined above the magnitude of visual impact is considered to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MHDR34	Royal Canal view from the Blackshade Bridge	SE	2.88	19

Representative of:	• A designated canal view • Local Community views		
Receptor Sensitivity	**Medium**		
Existing View	This is a slightly elevated view from the Blackshade Bridge over the Royal Canal. In the immediate vicinity, the canal is enclosed on all sides by relatively dense riparian vegetation which limits views of the landscape beyond. The most open aspect of the view is to the southeast along the canal alignment, before it veers in a more easterly direction a short distance away. Glimpses of several nearby dwellings can be seen through the canal-side vegetation in this direction.		
Visual Impact of Maighne Wind Farm	The Ballynakill cluster of turbines can be seen on direct alignment with the canal to the southeast. They will rise at a reasonable scale above the canal-side vegetation and will be a distinctive feature of this otherwise fairly contained vista. In the distance beyond can be seen the three turbines from the Windmill cluster at a much smaller scale. The proposed wind farm is considered to have a co-dominant visual presence within this south-easterly view. From this viewing angle the Ballynakill turbines are seen to have a relatively modest lateral extent with the trade-off being that they are fairly tightly spaced. This results in some turbine overlap, which may cause a degree of visual clutter, particularly in conjunction with foreground tree tops and utility poles. Nonetheless, these turbines are seen at a scale that allows them to rise above the foreground vegetation and makes for a comprehensible view of the scheme. It is not considered that the turbines conflict with the qualities of this canal view or the character of the surrounding landscape generally. Overall, the proposed wind farm is deemed to have a medium magnitude of visual impact.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MHDR35	Local road at Rathcore	W	4.96	11

Representative of:	• A designated scenic view • Local Community views		
Receptor Sensitivity	**High-medium**		
Existing View	This is a vast panoramic view to the west from a slightly elevated section of road. It takes in a foreground landscape of pastoral farming and tillage on gently undulating terrain, which gives way to a more planar landscape beyond. The Plains are perceived to be cloaked in vegetation, but this is an effect of hedgerow vegetation become tightened by perspective and distance. The horizon to the west is almost entirely flat with only occasional bumps representing distant hills. The chimney stack from the Lagan cement factory near Kinnegad is faintly visible above the horizon to the southwest.		
Visual Impact of Maighne Wind Farm	The proposed Ballynakill cluster of turbines will be seen at a relatively prominent scale above the vegetated skyline to the south-west. This cluster occupies only a short section of the broad view on offer, but it will be a distinctive feature, particularly given that the land cover is otherwise fairly homogenous. In terms of visual presence, the proposed turbines are considered to be in the order of co-dominant to sub-dominant within this view. The proposed Ballynakill turbine cluster is relatively tightly spaced when viewed from this angle and this will give rise to a couple of instances of turbine overlap causing a minor degree of visual clutter. However, these turbines rise above the skyline to the extent that their blade sets will rotate freely above ridge-top vegetation in an unambiguous manner. The proposed turbines are considered to be well accommodated within the context of this broad and anthropogenic rural landscape setting. On balance of the factors outlined above, the magnitude of visual impact is considered to be medium-low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Medium-low**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
MHDR40	Tlaghta (Hill of Ward)	NE	20.44	8

Representative of:	• A publicly accessible ancient monument • A designated scenic view		
Receptor Sensitivity	**High**		
Existing View	This is a hilltop location within a lowland landscape that affords vast panoramic vistas in all directions except to the west where a mature tree line limits the view at relatively close quarters. In all other directions the flat landscape of the midlands appears to be blanketed in broadleaf woodland beyond the middle distance, but this is the stacking of hedgerows in perspective. The true nature of the land cover is revealed in the foreground context of large pastoral fields defined by tree-lined hedgerows.		
Visual Impact of Maighne Wind Farm	Within this southerly view only a handful of the easternmost turbines from the proposed development will be visible just to the left of the bank of foreground screening provided by mature broadleaf trees to the west. These turbines are seen at a very small scale due to the considerable viewing distance of nearly 30km. They will also be only faintly visible due to the effects of atmospheric perspective (the fading of distant objects) and the absence of a terrain backdrop. For these reasons the turbines are considered to have a minimal visual presence and almost no effect on the visual amenity of the scene, resulting in a negligible magnitude of visual impact.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
SDDR1	Local road at Saggart Hill	NW	23.43	47

Representative of:	• A designated scenic view		
Receptor Sensitivity	**High**		
Existing View	This is a vast panoramic view to the northwest from Saggart Hill in South County Dublin. This view represents one of the easternmost designated views within South County Dublin. The foreground consists of marginal grazing and some forestry on the surrounding hills. Beyond the brow of the hill emerges the vast plains of County Kildare and from this elevation there is a reasonable sense of the settlement patterns as well as areas of farmland and bog. Aside from some low hills in the western periphery of the view, the horizon is relatively flat.		
Visual Impact of Maighne Wind Farm	All of the proposed turbines will be visible from here, dispersed throughout the distant plains. There will be seen as faint and very small scale features at this distance, but they would be contrasted against the ground plane to a slightly greater degree than if there were seen in silhouette above the horizon line. The scheme has a considerable lateral extent when viewed from here and the turbines would be distinctive singular features within a landscape that is largely read as a pattern from this vantage point. In terms of visual presence the proposed turbines are considered to be in the order of sub-dominant to minimal. Aesthetically, this is a clear and comprehensible view of the development. From this elevation the dispersal of the turbines throughout the landscape is clearly evident compared to lower angle views where the turbines appear in a line. There is a minor degree of scale ambivalence as the extent of the proposed development is of a broader dimension than the finer grain of the underlying landscape pattern when viewed from this distance. Nonetheless, the turbines will not appear incongruous within the settled and productive landscape setting of the plains. On balance of the reasons outlined above, the magnitude of visual impact is considered to be Low-negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High	**Low-negligible**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
WWDR1	R756 above Hollywood	NW	27.63	27

Representative of:	• A designated scenic view • A major route		
Receptor Sensitivity	**High-medium**		
Existing View	This is a vast view over the plains of Kildare that is afforded to westbound motorists travelling from the Wicklow Gap. The view is framed on each side by spur ridges of marginal grassland and forestry that surround the settlement of Hollywood on the flat ground below. Therafter, a planar landscape of fields and hedgerows stretches out for a long distance and eventually forms a flat horizon to the northwest.		
Visual Impact of Maighne Wind Farm	Most of the turbines from the Cloncumber cluster will be seen from here on either side of a small knoll in the horizon that is the Hill of Allen. These turbines are seen at a very small scale from this distance though there may even be smaller scale visibility of some of the turbine clusters that lie beyond to the north, but only in the clearest of viewing conditions. There may also be glimpses of turbines from the Drehid-Hortland cluster amongst the branches of a foreground tree and lattice structure of a large electricity pylon just beyond. All of these turbines would be only faintly visible with a low degree of contrast against a backdrop of sky and thus, the visual presence of the scheme is considered to be minimal. The proposed turbines are seen to be contained within a productive rural landscape context and there are not considered to be any particular aesthetic issues associated with the view of turbines at such a long distance. For these reasons the magnitude of visual impact is considered to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Negligible**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06LC17	R160 at Ballynakill	360°	0.54	9

Representative of:	• Local Community Views • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This is a view across agricultural lowlands defined by large fields with low scrubby hedgerows boundaries that provide little containment to the view. Nonetheless, in such a flat landscape the view is not particularly extensive despite its openness. There are several dwellings and a cluster of large farm sheds in the immediate vicinity.		
Visual Impact of Maighne Wind Farm	The proposed turbines from the Ballynakill cluster will be visible from here in close proximity to both sides of the road, but with the majority to the northeast. The turbines are seen at a substantial scale and they are fully revealed in silhouette above the near skyline due to the absence of any significant hedgerow screening. Although they are accommodated within an open vista, they are still considered to have a dominant visual presence at this locality. Given the close proximity and clear view of the turbines, there is little ambiguity associated with the view of them. Whilst they occupy a broad section of the easterly view this allows a generous spacing between them that avoids the clutter that can be associated with turbine overlap. The pair of turbines to the west are seen in a similar manner and obviously occupy less of this aspect of the vista. The main issues at this location at the substantial scale of the turbines, the lateral extent and a sense of being surrounded by the proposed development. Aside from these effects on residential amenity, this is a landscape in which the turbines do not appear out of place in terms of scale or function. On balance of all of these factors it is considered that the magnitude of visual impact is high at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**High**	**Substantial-moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06LC32	Broadford	N	1.72	6

Representative of:	• Local Community Views		
Receptor Sensitivity	**Medium-low**		
Existing View	This is a view from a car park at the centre of the small village of Broadford. To the north, beyond the immediate village context, can be seen a landscape of pastoral farming interspersed with hedgerows and mature broadleaf trees. A church and school can be seen on the opposite side of the road to the east, backed by mature trees.		
Visual Impact of Maighne Wind Farm	Three to four of the proposed turbines from the Ballynakill cluster will be seen at a relatively prominent scale between foreground trees and buildings to the north of the village. The lower sections of these turbines are substantially screened by vegetation. In the context of this relatively complex vista and the degree of screening, the turbines are considered to have a visual presence in the order of co-dominant to sub-dominant. There will be some degree of visual clutter associated with the turbines rotating between and above intervening landscape features and buildings. However, this is contributing to a scene that already has a reasonable degree of complexity. Although the landscape in which the turbines are located is not apparent from here, it is clear that they are contained within the rural landscape well beyond the settlement. Overall, it is considered that the magnitude of visual impact is medium at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Medium**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
07LC30	Local road at Newtownhortland	W	0.65	11

Representative of:	• Local Community Views		
Receptor Sensitivity	**Medium-low**		
Existing View	This view is afforded from a road that runs around the toe of a low slope. Uphill to the northeast can be seen a field of marginal pasture in the foreground with higher quality grazing lined by neat hedgerows further up the slope. In the opposite direction, the flat lowland landscape consists of rough grazing in the foreground, but giving way to large plantation forests and areas of scrubland surrounding an equally extensive bog landscape. Although it is an open view, due to the flatness of the terrain, it is contained by vegetation in the middle distance.		
Visual Impact of Maighne Wind Farm	Seven of the proposed turbines from the eastern end of the Drehid-Hortland cluster can be seen rising above the forests and woodland scrub at a substantial scale to the west of the road. They will occupy a broad section of the available view in this direction. Even in the context of this extensive landscape pattern the proposed turbines are considered to have a dominant visual presence as the most distinctive feature of the view. However, it should be noted that they are not considered to be spatially dominant or overbearing in this scene. In an aesthetic sense, the turbines seem ideally placed into this type of landscape. They are comfortably assimilated in terms of their scale and extent within this open vista and large-scale landscape pattern. They are also complementary to the robust and productive character of this rural landscape. The turbines are generously spaced so that there is a strong sense of permeability through the scheme. Although there is one instance of turbine overlap, there is also a strong sense of perspective between the nearest and furthest turbines so that the actual separation between turbines is clearly comprehended. On the basis of the reasons outlined above the magnitude of visual impact is considered to be High-medium at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**High-medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10LC12	R402 at Ballnamullagh	N	0.95	13

Representative of:	• Local Community Views • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This is an open lowland vista to the south across large pastoral fields from the R402 regional road. A number of houses line the Road in the near vicinity and whilst the hedgerows in the foreground are clipped, they tend to be of a more scrubby nature across the middle ground and form a low skyline that is occasionally interrupted by taller trees.		
Visual Impact of Maighne Wind Farm	The proposed turbines from the Drehid-Hortland cluster will be seen at a prominent scale throughout the southerly vista. At such close distances, there tends to be a considerable differential in perceived scale between the nearest and furthest of the visible turbines. On balance of the scale and extent of the proposal within a relatively uniform vista the visual presence of the scheme is considered to be dominant. From this viewing angle the Drehid-Hortland cluster is seen with a broad lateral extent, but relatively loose spacing that allows a reasonable sense of permeability. Furthermore, the considerable variation in scale between the closer and slightly more distant turbines gives a strong sense of perspective and comprehension of the dispersed layout of the turbines. Due to the lateral extent of the development, there will be some sense of being surrounded by turbines for houses in the vicinity, at least throughout the southern quarters. Within this broad scale productive landscape setting, it is considered that the turbines are well accommodated in terms of both their scale and function. There will be only a couple of minor instances of turbine blades rotating amongst foreground elements to detract from what is otherwise a clear and comprehensible view of this turbine cluster. On balance of the factors associated with visual presence and visual amenity described above, the magnitude of visual impact is deemed to be High-medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**High-medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10LC13	Local road at Drehid	N	0.61	11

Representative of:	• Local Community Views		
Receptor Sensitivity	**Low**		
Existing View	This is a relatively unremarkable view to the north across a lowland context of pastoral farmland in the foreground field contained by scrubby hedgerows at its boundaries. Although there is a low degree of enclosure to this view, it is contained at a short distance by the hedgerow vegetation due to the flat nature of the terrain in the vicinity of the bog that lies a short distance beyond.		
Visual Impact of Maighne Wind Farm	Approximately eight of the proposed turbines from the Drehid-Hortland cluster will be seen rising at varying scales above the hedgerow vegetation that lines this field. The nearest of these will be seen at a prominent scale due to the relatively short viewing distance. The more distant turbines are seen at a much reduced scale and are substantially screened by the intervening vegetation. The proposed turbines will occupy a reasonable proportion of the available view to the northeast and, in combination with their prominent scale, they are considered to have a dominant visual presence. The proposed turbines are seen in a clear and comprehensible manner with a strong degree of perspective generated between the nearest and furthest of the visible machines. From this angle the turbines appear relatively tightly spaced, which results in a minor instance of turbine overlap and some sense of visual clutter. However, the trade-off is that there is not a strong sense of being surrounded by turbines as can occur in close proximity to a turbine cluster of this size. In the context of the broad scale land use patterns in view, the turbines do not appear out of place in terms of either their scale or purpose. On the basis of the reasons described above the magnitude of visual impact is considered to be High.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**High**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10LC14	Timahoe Cross Roads	N	3.43	7

Representative of:	• Local Community Views		
Receptor Sensitivity	**Low**		
Existing View	This is a view from a slightly raised section of road just to the south of a substantial area of bog at Timahoe Cross Roads. The foreground is dominated by the junction of two local roads and a cluster of houses that surround it to the east and southwest. There are also a number of mature broadleaf trees in the foreground, which break up an otherwise fairly open view to the north. Through a band of broadleaf trees in the near middle ground can be seen a marginal landscape of rough grazing and large tracts of commercial forest plantation, which occupy the transitional landscape between, an area of pastoral farming to the south, and peatland to the north.		
Visual Impact of Maighne Wind Farm	Although the wireframe image indicates that a number of the proposed turbines from the Drehid-Hortland cluster will occupy the north-eastern quarter of this view, most of these are almost completely screened by the intervening band of broadleaf trees. Occasional blades and blade sets can be seen rising above and between the tops of trees and houses. The nearest turbine can be seen to the left of the junction rising above a mature conifer plantation in the near middle ground. It is revealed to the extent that only its blade sets are visible. Due to the high degree of screening, the proposed wind farm is considered to have a sub-dominant visual presence from here despite the relatively close proximity to this turbine cluster. Aesthetically, the view of turbines popping-up intermittently within the view between treetops and other elements in the foreground is not ideal as this can give rise to visual clutter and ambiguity. These effects are strongly diminished in this instance by the high degree of screening and the reduced level of visual presence this generates. The scale and extent of the turbines does not appear out of place in the northern aspect of this vista due to the broad scale of the land use patterns in view. Overall, the magnitude of visual impact is judged to be medium-low at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**Medium-low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10LC16	R403 at Derrinturn	NE	2.04	13

Representative of:	• Local Community Views • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This is an open view across a large field at the southern end of the village of Derrinturn. There is a low degree of containment to this vista due to the distance to the scrubby hedgerow that lines the far side of the field. Nonetheless, in this flat landscape this hedgerow almost completely screens the landscape beyond.		
Visual Impact of Maighne Wind Farm	This north-easterly view takes in the proposed Drehid-Hortland turbine cluster and approximately a dozen of these turbines are seen in relatively close proximity. Several others can be seen in the far distance through a low section in the middle distance hedgerow. One turbine in particular stands out at a more prominent scale than the others in the centre of the nearest cluster. In the context of this vista the proposed turbines are considered to have a visual presence in the order of co-dominant to sub-dominant. Aesthetically, this is a relatively comprehensible view of the scheme, which is aided by the clearer view of the nearest turbine. The blade sets of this turbine rotate fully in silhouette above the intervening vegetation and it generates a strong sense of perspective in conjunction with the turbines beyond. This in turn allows the viewer a sense of the spatial separation between turbines and the depth of the layout in this flat landscape. There may be a minor degree of visual irritation generated by the view of some of the turbines blades rotating amongst the tops of intervening trees. The proposed wind farm will not appear incongruous in this productive rural landscape setting. Overall, the magnitude of visual impact is considered to be Low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10LC32	Local road at Ballyteige South	NW	0.84	6

Representative of:	• Local Community views		
Receptor Sensitivity	**Medium-low**		
Existing View	The view to the south takes in a combination of transitional bogland scrub and open bog with the Hill of Allen providing a backdrop in the middle distance. Immediately to the north are a cluster of houses that form a small settlement at this location. Beyond these is a strip of vegetation, which identifies the route of the Barrow Line Canal and limits the view of the landscape beyond.		
Visual Impact of Maighne Wind Farm	The proposed turbines from the Cloncumber cluster will be visible in close proximity and at a prominent scale, a short distance to the northwest beyond the Grand Canal. They will spread across most of the northern quarters when viewed from here, rising intermittently between buildings and tree tops. For these reasons their visual presence is considered to be dominant. The view of turbines rising in various sections of the northerly vista amongst foreground elements may give rise to some sense of visual clutter and confusion, particularly as the landscape context in which the turbines are placed cannot be seen beyond the canal. There is some sense of perspective generated between the nearest and furthest of the turbines, which aids the comprehension of the three-dimensional nature of the layout. It is considered that the more important viewing aspect of this cluster of houses is across the bog towards the Hill of Allen, which lies in the opposite direction to the proposed turbines. On the basis of the reasons outlined above the magnitude of visual impact is considered to be High.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**High**	**Substantial-moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06CP5	R156 between Raharney and Killucan	SE	13.52	27

Representative of:	• Centres of population • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This is a slightly elevated and expansive view to the south from the R156. The foreground of the view is contained in a large pastoral field, which slopes gently down to hedgerow vegetation on its opposite side. Above this can be seen a similar landscape of pastoral farming and hedgerows that become stacked together by perspective to form a dense band of vegetation below the flat horizon.		
Visual Impact of Maighne Wind Farm	Turbines from the northernmost clusters of the proposed development can be seen from here, rising at slightly different scales above the foreground tree tops. The nearest and most prominent of these are from the Ballynakill cluster with those from the Windmill and Drehid-Hortland clusters seen at a smaller scale beyond. The turbines would be somewhat camouflaged among the treetops if not for the rotating blades. On balance, it is considered that the turbines have a sub-dominant visual presence within the context of this broad vista. Whilst aesthetically, it is not ideal for turbine blades to be rotating amongst the tops of intervening trees, the clearer view of some of the nearer turbines provides less ambiguity to the view of the more substantially screened turbines beyond. The landscape within the scene is a productive rural one with a broad scale land use pattern. Within this, the proposed turbines are not considered to be an incongruous addition. On the basis of the reasons outlined above the magnitude of visual impact is considered to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06CP10	R156 near Ballivor	S	9.83	20

Representative of:	• A centre of population • A major route		
Receptor Sensitivity	**Low**		
Existing View	This is a relatively open yet unremarkable rural vista to the south of the R156 near Ballivor. The foreground is contained in a large pastoral field defined at its far side by a scrubby hedgerow with slightly taller broadleaf vegetation just beyond. This forms a vegetated skyline in the near middle distance.		
Visual Impact of Maighne Wind Farm	The proposed turbines from the Ballynakill cluster can be seen rising in silhouette above the vegetated skyline to the south. They will be seen at a noticeable, but not prominent scale from this distance. Turbines from the Drehid-Hortland cluster will also be seen at a comparatively smaller scale to the left of the Ballynakill turbines. In the context of this relatively homogenous view, the turbines will be a distinctive feature, but they will remain sub-dominant in terms of visual presence. Compositionally, the turbines of the Ballynakill cluster are seen to have a relatively even spacing with their blade sets rotating freely above the tops of the intervening vegetation. They are not considered to detract from this productive rural setting in a thematic sense. There may be some visual clutter and ambiguity associated with the view of the more distant turbines rotating amongst the tops of intervening trees. However, in the context of the clearer view of the nearer turbines, such effects tend to be diminished. On the basis of the reasons outlined above, the magnitude of visual impact is considered to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**Low**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06CP12	Longwood	S	1.44	16

Representative of:	• Centre of Population • Local community views • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This is an open panoramic view across a flat landscape of fields and tidy hedgerows interspersed with occasional mature broadleaf trees. There is also a number of farmsteads within the locality at the edge of the settlement of Longwood.		
Visual Impact of Maighne Wind Farm	Nine of the turbines from the proposed Ballynakill cluster will be seen at a relatively prominent scale across the southern aspect of the view. They will rise in silhouette against the sky and would be one of the more distinctive aspects of the view. For this reason they are considered to have a visual presence in the order of dominant to co-dominant. Aesthetically, this is a clear and legible view of the proposed turbines within this flat and productive landscape. They are all seen at a similar scale wrapping around the view to the south at similar distances. They have an even spacing and a profile that matches the underlying terrain. There are no significant instances of turbine overlap, though there will be occasional blade sets rotating amongst the tops of intervening trees, which may give rise to a minor degree of visual clutter. On the basis of the reasons outlined above the magnitude of visual impact is considered to be medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Medium**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06CP13	Enfield	SW	3.37	18

Representative of:	• A centre of population • A major route		
Receptor Sensitivity	**Low**		
Existing View	This is a relatively open view to the west from the R148 orbital route around the settlement of Enfield. It takes in a foreground of pastoral farmland sandwiched between the Royal Canal, the railway line and the R402 regional road that links a short distance to the M4 motorway. The motorway corridor is just visible running across the middle ground of this view. Between mature foreground trees can be seen a flat vegetated skyline to the southwest.		
Visual Impact of Maighne Wind Farm	Turbines from the Drehid-Hortland cluster will be seen in two sections of this vista, on alignment with the road to the southeast and beyond the motorway to the southwest. They are seen at a modest scale from this distance within a complex vista. The turbines will all rise at a similar scale and to a similar degree above the skyline with blade sets seen in silhouette. However, there are a number of turbines that will be substantially or fully screened by intervening tree tops. Notably, the Cloncumber cluster, which is aligned with the Drehid-Hortland cluster from here, will be fully screened below the vegetated skyline due to the greater viewing distance. Overall, the visual presence of turbines in this complex and dynamic vista is considered to be sub-dominant. Some visual clutter may arise in combination with signage, light poles and tree tops in respect of those turbines seen along the road alignment. This will occur to a lesser extent for the turbines visible to the southwest. Although these turbines are seen to be tightly clustered, there are few instances of turbine overlap. There is also some sense of perspective generated by the slight discrepancy in scales, which highlights the actual spatial dispersion of the turbines. The turbines will not appear out of place in this strongly anthropogenic vista, which is one of the few locations around Enfield to be afforded any view of the proposed development. On the basis of the reasons outlined above, the magnitude of the visual impact at this location is deemed to be Medium-low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**Medium-low**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06CP30	Clonard	E	3.23	4

Representative of:	• A centre of population • Local community views		
Receptor Sensitivity	**Medium-low**		
Existing View	This is a view along the main street of Clonard from the eastern side of the settlement. It takes in a foreground of a loosely defined main street setting consisting of roadside car parking to the left and a church graveyard to the right. Numerous mature trees, signs and utility poles line the road and a broadleaf treeline crosses the view in the middle ground to the northeast. The graveyard is contained by a dense stand of coniferous trees.		
Visual Impact of Maighne Wind Farm	Only four of the proposed turbines from the Ballynakill cluster can be seen to any noticeable degree rising above intervening trees and signage close to the alignment of the road. The most that can be seen of these turbines is nacelles and partial blade sets camouflaged amongst the trees. In the context of this complex and dynamic street scene, the proposed turbines are considered to have a sub-dominant visual presence. Compositionally, the proposed turbines will contribute to the sense of visual clutter in this view in conjunction with the foreground utility poles and treetops. However, given the relatively low degree of visibility, they will only be a minor contributor to this existing effect. They will not detract from the street scene to a noticeable degree and they are clearly understood to be contained in the rural landscape beyond the settlement. On the basis of the reasons outlined above, the magnitude of visual impact is deemed to be Low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
07CP1	Summerhill	SW	12.72	0

Representative of:	• A centre of population • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This is a slightly elevated view to the southwest from just to the north of the settlement of Summerhill. It takes in a descending foreground of pastoral fields and hedgerows that become stacked together within a relatively short distance to form a vegetated skyline across the middle ground.		
Visual Impact of Maighne Wind Farm	Several turbines from the proposed Drehid-Hortland cluster can just be seen within tree tops on the skyline. These are revealed to the extent that only blade tips will be seen at a considerable distance. Consequently, the visual presence of the proposed development within this relatively broad view is deemed to be minimal. There is potential for a very minor degree of visual clutter and irritation to be generated by the view of turbine blade tips rotating amongst the tops of skyline trees. However, given the low degree of visibility, this will have a negligible impact on visual amenity overall.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10CP7	Robertstown	NW	4.91	17

Representative of:	• A centre of population • A designated view • Local community views • A recreation and heritage feature (Grand Canal)		
Receptor Sensitivity	**High-medium**		
Existing View	This is a slightly elevated view from the canal bridge at the centre of the idyllic canal-side settlement of Robertstown. The settlement itself occupies the southern aspect of the view and includes shops, houses, boats and a sizeable civic building on direct alignment with the canal. To the north can be seen houses at the fringe of the settlement flanking a bend in the canal. The view is relatively open above these dwellings revealing a rural landscape predominantly contained in plantation forestry.		
Visual Impact of Maighne Wind Farm	Approximately a dozen of the proposed turbines from the Drehid-Hortland cluster can be seen at a modest scale above the plantation forestry to the north. Whilst there are nearer clusters, including Cloncumber and Derrybrennan to the northwest, these are fully screened by intervening buildings and vegetation. In the context of this view the proposed turbines are considered to have a sub-dominant visual presence. The proposed turbines are seen in a legible manner with their blade sets rotating freely above the tops of the forest plantation. There is a minor sense of perspective generated by the nearest of the proposed turbines as itis seen at a slightly larger scale than those beyond. This gives a sense of the depth of the layout where it would otherwise be seen as a linear arrangement. There are a couple of minor instances of turbine overlap, but any sense of visual clutter this may generate is strongly diluted by the viewing distance. Within the context of this settlement and canal view, the proposed turbines appear well placed, clearly within the rural context beyond. Overall, it is considered that the magnitude of visual impact is low at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10CP9	Rathangan	E	4.57	6

Representative of:	• A centre of population • A designated view • Local community views • A recreation and heritage feature (Grand Canal)		
Receptor Sensitivity	**Medium**		
Existing View	This is a view from a pedestrian over-pass of the grand Canal in the centre of the village. The principal view is along the canal in both directions, however, it also takes in a range of urban land uses including a derelict site immediately to the south. Within the easterly view is a stone arch canal bridge complemented by a large stone building to the left of the canal. A service station can be seen to the right along the main street. Beyond the immediate urban context, the canal is lined by riparian vegetation, which limits the view of the rural landscape beyond.		
Visual Impact of Maighne Wind Farm	Approximately five of the proposed turbines from the Cloncumber cluster can be seen just to the left of the canal alignment. These are revealed to the extent that only their partial blade sets will be seen rotating amongst the tops of foreground trees. In the context of this complex and dynamic village centre view, the proposed turbines are considered to have a sub-dominant visual presence. The view of turbine blades rotating amongst the tops of trees is not ideal as it can give rise to a sense of visual clutter and irritation. This is also contributed to by a strong degree of overlap between the turbines given the end-on alignment of this view in relation to the elongated Cloncumber cluster. Although the turbines are seen within the context of an urban foreground, they are clearly understood to be within the rural landscape beyond. On balance of the factors described above, it is considered that the magnitude of visual impact is medium-low at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium-low**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10CP15	Portarlington	NE	19.80	38

Representative of:	• A centre of population		
Receptor Sensitivity	**Medium-low**		
Existing View	This is a slightly elevated, panoramic view to the northeast from the hill at Carrick Wood in the outskirts of Portarlington. The view takes in a brief foreground of farmland, which slopes down to a section of the main national railway line at the base of the Hill. Thereafter, can be seen the urban context of Portarlington with a band of vegetation above the houses representing the rural landscape in the distance beyond the settlement. Aside from a couple of low hills, this band of vegetation forms a flat skyline to the north-east.		
Visual Impact of Maighne Wind Farm	Nearly all of the proposed turbines can be seen from here, but at a long distance, which renders them small scale features. They will also be faintly visible with a low degree of contrast against a backdrop of sky. Nonetheless, the proposed development is seen to have a relatively broad lateral extent from here and will occupy much of the north-eastern horizon. On balance of these factors the visual presence is considered to be in the order of sub-dominant to minimal. In terms of aesthetics, the turbines are seen in a linear formation and at a similar scale due to the effects of distance and perspective. There are a number of instances of turbine overlap and although this can cause a sense of visual clutter in some instances, at such long distances this has little effect on visual amenity. Despite the alignment with the settlement, the turbines are clearly understood to be located above the band of vegetation on the skyline within the distant rural context. Thus, there is a clear sense of separation between the two landscape contexts. On the basis of the reasons outlined above, the magnitude of visual impact is considered to be low-negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Low-negligible**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10CP17	Newbridge	N	10.05	0

Representative of:	• A centre of population • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This is a slightly elevated view to the north from the railway over-bridge in Newbridge, which is one of the few locations within the settlement to afford any panoramic vista. The view to the north takes in a car park, all-weather playing pitches, the Department of Defence headquarters building and other grass playing fields to the rear of this. A low ridge in the middle distance is occupied by residential development, which screens the view of the landscape beyond.		
Visual Impact of Maighne Wind Farm	Although two separate clusters the proposed turbines are theoretically visible from here, the wireframe image indicates that terrain screening limits this to blade tips at a reasonable viewing distance. The photomontage shows that in reality the turbines are fully screened from here by foreground buildings and vegetation. For this reason the magnitude of visual impact is considered to be negligible by default.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10CP30	Kilmeage	W	2.99	0

Representative of:	• Centre of Population • Local Community views • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This view represents one of the few open vistas to the west from the village of Kilmeage, which is predominantly contained on the eastern side of a low hill. This view is framed to the left by residential dwellings on the outskirts of the settlement and large open fields defined by clipped hedgerows occur to the right. In the middle distance the central (western) portion of the view is contained by a line of broadleaf trees in the near middle distance.		
Visual Impact of Maighne Wind Farm	Despite the relative close proximity, only a couple of blade tips from the nearest turbines of the Cloncumber cluster can be seen from here, rotating just above the middle distance tree line. These would be fairly inconspicuous within the view except for the rotation of the blades, which will make them slightly more eye-catching. For this reason the visual presence of the turbine blades is considered to be in the range of sub-dominant to minimal. The view of blade tips rotating amongst nearby treetops may give rise to a degree of visual irritation and ambiguity. However, this must be balanced against a low level of visibility and consequently there is a very limited effect on visual amenity overall. On balance of the factors described above, the magnitude of visual impact is deemed to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
11CP1	Maynooth	W	12.70	0

Representative of:	• Centre of population • A major route		
Receptor Sensitivity	**Medium-low**		
Existing View	This is a slightly elevated view from the combined canal and railway overpass near the centre of Maynooth. The westward view takes in the railway station, car park and amenity pond surrounded by mature broadleaf vegetation. On the southern side of the canal can be seen rooftops from the residential areas of the settlement just above the parapet wall at the roadside.		
Visual Impact of Maighne Wind Farm	Even though this is one of the more elevated locations within the settlement and there is a relatively low degree of containment within the view to the west, none of the proposed turbines will be visible from here due to screening by intervening vegetation and buildings. For this reason, the magnitude of visual impact is considered to be negligible by default.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
11CP30	Papal Cross, Phoenix Park, Dublin City	W	29.75	0

Representative of:	• A recognised view and tourist attraction • A major centre of population • A recreational, amenity and heritage location		
Receptor Sensitivity	**High**		
Existing View	This is an open and elevated view across Dublin's Phoenix Park from the base of the Papal Cross, which is a well-known feature within the park. The foreground of the view consists of an open prairie-type landscape enclosed at its edges by loose woodlands. Beyond, to the south, can be seen the Wicklow Mountains, whilst the skyline to the east is defined by the vegetation on the opposite side of the park.		
Visual Impact of Maighne Wind Farm	Although the wireframe image indicates that there is a theoretical view of a small cluster of turbine blades above the westerly terrain, the photomontage shows that in reality the proposed turbines will be fully screened from here. Consequently, there will be no effect on visual amenity at this location, which has been selected as a worst-case scenario in terms of sensitivity and potential visual exposure from the western outskirts of Dublin city. Even if the turbines blades were not screened they would be almost impossible to discern against a backdrop of sky at this distance of almost 30km. The magnitude of visual impact is therefore deemed to be negligible by default.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
11CP32	Clane	W	8.93	3

Representative of:	• A centre of population • A major route		
Receptor Sensitivity	**Low**		
Existing View	This is a view over rooftops from one of the most elevated locations within the settlement of Clane. Little can be seen beyond the foreground residential context except for a line of treetops that defines the western horizon in the middle distance. The only other notable feature of this vista is a line of high voltage electricity pylons, which crosses from left to right just beyond the houses.		
Visual Impact of Maighne Wind Farm	The only aspect of the proposed wind farm that will be visible from here is the occasional glimpses of turbine blades amongst the distant treetops. These would be barely discernible except for their movement, which will make them slightly more noticeable. Despite this, the turbines are still considered to have only a minimal visual presence within this scene. Due to the low degree of visibility, there will be almost no effect on visual amenity at this location and thus, the magnitude of visual impact is considered to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
11CP33	Naas	NW	15.73	13

Representative of:	• Centre of population • Major route		
Receptor Sensitivity	**Low**		
Existing View	This is a slightly elevated and open view to the northwest from an orbital road around the settlement of Naas. The view is dominated in the foreground by the road corridor, which descends towards a large roundabout and is densely lined by light poles. To the left is pastoral farmland and to the right is the residential outskirts of the settlement. Running across the middle ground skyline is a sporadic row of broadleaf trees and conifers. The Hill of Allen can be seen rising above this line of trees in the distance.		
Visual Impact of Maighne Wind Farm	Several of the proposed turbines from the Cloncumber cluster will be visible above the middle ground vegetation along with two of the turbines from the Derrybrennan cluster further to the right. These are all seen as small scale features from this distance. In the context of this complex and busy foreground scenario the turbines are not likely to be particularly noticeable. On the basis of these reasons, the visual presence is considered to be in the order of sub-dominant to minimal. Aesthetically, the view of turbines appearing intermittently amongst the tree tops, buildings and light poles may give rise to an additional degree of visual clutter within a scene that is already fairly cluttered. The clearer view of some of the turbines near the Hill of Allen help to make of the view of the remainder of the scheme more legible. On balance of the factors described above, the magnitude of visual impact is considered to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**Low**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06MR7	R148 overpass of the M4 at Kinnegad	SE	9.57	12

Representative of:	• A major route		
Receptor Sensitivity	**Low**		
Existing View	This is an elevated and relatively open view to the east along the alignment of the M4 motorway from an overpass near Kinnegad. The foreground of the view is dominated by the broad corridor of the motorway, which is contained in a section of 'cut' and lined by a legion of lighting poles. Beyond this can be seen a broad flat landscape which is only revealed as a narrow line of vegetation below the flat horizon.		
Visual Impact of Maighne Wind Farm	The partial blade sets of approximately a dozen turbines from the Ballynakill, Windmill and Drehid-Hortland clusters are just visible above the vegetated horizon. These turbine components will be seen at a small scale from this viewing distance and will be somewhat camouflaged within the tree tops and line of intervening lighting poles. In the context of this complex and dynamic vista, the visual presence of the scheme is considered to be in the order of sub-dominant to minimal. In terms of aesthetics, the view of the proposed turbines blades rotating amongst skyline treetops and foreground lighting poles is likely to give rise to an increased degree of visual clutter. However, this is in the context of an already cluttered vista and given the relatively low degree of visibility of the turbines, this is only considered to be a minor issue. Overall, the magnitude of visual impact is considered to be Low-negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**Low-negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06MR14	Local road overpass of M4 near Moyvalley	NW	1.00	23

Representative of:	• A local community view • A major route		
Receptor Sensitivity	**Low**		
Existing View	This is an elevated view from a local Road overpass of the M4 motorway. It is a broadly panoramic view in all directions, but tends to be contained in the middle distance by hedgerow and roadside vegetation. The setting is dominated by the road corridors and is a dynamic location. To the north can be seen pastoral fields and a cluster of dwellings on gently undulating ground.		
Visual Impact of Maighne Wind Farm	The proposed turbines from the Ballynakill cluster are all seen in close proximity and at a prominent scale in direct alignment with the local road. They also occupy a reasonable portion of the northern skyline. To the south can be seen the three turbines from the Windmill cluster at a much smaller scale as well as the turbines from the Drehid-Hortland cluster slightly further away again. These will be much less noticeable in the context of the view of the Ballynakill turbines. On the basis of these reasons, the visual presence of the proposed development at this location is considered to be dominant to co-dominant. Aesthetically, the Ballynakill turbines are seen in a clear and comprehensible manner with a strong degree of perspective, which aids the perception of a layout with depth. They are also clearly located within a broad rural landscape context. There is some sense of scale ambivalence in relation to the houses to the fore of the turbines as the perceived distance between them and the turbines is diminished by the screening of the landscape between. Given the distance to the more southerly turbines there is little sense of being surrounded by them. Overall, it is considered that the magnitude of visual impact is High-medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**High-medium**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
07MR30	M4 motorway at Ballyvoneen	SW	3.93	20

Representative of:	• A major route		
Receptor Sensitivity	**Low**		
Existing View	This is the slightly elevated and relatively extensive view presented to southbound motorists on the M4 (albeit, from the opposite side of the road) having just exited a large section of cut. Between mature tree lined hedgerows in the foreground, can be seen a rolling pastoral landscape to both the left and right hand side of the road.		
Visual Impact of Maighne Wind Farm	The proposed turbines from the Drehid-Hortland cluster can be seen at a relatively prominent scale to the left hand side of the road between foreground trees and tree lines. The turbines appear to diminish and scale and converge with the Road alignment due to the effects of perspective and they will occupy much of the southerly view from here. The three turbines from the Windmill cluster also come into view just to the right of the Road alignment but at a much smaller scale than the nearer turbines. Overall, the visual presence of the proposed scheme is considered to be co-dominant within this view. The scale of the proposed turbines is not overbearing within this view across pastoral farmland and the turbines appear well accommodated in a thematic sense. There will be some minor aesthetic issues associated with turbines emerging between and beyond foreground trees at the left hand side of the view as this could give rise to a degree of visual clutter and ambiguity. However, this is balanced by a clearer view of the turbines closer to the road alignment, which will be the more noticeable group. On balance of the factors described above, the magnitude of visual impact is considered to be medium low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Low	**Medium-low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10MR31	R402 at Carbury	N&E	3.11	8

Representative of:	• A major route • Local community views • Heritage features (nearby)		
Receptor Sensitivity	**Medium-low**		
Existing View	The view from this section of the R402 has been selected because it takes in Carbury Castle on Carbury Hill a short distance to the northwest and also affords a glimpse of Newbury Hall and its associated demesne to the southeast. The foreground of the view is dominated by the recently upgraded road corridor with pastoral farmland occurring just beyond on either side. At the base of Carbury Hill can be seen the small village of Carbury itself along with a number of more isolated dwellings lining the local approach road further to the east. Beyond the first field to the south of the road can be seen the parkland type landscape of Newbury demesne and the house itself is visible amongst the treeline in the middle distance.		
Visual Impact of Maighne Wind Farm	The hub and blades of two of the proposed turbines, along with the blade tips of the other turbine from the Windmill cluster, can be seen rising above and between foreground houses and vegetation to the north. These turbine components will be seen at a relatively small scale but the eye is likely to be drawn to the movement of the blades highlighting their position. The blades of a number of turbines from the Drehid-Hortland and Derrybrennan clusters will be visible to the southeast above and between intervening vegetation. This tends to camouflages them somewhat, however, the movement of the blades will tend to highlight their location as well. Although the proposed turbines are substantially screened from this location they occur throughout a broad arc of the available vista and on balance the visual presence is considered to be sub-dominant. The view of turbine blades rotating amongst intervening treetops and buildings is not ideal in an aesthetic sense because it can give rise to a degree of visual clutter and ambiguity. This is exacerbated when it may detract from the view of important heritage features in the landscape. In the case of Carbury Castle the turbines from the proposed Windmill cluster are considered to be seen at a disparate enough viewing angle and at a subordinate scale so that there will only be a minor intrusion on the view of the Castle from here. Whilst the vast majority of turbines that are visible to the south-east will have little bearing on the view of Newbury Hall and its demesne, due to the level of screening, a pair of turbines blades will be seen to rise above the treeline just to the right of the house. This may cause some detraction from the view of this architectural heritage feature. However, this is a fleeting, oblique glimpse of the substantially screened structure and by no means an iconic view of the stately house. On balance of the factors of visual presence and visual amenity described above, the magnitude of visual impact is considered to be Medium at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium-low	**Medium**	**Moderate-slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
06AH4	Canal overpass of the R160 at Boynedock	W	0.61	11

Representative of:	• Designated canal view • Local community views		
Receptor Sensitivity	**Medium**		
Existing View	This is a somewhat complex and noteworthy view to the south-east from the canal overpass at Boyne Dock. In the lower foreground to the east can be seen the R160 regional road and several houses that line it backed by mature broadleaf vegetation. In the immediate foreground to the southeast is a turning lock in the canal with the canal itself continuing on in the same direction. Two stone buildings flank the turning lock and add to the historic character of this setting. This elevated section of the canal affords intermittent views over the landscape to the south between sections of canal-side vegetation.		
Visual Impact of Maighne Wind Farm	Approximately six of the proposed turbines from the Ballynakill cluster are seen at a dramatic scale from here lining the canal. They will be the most prominent and distinctive feature of the view and for this reason they are deemed to have a highly dominant visual presence. In aesthetic terms, this is a striking view of the turbines flanking the canal. They have a dramatic sense of perspective generated by the scale differential between the nearest and furthest of the visible turbines. This compliments the sense of perspective generated by the canal as it recedes away from the viewer beyond the turning Lough. The dramatic nature of this view is enhanced by the view of the turbine blades reflecting off the surface of the canal. Despite the considerable temporal separation between the modern turbine structures and the historic waterway there is a certain symbiosis in the combined and unapologetic view of these two icons of technology. There may be some sense of overbearing due to the proximity of the turbines to the canal, but this is also responsible for the dramatic nature of the view. There may also be a small degree of visual clutter associated with some turbine blades rotating amongst the branches of intervening trees. However, in the context of this view such minor aesthetic issues are unlikely to be noticed. Given the relative uniformity of canal journeys (on foot or by boat) it is possible that the occasional close encounter with turbines at the canal side will enhance rather than detract from the experience and they may become something of a familiar way-marker over time. On balance of the high order visual presence and the dramatic, yet not disagreeable, view of the turbines within this particular context, the magnitude of visual impact is considered to be medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10AH3	Croghan Hill	E	19.91	47

Representative of:	• An iconic landscape feature • A recreation and heritage site		
Receptor Sensitivity	**High**		
Existing View	This is a vast panoramic vista from an ancient graveyard near the summit of Croghan Hill. The view to the east takes in broad scale pastoral farmland on the lower slopes of the hill. From the base of the hill stretches a vast planar landscape of cutaway peatland, regenerating scrub and large farmed fields. To the south can be seen the recently constructed Mount Lucas Wind Farm at a noticeable scale in the middle distance. Other notable features within the land use pattern of the plains include the Lagan cement factory near Kinnegad (NW) and an electricity peaking plant near Clonbulloge (SE). The overriding landscape of cutaway bog and farmland eventually forms a dense pattern of vegetation below the flat skyline to the east. The commanding vista gives the viewer some sense of why Croghan Hill has been a culturally important landscape feature within the otherwise flat midland landscape for millennia. The value and sensitivity of this vista relates to its vastness and the cultural heritage associated with the viewing location and not for any sense of the naturalistic. Indeed, the landscape below is testimony to decades of industrial scale peat extraction for energy production. The other land uses contribute to a sense that this is a productive landscape, which is valued as such.		
Visual Impact of Maighne Wind Farm	All of the proposed turbines are visible from here as a series of linear clusters occupying much of the eastern skyline. The turbines would be faintly visible at a very small scale, mainly in silhouette above flat sections of the horizon. Within the context of the 360° view, that also contains Mount Lucas Wind Farm in closer proximity as well as a number of other landscape features of note, the proposal is considered to have a sub-dominant visual presence. The proposed turbines are seen in a comprehensible manner from here within the matrix of productive land uses that occupy this planar landscape. Although the spacing between the turbines is tightened by distance there are few instances of turbine overlap in what is a relatively relaxed layout with a high degree of permeability. The turbines are comfortably assimilated within this productive landscape context in terms of their function and broad extent although there is little relief from the view of the turbines on the eastern horizon. On the basis of the reasons outlined above the magnitude of visual impact is considered to be Low-negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High	**Low-negligible**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10AH4	Shee Bridge over the Grand Canal near Allenwood	SW	1.97	4

Representative of:	• A designated canal view • A major route • Local community views		
Receptor Sensitivity	**Medium**		
Existing View	This is a panoramic, but relatively short range view from the top of Shee Bridge over the Grand Canal. Mature broadleaf trees and conifers in the foreground allow only intermittent views over a landscape of bogs scrubland and marginal farmland beyond. Occasional dwellings and farm sheds can also be seen within the fore and middle ground context. The view is also dominated by the junction of two regional roads.		
Visual Impact of Maighne Wind Farm	Two or three of the proposed turbines from the northern end of the Cloncumber cluster can be seen rising in silhouette to the south-west. These are seen at a noticeable scale in relatively close proximity, but they are also substantially screened by intervening trees. A number of other turbines in similarly close proximity are fully screened by foreground vegetation. The visible turbines are considered to have a visual presence in the order of sub-dominant in the context of this complex and intermittent 360° view. Aesthetically, there may be some visual clutter associated with the view of the proposed turbines rotating amongst the branches of foreground tree tops. However, the turbines are clearly located within the broad bogland beyond the immediate canal context of the view. On balance of the reasons outlined above the magnitude of visual impact is considered to be low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10AH5	Ticknevin Bridge over the Grand Canal	SE	2.71	4

Representative of:	• A designated canal view • Local community views		
Receptor Sensitivity	**Medium**		
Existing View	This is an elevated view from the Ticknevin Bridge over the Grand Canal. It is a relatively channelled view along the canal due to mature broadleaf vegetation that flanks the canal on both sides. This is a tranquil setting enjoyed by a cluster of houses that surround the bridge within an enclosed wooded context.		
Visual Impact of Maighne Wind Farm	Despite their relatively close proximity to the northeast and to the south of this location, none of the proposed turbines will be visible from here due to the degree of canal-side screening in the foreground and the fact that they are not on direct alignment with the canal. This view has been retained for illustrative purposes rather than as a worst-case scenario. The magnitude of visual impact is considered to be negligible by default.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Negligible**	**Imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10AH31	Carbury Castle on Carbury Hill	N and E	2.38	34

Representative of:	• A heritage feature • Local community views		
Receptor Sensitivity	**High-medium**		
Existing View	This is a vast panoramic vista to the north and east from the ruins of Carbury Castle on top of Carbury Hill. From the base of the hill spans a flat landscape of mixed quality pastoral farmland, which gives way to a large the bog that includes cutaway sections and other portions that have been retained in a relatively naturalistic state. A low rise cloaked in pastoral fields can be seen just beyond the bog to the northeast, but otherwise, a planar landscape continues to the flat horizon consisting of a similar range of land uses. Newbury Hall and its associated demesne are a notable feature of the middle ground context to the southeast.		
Visual Impact of Maighne Wind Farm	The three turbines from the Windmill cluster are seen in the near middle ground of this vista within the heart of the bog landscape. They are seen at a modest yet distinctive scale, particularly in comparison to the turbines from the Ballynakill cluster and the remaining clusters that can be seen scattered at greater distances to the north and east. In the context of this broad panorama, the proposed wind energy development is considered to have a co-dominant visual presence. The view of the turbines in this instance is not without some degree of aesthetic merit. The three turbines of the more prominent Windmill cluster have an even spacing and appear comfortably assimilated, within the heart of a cutaway section of bog in terms of both their scale and function. There is a strong sense of perspective generated between these nearer turbines and the more distant turbines contained within the view. This gives a sense of the dispersion of the clusters throughout the plains, which is also reinforced by considerable lateral gaps between them. Most importantly in this instance, the proposed turbines are not considered to significantly detract from the view from Carbury Castle. This remains a commanding view over the lowland landscape within which the turbines are clearly contained. There is also little sense of the nearest turbines imposing on the immediate setting of Carbury Castle (see chapter 14 Cultural Heritage for a more detailed appraisal in relation to 'historic setting'). Overall, it is considered that the magnitude of visual impact is Medium-low from this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Medium-low**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10AH32	Top of Round Tower in Kildare Town	N	9.62	15

Representative of:	• A centre of population • An amenity and heritage feature		
Receptor Sensitivity	**High-medium**		
Existing View	This is a vast 360° Vista afforded from the top of the round tower in the centre of Kildare town. It takes in a lower foreground of the urban context of Kildare town surrounded by a rural landscape of pastoral farming and tillage. To the north can be seen the 'Chair of Kildare Hills' (Allen, Dunmurry and Red) topped with a combination of farmland and conifer plantations.		
Visual Impact of Maighne Wind Farm	Approximately 16 of the proposed turbines will be visible in the saddle between Dunmurry Hill and the Hill of Allen. The most prominent of these will be four turbines at the eastern end of the Cloncumber cluster. One turbine from the Western end can be glimpsed between Dunmurry Hill and Red Hill. Additional turbines from the Derrybrennan and Drehid-Hortland clusters will be seen beyond the Cloncumber turbines at a smaller scale. In the context of this complex and vast 360° view, the visual presence of the proposed turbines is considered to be sub-dominant. Compositionally, the view of turbines within the saddle between these two Hills is an appropriate location that remains subordinate to these hilltops. There will be some visual clutter associated with the overlapping of several turbines within the saddle and also the potential for some scale confusion. This is on the basis that the flat landscape beyond the saddle is screened from view and the scale differential between turbines is slightly ambiguous along the linear feature of the saddle. Nonetheless, there is a comprehension that the turbines are contained within the broad and productive rural context and they do not appear out of place in this regard. For the reasons outlined above, the magnitude of visual impact is considered to be Low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High-medium	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10AH33	Blundell Castle, Edenderry	SE	6.63	12

Representative of:	• A centre of population • A heritage feature • A recreational feature		
Receptor Sensitivity	**Medium**		
Existing View	This is a vast panoramic vista to the south from the base of Blundell Castel ruins on Blundell Hill in Edenderry. It takes in a foreground of residential development at the outskirts of the town. The view to the south sweeps down across a large open field that is contained by a dense tree-lined hedgerow and similar vegetation beyond. This largely masks the farmed fields beyond and appears as a band of vegetation. A section of canal can be seen running away from the viewer to the south from the base of the hill. The chair of Kildare Hills provide a minor degree of containment to the south-eastern aspect of the view above foreground dwellings. The Wicklow Mountains can also be seen in the far distance.		
Visual Impact of Maighne Wind Farm	Approximately 7 to 8 of the proposed turbines from the eastern end of the Cloncumber cluster and the western end of the Derrybrennan cluster will be visible from here at a modest, yet noticeable scale between foreground houses and sections of vegetation. They will be seen partially in silhouette above the distant skyline ridge and partially against a backdrop of terrain. In terms of visual presence, the turbines are considered to be sub-dominant within this broad Vista. Aesthetically there will be a minor degree of visual clutter associated with the view of turbines amongst foreground buildings and tree tops. However, this is diminished by the clearer view of the Cloncumber turbines within the heart of the planar landscape to the southeast. These are clearly contained within the rural landscape beyond the settlement and do not appear out of place in terms of either the composition of the view or their thematic association with the underlying landscape pattern. On balance of the reasons described above, the magnitude of visual impact is considered to be Low.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
10AH34	Lullymore cemetery	SE	2.28	15

Representative of:	• A heritage feature • Local community views		
Receptor Sensitivity	**Medium**		
Existing View	This is an open view to the south from Lullymore cemetery, which is contained in the immediate foreground by a low stone wall. Beyond the wall is a semi-circular shaped field, which hints at the monastic origins of the site. This is defined by a scrubby tree-lined hedgerow and a line of conifers can be seen just beyond. Rising just above the conifers are the dome shaped tops of the 'Chair of Kildare' hills .		
Visual Impact of Maighne Wind Farm	Approximately a dozen of the proposed turbines from the Cloncumber cluster are intermittently visible above and between foreground trees and hedgerows. They are seen at a reasonable scale and they have a relatively broad lateral array, albeit with a low level of intensity. In the context of this view, the proposed turbines are considered to be co-dominant. This is a relatively clear and comprehensible view of the turbines, which are clearly seen to be contained within the broad rural context of farmland and bog beyond the cemetery. They will intrude on the chair of Kildare Hills to some degree, but this is by no means an iconic view of this landform. They are also clearly to the fore of these hills within a separate landscape context. There may be some minor visual clutter associated with turbines rising amongst foreground trees, but this tends to be ameliorated by the clearer view of other turbines, which provide legibility to the proposal. For the reasons outlined above, the magnitude of visual impact is considered to be Medium.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Medium	**Medium**	**Moderate**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
11AH1	Dun Ailinne	N	17.6	41
Representative of:	• A heritage feature (UNESCO candidate World Heritage Site)			
Receptor Sensitivity	**High**			
Existing View	This is an elevated 360° vista afforded from the top of Knockaulinne, which is the site of Dun Aillinne – an ancient ceremonial site thought to be associated with the inauguration of the kings of Leinster. There is little physical evidence of its heritage importance visible above ground other than a small cluster of stones on the hilltop. To the south the vista is dominated by the northern extents of the Wicklow Mountains and the Slieve Bloom range can be seen at a more modest scale to the west. In the subject view to the north, large pastoral fields defined by low hedgerows sweep down towards a complex lowland landscape that is dominated in the near middle ground by a large quarry to the northwest and a farmstead consisting of a number of large sheds and silos to the west. The landscape beyond becomes a relatively homogenous pattern of fields and hedgerows except in the direction of the quarry where the distinct grassland area of the Curragh and redbrick towers of the Curragh Military Camp can be seen. Further on in this direction the skyline is defined by the low undulating form of the 'Chair of Kildare' hills. Several settlements can be seen from this prominent location and the closest of these is Kilcullen just to the northeast. Kildare Town is also visible in the distance in the same section of view as the quarry and the 'Chair of Kildare' Hills. Another notable element within the overall view are a number of high voltage electricity lines and associated pylons.			
Visual Impact of Maighne Wind Farm	Nearly all of the proposed turbines will be visible above the skyline to the north to some degree, although there are several that will be substantially screened by the Hill of Allen. The turbines are seen at a small scale from this distance with a low degree of contrast against a backdrop of sky. This is particularly true of the Ballynakill, Windmill and Drehid-Hortland clusters, which are all more than 27km away and will only be discernible in the clearest of viewing conditions. The scheme will occupy a reasonable lateral extent, but this is relatively minor in the context of the 360° vista afforded from here. The turbines will be a noticeable background element within a vast and richly complex view over the Kildare lowlands and overall, their visual presence is deemed to be sub-dominant. In terms of aesthetics, the nearest cluster of turbines (Cloncumber) is seen at a larger scale than the more distant clusters, some of which are more than twice the distance away (30km+). This provides the viewer with a sense of perspective as well as some comprehension of the dispersed layout of the scheme. It also provides a rationale for the apparently tightly clustered and overlapping lines of turbines in the far distance, particularly when compared to the looser arrangement of the Cloncumber cluster. This nearer and more noticeable group of turbines has a relatively even spacing and a flat profile that reflects the planar nature of the landscape in which they sit. As with other hilltop views from the likes of the Hill of Allen, the landscape in view is perceived to be a modified anthropogenic one containing a rich variety of productive and extractive land uses. Within this context, the proposed turbines will not appear incongruous. On balance of the reasons outlined above the magnitude of visual impact is considered to be Low.			

Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High	**Low**	**Slight**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
14AH1	Rock of Dunamase	N	29.81	21

Representative of:	• A designated scenic view • A tourism and heritage feature		
Receptor Sensitivity	**High**		
Existing View	This is a vast panoramic view to the north and west across the lowland Plains of County Kildare and County Offaly from the rock of Dunamase. The foreground slopes sweep down in a series of large fields contained in pasture and tillage and defined by neat hedgerows. In the near middle ground the most prominent feature of this view is the series of three small, but steep Hills. Otherwise the distant horizon to the north and west is fairly flat.		
Visual Impact of Maighne Wind Farm	Most of the proposed turbines are potentially visible from here to the left and between the series of small hills in the near middle ground that are a focus of this view. Nonetheless, the turbines will be faintly visible, very small scale features at distances ranging between 25 and 40 km. From this angle they are seen within a relatively condensed cluster especially in relation to the broad panorama on offer. In the context of this vista, the turbines are considered to have a visual presence in the order of sub-dominant to minimal. Though they may be noticeable in the clearest of viewing conditions, it is not considered that the proposed turbines will have any measurable effect on visual amenity within this vast vista over a working rural landscape. Thus, the magnitude of visual impact is considered to be negligible.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	High	**Negligible**	**Slight-imperceptible**

Viewshed Reference Point		Direction of View	Distance to nearest turbine:	Number of turbine nacelles visible:
07KV5	Top of Trim Castle	S	15.89	20

Representative of:	• An important heritage feature • Major tourist attraction • A heritage town		
Receptor Sensitivity	**Very High**		
Existing View	This is an elevated 360° vista from the top of Trim Castle, which is the largest Norman Castle in Ireland. The lower foreground takes in the urban area of Trim to the south and west and a town park that surrounds the River Boyne to the north. Beyond the townscape to the south is a fairly uniform rural landscape of fields and hedgerows that become condensed to form a dark band of vegetation below the flat horizon.		
Visual Impact of Maighne Wind Farm	The proposed turbines will be revealed in silhouette above the distant horizon to the extent that only the full blade sets of the nearest turbine cluster (Ballynakill) will be visible. More distant turbine clusters will be fully or partially screened from view. The visible turbines will only be faintly visible at this distance due to the low degree of contrast against the sky. The scheme will have a reasonable lateral extent in the context of the southerly vista, but in the context of the 360° panorama afforded from the top of the castle, this represents a small proportion of the overall view. Consequently, the visual presence of the scheme is considered to be in the order of sub-dominant to minimal. The proposed turbines would be seen to have a loose linear layout from this slightly elevated advantage point. Given that the more distant turbine clusters will be screened from view, there will be few instances of turbine overlap that might cause visual clutter on the horizon. Whilst the blade sets of some of the turbines will rotate on the vegetated skyline, this is a relatively minor aesthetic issue at this considerable distance. On the basis of the reasons outlined above, it is considered that the magnitude of visual impact is Low-negligible at this location.		
Summary	Based on the assessment criteria and matrices outlined in section 15.5 the significance of visual impact is summarised below.		
	Visual Receptor Sensitivity	**Visual Impact Magnitude**	**Significance of Visual Impact**
	Very High	**Low-negligible**	**Slight**

Appendix M.2

Methodology Statements for Landscape and Visual Analysis Tools

M.2a Theoretical Visual Intensity (TVI) Mapping

M.2b Theoretical Visual Intensity (TVI) Mapping

M.2c Route Screening Analysis (RSA)

M.2d Photomontage Preparation

Zone of Theoretical Visibility (ZTV) Mapping

The first part of the visual baseline is establishing a 'Zone of Theoretical Visibility' (ZTV) using a computer-based visiibility calculation called viewshed analysis. This type of analysis is commonly used for wind farm developments, indicating the number of the proposed turbines that could potentially be seen from the surrounding landscape if they were built. The word 'potential' is used here as the digital terrain data (DTM) upon which the results are based does not account for non-landform detail such as vegetation or buildings that may offer screening between the viewer and the proposed development. While this offers a useful starting point by identifying those areas that are definitely screened by permanent landform, those areas identified as having a view of turbines represent a worst-case scenario that would only be valid if the landscape were 'lunar' in character i.e. completely devoid of vegetation or man-made structures.

While such a map is commonly presented as a statement of visibility for many wind energy developments, it has limited application in the case of this proposal due to the nature of the surrounding landscape - its relatively flat landform profile coupled with its heavily hedgerowed field boundaries. In this instance it was used principally as an early aid to viewpoint selection and also as a filter for a subsequent more thorough and comprehensive analysis of non-landform screening on the ground.

There are other texts that provide exhaustive discussion on the algorithms used to generate a ZTV (*see 'Visual Representation of Windfarms – Good Practice Guidance', SNH, 2006*). For the purpose of this methodology a list of the basic parameters that were used in its calculation follows:

Software used:	ArcGIS with 3D Analyst module
Data used:	DTM point data (10m centres) from Ordnance Survey Ireland
Data extent:	30km from the cumulative footprint of all turbine positions combined
Heights tested:	ZTV no.1 - Blade Tip Height – 169 m (109m tower + 60m blade) ZTV no.2 - Nacelle Height – 109 m
Eye-level height:	1.7 m
Earth Curvature:	Yes

Theoretical Visual Intensity (TVI) Mapping

Basis for Theoretical Visual Intensity (TVI) Mapping

The ZTV calculation for a wind farm requires that a representative height be selected on the turbine structure for which we wish to test the visibility in the surrounding landscape. Heights that would be typically examined include the nacelle height or the height of the blade tip. If the map is calculated on the basis of the nacelle height and the colouring in a particular area indicates a value of 10, this means that 10 nacelles can be seen from that area by a person of average height. It does not, however, mean that just the nacelles are visible – while this might indeed be the case, it might be the case that 10 full turbines are visible. It simply means that *at least* the nacelle part of the turbine will be visible for a total of 10 turbines. So, while a ZTV is useful for indicating the number of turbines that are visible at a specific height, one cannot glean from a ZTV map information about the full level of visibility of the turbine structures in view. Furthermore, a ZTV map typically does not account for the scale of turbines in relation to viewing distance. This would suggest that the same level of visibility might be experienced at 30km as would be experienced from 1km. If the person viewing this map is not experienced with this type of analysis, ZTVs can be misunderstood and assigned too much importance in the determining of wind energy applications.

For these reasons a more advanced form of ZTV analysis has been utilised for this baseline study and this has been coined Theoretical Visual Intensity (TVI) Mapping.

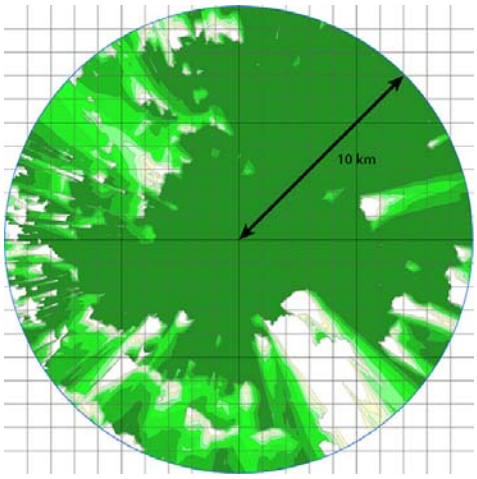
Description of TVI mapping

A simple description of the TVI map is that it is a measure of the proportion of a 360° viewshed that would be occupied by turbines within the context of the surrounding terrain. The value of TVI mapping is that it highlights where in the study area the proposed turbines are likely to be a prominent visual feature and therefore have the potential to give rise to higher order visual impacts. It must be reiterated that Visual Intensity Mapping is still a part of baseline analysis as it does not take account of the nature of change to views or the sensitivity of visual receptors, which remain the subject of professional judgment by the landscape and visual specialist. As with standard ZTV analysis, Visual Intensity mapping also does not account for screening of views by the likes of vegetation and buildings, which can be a key factor in rural, lowland landscapes.

The area that a turbine (or any structure) occupies in one's view is a function of (a) its dimension, (b) the proportion of it that is visible and (c) its distance from the viewer.

By processing and combining multiple ZTVs for a range of heights along a turbine's structure we develop an accurate picture of its level of exposure to the surrounding terrain. By considering the area of the turbine potentially exposed at each of these heights we can map the visibility as a percentage of the total turbine that is visible. Based on the landscape type and the proliferation of hedgerow vegetation it was decided that a 10km radius provided an ample study area for each turbine.

Figure M.2.1: ZTV carried out for a single turbine indicating the relative proportions of the turbine that will be visible from the surrounding landscape to 10km



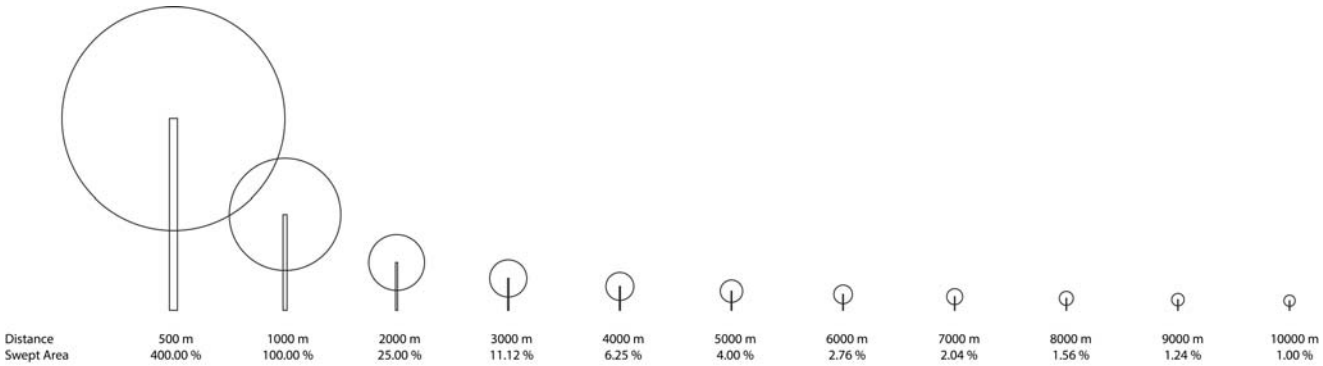
White areas indicate those areas that are completely screened by landform and will have no view of the turbine.

The light green colour indicates where blades will come into view followed by darker shades of green to indicate the potential view of progressively more of the turbine.

The dark shade of green covering the majority of the ZTV indicates the area that will have a view of the entire turbine.

Based on the principle that the perceived height of an object in the landscape will reduce to 50% (and its perceiced area will reduce to 25%) when its distance from the viewer is doubled, we calculated the scale reductions for a number of distance intervals to 10km. For ease of reference we assigned a value of 100% to the perceived area occupied by 1 turbine at 1km distance. This results for example in a value of 25% for a full turbine at a distance of 2km or 400% when placed at a distance of 500m.

Figure M.2.2: Perceived relative size of a turbine when viewed over a range of distances. % values are relative to a turbine at 1,000m distance = 100%

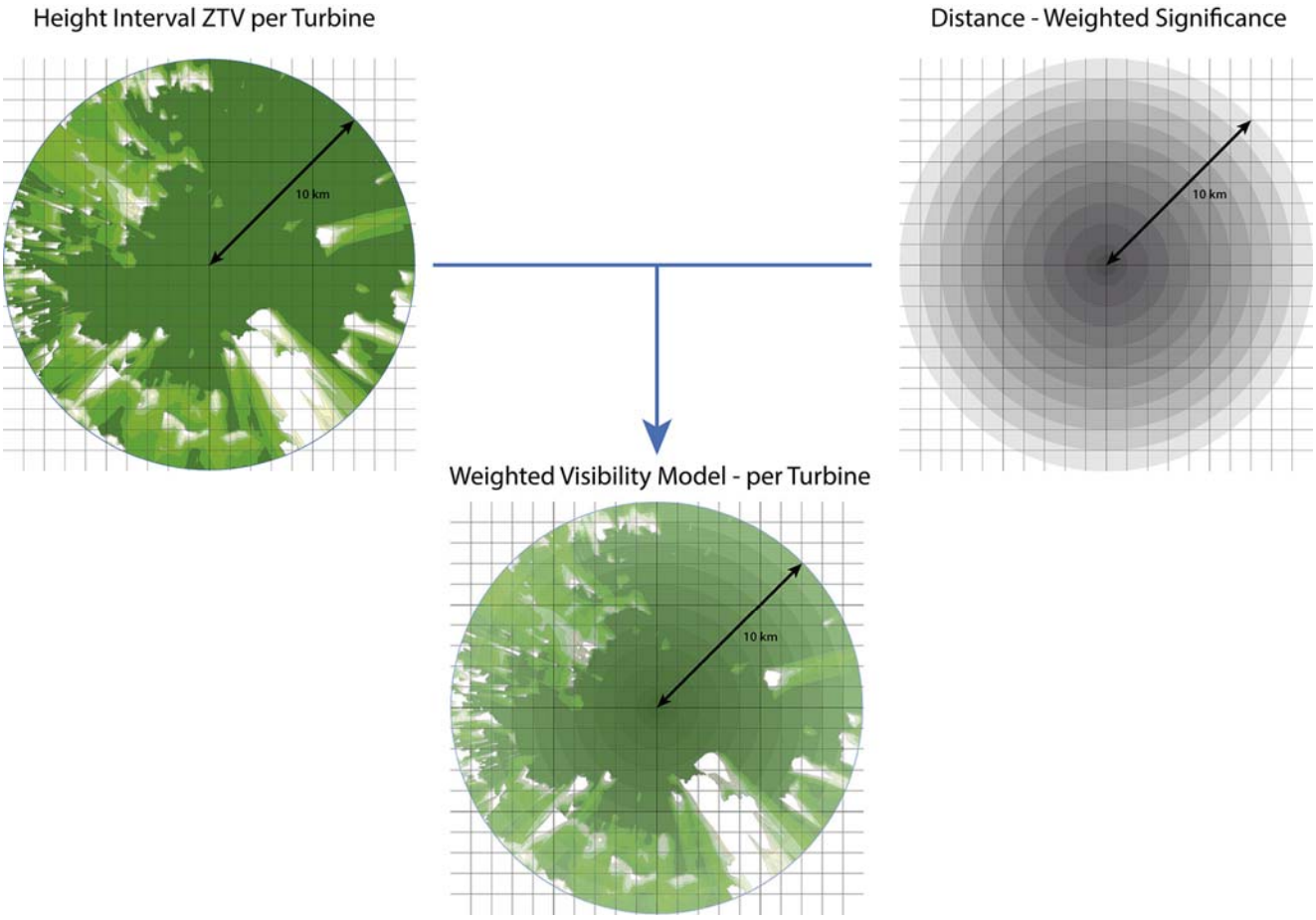


It must be noted that a value of 100% is not intended as a limit of acceptability or a key threshold. Instead, this is a relatively arbitrary scenario that simply allows a comprehensible starting point for understanding the relative percentage scores used for the mapping. As it is reasonable to consider that a turbine occupies more space than its slender components alone, a 'draped' area is used to calculate the space within a view occupied by each turbine (see figure M.2.3 below)

Figure M.2.3: Example of 'draped' turbine used for area calculations in the Theoretical Visual Intensity (TVI) mapping

By combining the results of the distance weighted model with the ZTV of combined-height for each individual turbine we achieve an accurate theoretical model of the perceived area that it will occupy in one's view. By combining these individual results we achieve the overall Theoretical Visual Intensity map.

Figure M.2.4: Result of combining the Distance Weighted Mapping with Combined-Height ZTV



Route Screening Analysis (RSA)

Basis for Route Screening Analysis (RSA)

Because ZTV and TVI maps are computer generated in respect of terrain only, they do not account for screening of views by the likes of vegetation, which can be a key factor in rural, lowland landscapes. These theoretical maps can, therefore, grossly overestimate the level of visibility in these landscapes. For this reason yet another layer of analysis is considered necessary in such instances and this is termed Route Screening Analysis (RSA). This is an internationally recognised form of visual analysis that has been used in the Irish context on several previous occasions. There are no particular guidelines for undertaking RSA so the degree of accuracy and reliability is strongly dependant on the rigour employed by the landscape and visualisation specialist and these needs to be set out for each particular study.

Description of RSA

Route Screening Analysis, as its name suggests, considers actual visibility of the proposed wind farm from surrounding roads using current imagery captured in the field then subsequently reviewed in the context of a digital model of the development. Route Screening Analysis bridges the gap for the assessor between the computer generated, theoretical visibility modelling (ZTV and TVI maps) and the actual nature of visibility in a given area.

RSA Methodology

For the proposed Maighne Wind Farm, RSA was undertaken for public roads within a 5km radius of turbines. This utilises 360° photography captured at one second intervals. Each frame is then presented in conjunction with a synchronised three dimensional model of the scheme within a digital terrain context. Back in the office a quick and relatively accurate estimate can then be made for each frame (55,000 in this instance) as to which of three possible visibility scenarios the viewpoint falls into. These categories include; open visibility; partial visibility; and fully screened. In this instance 'open visibility' is conservatively judged to occur if the view of a full blade rotation of a single turbine is afforded. 'Partial visibility' is the most ambiguous of the three categories and can occur in three possible ways. These include the clear view of less than a full blade rotation of any particular turbine, the veiled view of turbines through light vegetation (typically winter vegetation) or a fleeting open view of a turbine/s such as might be experienced passing a gateway.

Figure M2.5: 'Screen-grab' Example of an 'Open View' Scenario from the RSA process (55,000 such images)

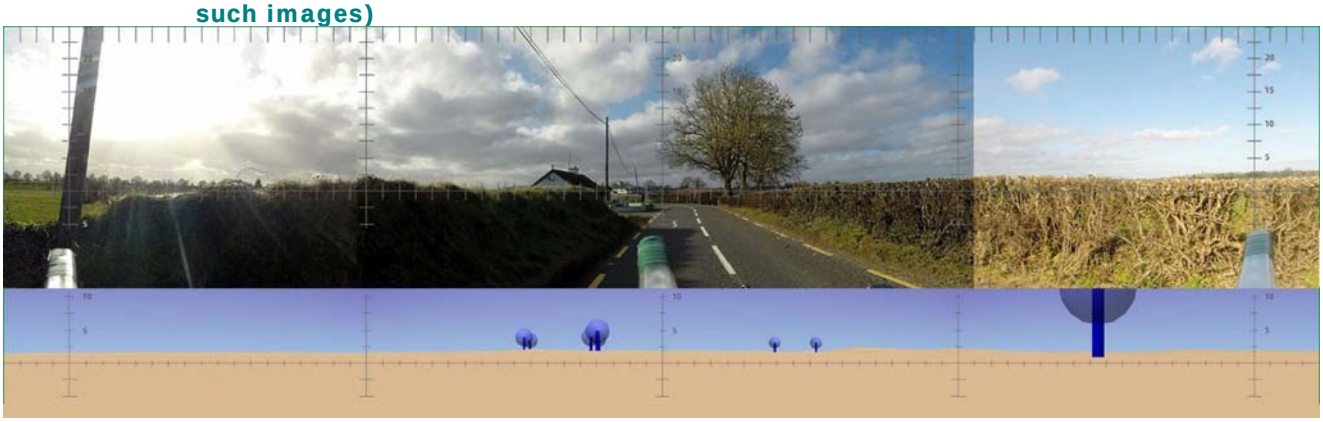


Figure M2.6: 'Screen-grab' Example of a 'Partial View' Scenario from the RSA process

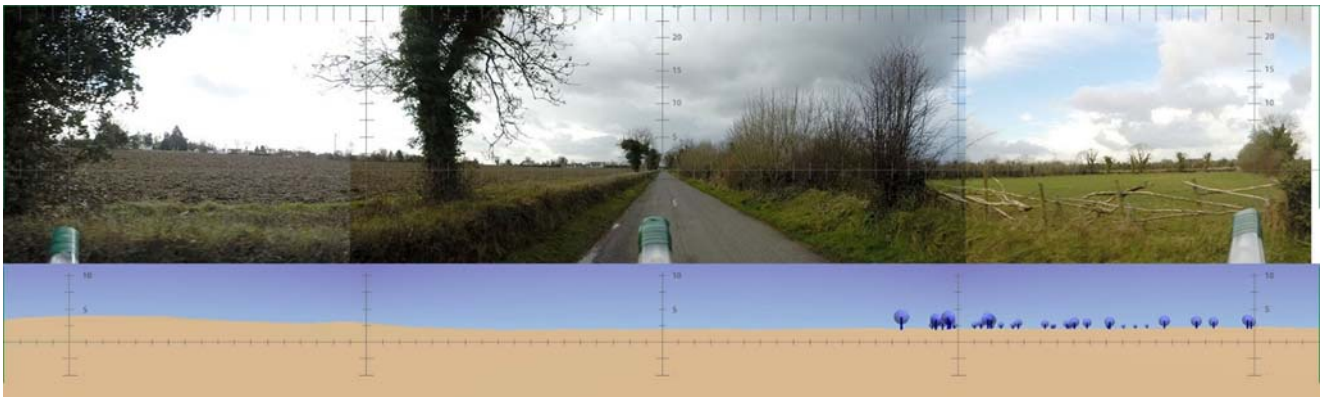
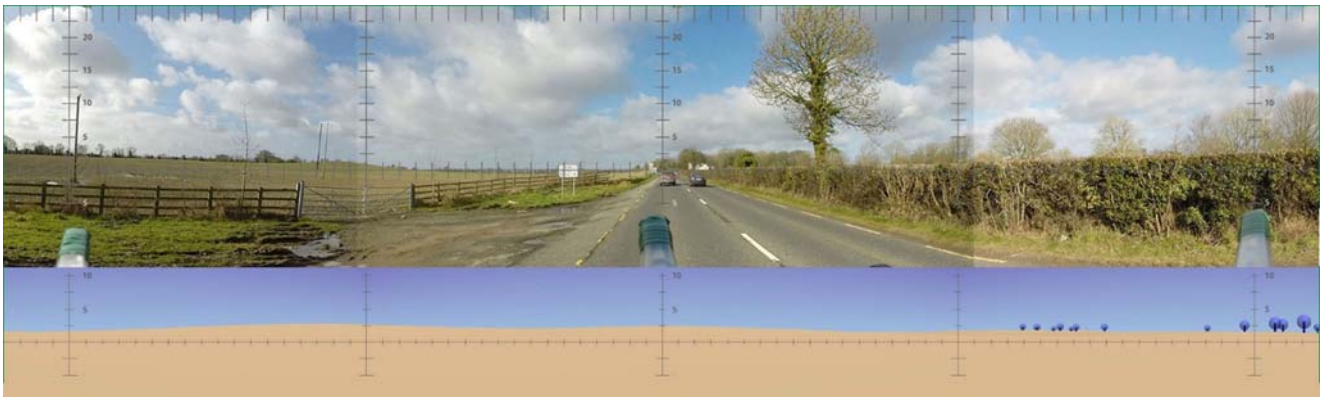


Figure M2.7: 'Screen-grab' Example of a 'Screened view' Scenario from the RSA process

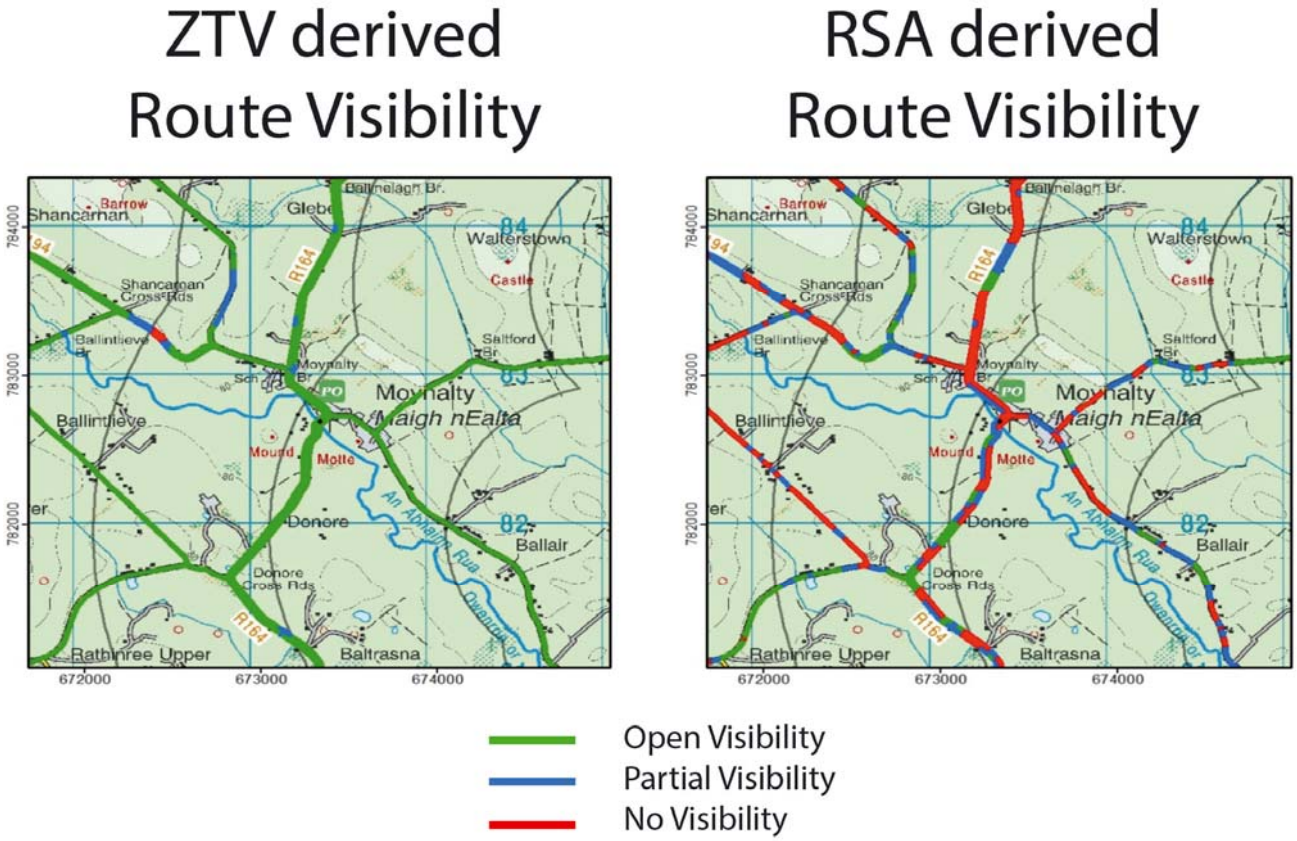


Not only is the study conservative in its categorisation of open visibility (a single blade rotation), it was also carried out during winter months when deciduous trees offer the lowest degree of screening. Although it only represents the view from roads, in the rural context of the central study area most dwellings are located adjacent to the road network. The degree of screening at the roadside is considered to be no greater, and in most cases less, than that surrounding rural dwellings. This is on the basis that shelter vegetation is commonly planted in close proximity to the dwelling on at least two sides. For these reasons it is felt that the RSA is a strongly representative and not overemphasised analysis of views experienced at all forms of receptor location within the central study area.

The mapped output of the RSA process can indicate the spatial distribution of visibility, which usually relates closely to the land form and land cover patterns in an area as well as distance from turbines. The pattern of visibility can also give a clear indication of the typical distance at which turbines of a particular height tend to become screened by the vegetation structure in that area. This is a function of turbine height versus the typical height of, and distance to, nearest hedgerows. The visibility data can also be compared with the theoretical visibility indicted in the initial ZTV map, which tends to highlight the inadequacy of the latter in lowland landscapes.

In order to understand the degree of discrepancy between a ZTV map and actual visibility of turbines represented by the RSA map, the two have can compared using the process in figure M2.5 below.

Figure M2.8: Comparison of route visibility derived by both ZTV and RSA



Capture of Imagery

A number of options for the analysis of the screening were considered including using Google Streetview or using georeferenced video footage. Streetview imagery was deemed not fit for purpose for a number of reasons - principally that it is captured at a height of 2.5m+ which doesn't represent what a person would normally witness on site; the imagery is out of date; it would be too difficult to analyse. Georeferenced video footage was deemed too difficult to handle and woud be very difficult to replicate the motion and view in a 3D environment.

In the end a photographic unit was designed and constructed by Macro Works Ltd for the purpose of collecting 360 degree imagery on the move. This unit housed 4 synchronised cameras capable of wide angle views, an anti-log NMEA reader for collecting a continuous stream of GPS data, and a high precision Trimble GPS beacon receiver capable of maintaining lock in taxing conditions and when under canopy. The unit was calibrated for viewing angles and level-mounted on top of a vehicle such that the camera height was equivalent to average eye-level height at 1.7m. With photo capture programmed for 1 second intervals and a car speed maintained less than 50kmph, this resulted in 360 degree imagery captured approximately every 15 metres.

Routing for the entire area was coordinated prior to going on site using detailed sat-nav functionality. This enabled the route to be driven in the most efficient manner with the minimum of overlap and time wastage. All Regional routes, National routes and Motorways were driven in both directions as there was sufficient separation between both sides of the road to result in different visibility results. Third class and local roads were driven in one direction (analysis in both directions). Access routes and tracks were not driven.

Figure M2.6: Image capture type per route type

Route Type	Direction of Driving	Analysis of Panoramic Imagery
Motorway	Bi-directional	Forward facing imagery only
National Primary	Bi-directional	Forward facing imagery only
National Secondary	Bi-directional	Forward facing imagery only
Regional	Bi-directional	Forward facing imagery only
Third Class	Uni-directional	Forward and Rear facing imagery
Access Routes / no-thru roads	N/A	N/A

Processing of Imagery

All imagery and data was downloaded at the end of each day (9 site visits resulting in 7.5 full days of imagery and a total of 350K+ images) and geo-tagged for position using the GPS data collected. Once geotagged each image was put through a custom action to correct for barrel distortion (inherent in wide angle imagery) and crop it to perfectly align with the imagery on either side of it. The images were subsequently aligned and resized to 200 degrees depending on the direction of view required. These images were carefully calibrated to match with regular panoramas captured with a 50mm lens and output to cylindrical projection.

Due to the number of images to be processed, a number of route samples were selected from the primary dataset and analysed to test the viability of using a viewpoint density of 1 in every 2 i.e. processing and analysing only every second viewpoint. At the stated vehicle speed of <=50km this would result in a viewpoint every 30m rather than every 15m. In each case the classification patterns proved to be a close match and the classification statistics proved virtually identical. It was on this basis that we proceeded, reducing the number of panoramic frames from approx 110,000 to 55,000.

A full digital model of the site (terrain and turbines) was prepared in 3D using DTM data procured from the Ordnance Survey of Ireland. This was the same model used to output wireframe renders for the photomontage output so it is of a high accuracy with regard to dimensions and positioning. This was used to output a 200 degree rendered view of the turbines from each point at which a panorama was captured.

Both the panoramic photographic composite and the panoramic render were compiled into a single image per viewpoint for analysis complete with an overlay of 2.5 degree graduations.

It should be noted that the camera unit was fixed rigidly to the vehicle and did not have the benefit of an IMU to counter changes to the picth and roll of the vehicle resulting from hils and camber. The model on the other hand was set to level for each point. Analysis was carried out with this in mind and a series of automated actions were programmed to quickly overlay and test imagery where there was any ambiguity surrounding visibility.

Analysing Imagery

Analysis was carried out through a series of progressive filters. Images that displayed no view of the turbines were identified and classified first. These were the removed from the data set. Images that displayed clear open views were identified next and removed from the data set, and so on. This meant that the remaining dataset became progressively smaller and easier to manage with each pass. The first stage filtering and classification identified 3 classes of visibility:

1. Clear open views – where at least 1 full rotation of a turbine's blades would be visible
2. Partially open views – (a) identified as 'veiled' views interrupted by thin vegetation
   (b) views where less than a full rotor rotation would be visible (above tree tops, for example)
   (c) fleeting views of turbines possibly with no more than a single frame
3. Screened views – where turbines are completely screened by vegetation

An additional stage of analysis and filtering of the 'Open' class of visibility concentrated on the numbers of turbines that would potentially be visible.

Additional analysis of RSA 'Open View' Category

For the primary RSA 'open visibility' was conservatively deemed to be a clear view of at least the full blade set of a single turbine. Based on the findings of the primary RSA that vegetative screening within the central study area tends to screen the view of turbines beyond a distance of 2-3km it was considered necessary to undertake additional analysis of the 'open view' category. It was intended that this would determine how many turbines are likely to be a clearly visible from any location already contained in the open view category. This analysis was divided into three classes being; 1-5 turbines, 5-10 turbines and 10+ turbines. Again, it uses the principle of a full blade rotation for determining how many turbines are openly visible.

Statement of Accuracy

Aspects of the limitations of this type of analysis have been discussed at points in the above methodology, however, it needs to be clearly emphasised that this study is designed to offer a general statement on the level of screening inherent through vegetation and/or buildings in the area surrounding the proposed Maighne turbines. We have taken every precaution possible to present a conservative estimate of the true levels of visibility on site including carrying out the assessment when the screening foliage is at its minimum.

By effectively post-processing and analysing the data at 2 second intervals (every 2nd captured viewpoint) there may be gaps in the screening up to 30m long that could potentially be missed in this assessment. Equally, however, there may be a frequency of open views that hides the reality of intermittent screening along a route. Overall, we are confident that the analysis is balanced and offers a realistic sense of the screening levels as they would be experienced on site.

It should be noted that many of the route sections that fall into the 'Partial View' category have been so classified on the basis of veiled screening by hedgerow vegetation. It is this screening type which is likely to change in favour of being fully screened in summer months as foliage becomes thicker and less permeable to views.

Photomontage Preparation

Photomontage Methodology

Detail pertaining to the procedure involved in capturing preparing photomontages for wind energy developments is detailed, prescriptive and standard across the more stringent guidelines to which Macro Works has adhered to in the course of this study. For a detailed discussion on this prescribed methodology, please refer to the 'Visual Representation of Wind Farms, 2006 or Dec 2014' by the Scottish Natural Heritage (SNH) or the 'Visualisation Standards for Wind Energy, 2013' by the Highland Council.

The following aspects of our procedure are worth noting:

- Equipment Used
    1. Camera – Canon EOS 5D Mark II (22 MP full frame sensor)
    2. Lens – Canon EF 50mm 1.4 (fixed focal length prime lens)
    3. GPS – Trimble GeoXH (GeoExplorer 6000 series) with Floodlight Tech (+/- 10cm accuracy)
    4. Laser Rangefinder – TruPulse 360B (with accurate height and compass measurement)
    5. Tripod and Head – Manfrotto 303SPH (professional panoramic head)

- All viewpoints were captured in full 360º. This results in 18 x 50mm images captured in portrait format. This has a number of advantages:
    1. This allows for fully informed assessment of visual impact.
    2. This facilitates a full assessment of cumulative impact irrespective of the direction in the view.
    3. In instances where there is limited visibility of surrounding terrain, this will often show features of distant terrain which aid placement of the turbine model in the XYZ planes.
    4. This enables consistency in the calibration of angles, angles of view and thus turbine scale and position.

  All imagery is captured in RAW format which is fully verifiable should it be required.

- In addition to the standard details captured on site we capture the following:
    1. A reference photo pointing due North. We use this as a calibration aid when matching model to terrain.
    2. A reference photo of the position of the tripod for verification. This can also aid the repositioning of a tripod should an image be required from the same location at a later date.

- The modelling of turbines in the landscape:
    1. The terrain model is derived from DTM data (point data at 10 centres). This offers greater information and accuracy than 10m contour data and offers the subtle detail required to achieve accurate placement of turbines in terrain that can otherwise be short on the topographic detail required.
    2. All turbines are modelled with terrain in a 3D GIS environment. Topos by 43D is used in conjunction with ArcGIS 10 and its 3D Analyst extension. These models are used for wireframes and as a turbine placement aid only.
    3. Further to the turbine placement above we model all turbines to precise detail in 3D Studio Max. This allows us to render the development to a high photorealistic finish.
    4. All model renders take account of exact lighting detail present on the day of capture.
    5. All models take account of the inherent earth curvature – the effects of which are prevalent on a flat site such as this one.

- Printing
    1. Macro Works is cognisant of the differences between what can be observed on a computer screen and what is visible in print. All viewpoints are printed in draft a number of times to tweak the look of the turbines such that Macro Works is content that the output is as intended.
    2. Printing is carried out on the best possible large format photographic printers at a resolution of 1,440 dpi. Most standard photographic printing requires just 300 dpi.

Guidelines

While Macro Works keeps abreast of international best practice as it relates to the preparation and presentation of photo-simulations, the most thorough and researched guidance comes from our neighbours in the UK. Since the beginning of the wind power era and the placement of tall turbines in the landscape such guidance has sought to have photo-simulations presented in such a manner as to allow stakeholders (familiar and unfamiliar with the proposed site) to make consistent appraisal based on accurate and realistic imagery.

The DoEHLG Wind Energy Guidelines (2006), whilst comprehensive on the issue of turbine siting in the landscape, is scant on methodology and technical detail surrounding the preparation of visualisations – one of the principal tools for assessing the level of visual impact of a proposed scheme. At the same time in the UK the SNH published a comprehensive how-to guide for all things visual for the wind industry - 'Visual Representation of Wind Farms Good Practice Guidance', 2006. This was widely adopted as the principal reference guide by many discerning practitioners (including Macro Works) and was endorsed as *the* standard by many authorities across Ireland and the UK, including not least the British Landscape Institute. In light of the many wind farms now existing across Irish and British landscapes the opportunity to research and further develop this visual guidance was taken and resulted in an update last year, 2014.

While much of Macro Works' output is designed to at least achieve the standard set down by the SNH our workflow and methodology has deliberately evolved to facilitate the more challenging aspects of visibility analysis when it is required. This Maighne Wind Farm proposal is one such study where its scale, its spread, and the features of the landscape in which it is situated are not typical of most proposals heretofore. As such, some aspects of prescriptive outputs sought by the guidance are rendered too limiting to be meaningful and effective.

The SNH itself is cognisant of the fact that landscapes are diverse and that situations may dictate a common sense approach to the implementation of their guidance – 'Different landscapes, types of wind farms and conditions in other countries may require different approaches.' While the approach to image capture and preparation of accurate montages has been recognised and adopted in full, the approach to presentation of the graphics has been customised to facilitate the features of this type of large-scale development in the context of the Irish Midlands.

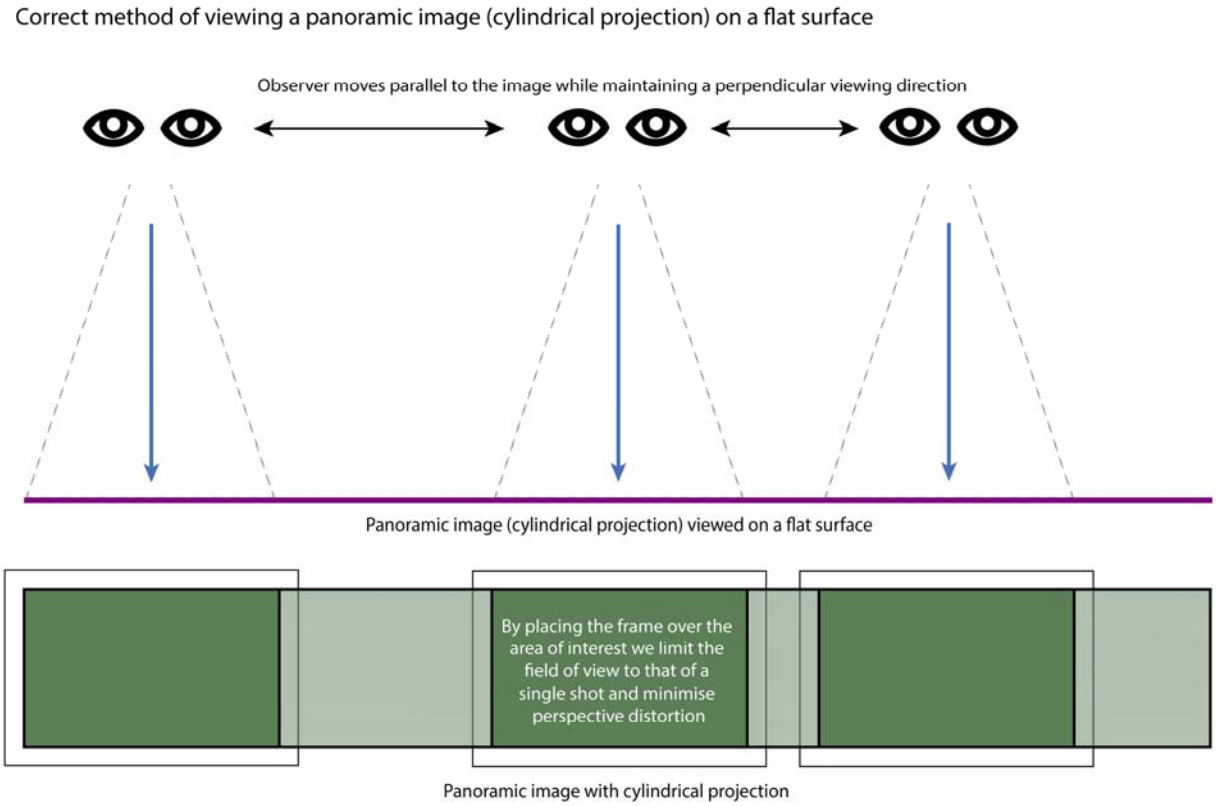
Limitations and Solutions of the SNH guidance in the context of Maighne Wind Farm

1. Panoramas (Planar vs Cylindrical projection)

   The use of planar projection panoramic imagery is best suited to developments that occupy a relatively small horizontal angle of view. This projection is designed to allow panoramic images captured in an arc to be displayed on a flat surface such as a wall or a table. The result, however, is an image where the point of interest and direction of view must be concentrated towards the centre due to ever-greater distortion occurring towards the edges. This works fine for a modest development at distance but results in exaggeration of the scale of turbines that fall outside of the central portion of the image – as would be the case for the Maighne Wind Farm where the turbines have the potential to occupy a large horizontal angle of view.

   To compensate for this we prepared the imagery for the Maighne Wind Farm with cylindrical projection. This projection results in a panoramic image that is representative of what we see in the landscape when we turn our heads in an arc from left to right or right to left. Panoramic imagery derived from a set of images captured in an arc should (to preserve scale and perspective) also be presented and viewed in an arc. This is seldom practical especially for large format prints. To enable review of such imagery on a flat surface such as a desk it is important to maintain a perpendicular view (at the specified viewing distance) whilst moving to the left or right along the length of the image.

   By placing the frame over the panorama we limit the view to the point of interest and crop out that portion that would otherwise appear distorted to the left and right.



2. Focal Length

All of the principal authorities involved in publishing guidance for visualisations, both here in Ireland and in the UK, continue to advocate the use of the 50mm focal length lens as the standard for all baseline photography. This, more specifically involves using a 50mm focal length lens mounted on an SLR camera with a full frame (24mm x 36mm) digital sensor. This camera / lens combination offers the least level of perspective distortion. While this 50mm baseline standard holds true there is much discussion currently taking place to suggest that a 70mm - 75mm equivalent image should be used to present the imagery. While not yet endorsed by all authorities, the SNH advocates this approach in its 'Visual Representation of Windfarms, Dec 2014' guidance based on research that it carried out in 2013/14 and previous research carried out by the University of Stirling in 2011. Although this research is an important development for visual submissions it is recognised by the SNH that there is high variability between developments and that circumstances may require a pragmatic and flexible approach to the implementation of their guidance. Furthermore it is worth noting that the guidance does accept that many projects have been in train for some time prior its publication and accepts that there will be a period required to migrate to the new procedures. Macro Works has accepted that this guidance is an important development and has taken a number of steps to address the focal length issue raised. We do contend, however, that the characteristics of this particular development in this particular landscape type would not be clearly represented using the 75mm focal length recommendation for the follow reasons:

1. Unlike typical upland sites where the majority of wind farms are sited due to greater wind potential, this midland site is serviced by a dense network of roads. This has resulted in a significant number of viewpoints that are relatively close to turbines. The 75mm focal length, if implemented, would result in turbine nacelles and blades (likely of the most important turbines being assessed) being cropped out of the view.

   In such instances, the guidelines suggests presenting the photograph in portrait mode rather than landscape mode. With a 75mm focal length this would result in an increase in the vertical angle of view (vAOV) from 18º to 27º. This is the same vAOV as we have presented with allof our 50mm focal length imagery.
2. The 50mm focal length imagery that we have presented shows a necessary horizontal angle of view (hAOV) of 120º. This results in a page length of 1.2 metres each. If enlarged to allow for a 75mm focal length, this 120º would result in a page

length of 1.8 metres each. This, in our opinion is unwieldy and impractical for any submission.

To account for the 75mm crop as recommended in the SNH guidance (70mm in the guidance published by the Highland Council, 2013), Macro Works has provided a rigid frame to place over the montage image that crops the panoramic image to the dimensions of a single 75mm focal length image. By adjusting the viewing distance to cater for the smaller image (66% of the vAOV of the 50mm image) we cater for the 75mm crop requirement should it be required.