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APPENDIX 15

Landscape and Visual

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APPENDIX 15.1

Visual Impact Assessment of Viewpoints

APPENDIX 15.1

Visual Impact Assessment at Viewpoints

15.1 (a) – Appraisal of Visual Receptor Sensitivity

15.1 (b) – Appraisal of Visual Impact Magnitude

1. Appendix 15.1 (a) - Appraisal of Visual Receptor Sensitivity

Degree of Association within each Criterion

Table 15.1 Degree of Association within each Criterion

Strong association	Moderate association	Mild association	Negligible association

Table 15.2 Receptor Sensitivity Criterion and Analysis at each Viewshed Reference Point (VRP) (VP1 - VP12)

Susceptibility / Values associated with the view	VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8	VP9	VP10	VP11	VP12
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	L	L	HM	ML	HM	ML	ML	ML	ML	ML	ML

Table 15.3 Receptor Sensitivity Criterion and Analysis at each Viewshed Reference Point (VRP) (VP13 - VP23)

Susceptibility / Values associated with the view	VP13	VP14	VP15	VP16	VP17	VP18	VP19	VP20	Vo21	VP22	VP23
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	ML	ML	ML	ML	ML	ML	ML	M	M	H M

Table 15.4 Receptor Sensitivity Criterion and Analysis at each Viewshed Reference Point (VRP) (VP24 - VP27)

Susceptibility / Values associated with the view	VP24	VP25	VP26	VP27
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	M	ML	ML	M

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP1	**Longwood** - 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. The low vegetated embankment of the Royal Canal can also be seen running across the view in the middle distance.	Medium-low	Around half of the proposed turbines will be partially visible from here, though they are unlikely to be noticed by a casual observer rising intermittently within the winter tree tops of a middle ground canal-side vegetation. Even if they are noticed, the distant turbines have little bearing on the visual amenity of this rural scene and the magnitude of impact is deemed to be Negligible.	**Imperceptible / Neutral / Long term**
VP2	**Enfield** - 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.	Low	Turbines from the proposed Drehid Wind Farm will be seen between and amongst the winter branches at an oblique angle to the direction of travel. 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. Overall, the visual presence of turbines in this complex and dynamic vista is considered to be in the order of sub-dominant to minimal – a background feature that may not be noticed. There are some minor instances of turbine overlap and potentially some ambiguity relating to the partial view of turbine blades rotating amongst intervening tree branches. However, such effects will be reduced for much of the year when the trees are in-leaf. 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 (albeit limited) of the proposed development.	**Imperceptible/ Neutral / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
			On the basis of the reasons outlined above, the magnitude of the visual impact at this location is deemed to be Negligible.	
VP3	**M4 motorway at Ballyvoneen** - 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, which stretches towards a distant flat horizon.	Low	The proposed turbines can be seen at a relatively prominent scale between middle-ground trees and tree lines just to the left of the road alignment. As such, they are within the focus of the view even though the vista spans across a vast lowland landscape to the northwest and the turbines only occupy around 13 degrees of viewing arc. On balance, the visual presence of the proposed scheme is considered to be in the order of co-dominant to sub-dominant within this view. The scale of the proposed turbines is not overbearing within this view across rolling pastoral farmland and the turbines appear well accommodated in a thematic sense within the lowland landscape just beyond. The tight clustering of the turbines, whilst desirably limiting the lateral extent of the development, results in a relative intensity of structures and a number of instances of overlapping, which can generate a sense of visual clutter. On balance of the factors described above, the magnitude of visual impact is considered to be Medium-low.	**Slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP4	**Local Road at Grange** - 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.	High medium	The proposed turbines are fully revealed rising out of the rural plains in the middle distance of this vast view. The blade sets and most of the towers are seen above the distant horizon with a low degree of contrast against the sky. The turbines are seen at a modest scale at this distance and with a consolidated lateral extent, but will still be a relatively prominent and distinctive feature of the view. In the context of the overall vista afforded from this hilltop the scheme is considered to have a visual presence in the order of co-dominant to sub-dominant. In terms of aesthetics, the proposed wind farm is seen in a clear and legible manner within the productive rural landscape of the north Kildare plains. There are a couple of instances of turbine overlap, which contribute a small degree of visual clutter, but otherwise the flat profile of the scheme reflects the underlying terrain. Neither the height or lateral extent of the turbines is overwhelming in terms of the broad nature of the surrounding landscape pattern or the overall context of this vast panorama. On balance of the factors outlined above, it is considered that the magnitude of visual impact is Medium-low.	**Moderate-slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP5	**R402 at Johnstown Bridge -** This is a slightly elevated view from the north-eastern outskirts of the small settlement of Johnstown Bridge as the R402 regional road approaches the M4 motorway (further to the northeast). The view in question is back to the southwest over the settlement itself, which can be seen as a series of residential estates beyond foreground fields. The R402 snakes into the village and provides the main street.	Medium low	The blade sets of the nearest three proposed turbines will rise above houses and trees to the south. Whilst the blade tips of several more distant turbines will also be visible within the tree tops, they are much less likely to be noticed than the more exposed trio. These are seen at a modest scale from this distance but they are a distinctive feature of the view even in the context of the intervening settlement. Within the context of this broad vista, the proposed development is deemed to have a visual presence in the order of co-dominant to sub-dominant. The three most noticeable turbines are seen in a relatively unambiguous manner with even-spacing and blade sets rotating predominantly above the treeline. The treeline is an important element in this context as it provides a defining backdrop to the settlement and a visual separation between the foreground dwellings and the background turbines, thereby reinforcing the contextual separation. That is, the turbines are more clearly perceived to be within the rural hinterland than part of the settlement context. The view of other blades amongst the treetops is not ideal in an aesthetic sense, but is of little consequence in this instance, due to the focus on the three more prominent turbines.	**Moderate slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
			The contextual images associated with this viewpoint (see photomontage set) illustrate that a much higher degree of visual containment and, therefore, reduced potential for scheme visibility, is found within the lower lying settlement of Johnstown Bridge. Overall, the magnitude of visual impact is deemed to be Medium-low from this location, with impacts from within the settlement itself likely to be lower.	
VP6	**Local road at Newtown** - 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 that 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.	High medium	All of the proposed turbines are visible from here within the framed lowland plains section of the view to the west. They are seen at a modest scale with a low degree of contrast against a backcloth of sky. Nonetheless, the turbines have a reasonable lateral extent that spans much of the more distant lowland section of the view, towards which the eye is naturally drawn. In the context of this view, the turbines are considered to have a co-dominant visual presence. This is a strongly legible view of the proposed turbines, which can be seen clearly rising out of the flat rural landscape of the plains, with a relatively even spacing that avoids overlap and clutter. The flat profile of the scheme also reflects the planar landscape in which it is contained, rather than the undulating topography of the foreground. On the basis of the reasons outlined above the magnitude of visual impact is considered to be Medium-low.	**Moderate-slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP7	**Local road at Cadamstown** - This is a fairly typical view across lowland farmland that is divided in this instance by low-clipped hedgerows in the foreground. Taller, tree-lined hedgerows emerge in the middle distance to provide a degree of low containment to this broadly horizontal vista. The dwellings and associated farm sheds from several properties within the dispersed rural settlement of Cadamstown can be seen lining the road to the east.	Medium low	Around half of the proposed turbines will be visible to some degree from this location. These turbines rise in silhouette above the vegetated skyline to the south, revealing full and partial blade sets amongst the tree tops. The turbines are seen at a noticeable, but not prominent scale, and are distinctive features of this otherwise typical rural scene. On balance, the visual presence of the scheme is deemed to be sub-dominant. The view of partial blade sets rotating amongst the middle ground tree tops may generate a small degree of visual irritation compared to clearer views of the turbines. However, this must be balanced against the lesser view of the turbines due to the same vegetation screening. Neither the scale or function of the proposed wind turbines appears out of place in this productive rural scene, and the scheme will not have a marked effect on the rural visual amenity enjoyed by the local population of Cadamstown. Overall, the magnitude of visual impact is judged to be Low.	**Slight / Negative / Long term**
VP8	**Local road at Coolrea** - This is a brief, open gateway view from a section of local road that is generally more enclosed (see contextual images for VP8). The view in question consists of a large pastoral field that is divided from its neighbour by an untypically manicured hedge for such an agricultural	Medium low	This gateway affords a slightly oblique view of the three nearest turbines, which can be seen at a prominent, but not overbearing, scale. The remaining turbines are all screened from view by foreground vegetation to the southwest. The visible turbines are relatively condensed in terms of their visual envelope.	**Moderate / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
	field boundary. The view is then contained at the end of these fields by dense and mature broadleaf and coniferous vegetation.		However, they will be the most distinctive feature of this typical rural setting and will tend to draw the eye. Consequently, their visual presence is deemed to be dominant. This is a relatively unambiguous view of two of the three nearest turbines. As the third turbine is partially obscured by the branches of a foreground tree, it is less noticeable than the other two as a result. The apparent scale differential between the nearest turbine and those beyond generates a strong sense of perspective and an understanding of layout depth. The proposed development will, nonetheless, increase the intensity of built development within this rural scene. Importantly, for such a close view of the wind farm, the visible turbines are not overwhelming in terms of scale and extent within the broad land cover pattern that lies beneath them. For the reasons outlined above, the magnitude of visual impact is considered to be High-medium.	

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP9	**Local road at Knockanally -** This is an expansive view across a flat, fore-to-middle ground context of wet grazing land with few notable field boundaries. A dense band of vegetation, comprising hedgerows, bog fringe, scrubby woodland and conifer plantations, contains the view in the middle distance. Whilst this view typifies the land use of the central study area and Western Boglands LCA generally, such open views are less typical due to roadside screening and layered hedgerows within the surrounding area. A degree of land use intensification and introduction of renewable land uses is the Hortland Solar Farm on the periphery of the view, bordered from the viewer by recently established mitigation planting.	Medium low	The proposed turbines are all visible from here, rising above the skyline vegetation to the extent that full blade sets are generally revealed. The three turbines at the right-hand side of the development are seen at a slightly larger scale, due to relative proximity, than those further to the left (i.e. southwest). Whilst the scheme has a reasonable horizontal visual envelope of around 35 degrees, when viewed from this angle, the vertical envelope is modest in the context of this broadly horizontal vista. Notwithstanding the visual envelope, the turbines are a distinctive feature within this view and their visual presence is deemed to be co-dominant. The proposed turbines have a loose linear arrangement with some sense of layout depth provided by the relative turbine heights / scheme profile. Whilst there are a couple of minor instances of turbine overlap, it is a highly legible view of the turbines in a context in which there is little sense of scale conflict with the surrounding landscape pattern. Despite being one of the few built development features in view, the turbines are well accommodated in both a visual and contextual sense in this broad and productive bogland / farmland landscape setting. Overall, the magnitude of visual impact is deemed to be Medium-low.	**Moderate slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP10	**Kilshanroe** - This view is afforded from the small and relatively dispersed rural settlement of Kilshanroe. Beyond the immediate context of the R402 regional road, a series of small and enclosed farmed fields are visible through the fore-to-middle ground. Thereafter, containment is completed by layered, tree-line hedgerows and forestry at a modest distance. The sheds from a foreground dwelling frame the left-hand side of this view.	Medium low	One of the proposed turbines is openly visible above a more distant, forested section of skyline, whilst the partial blade sets of two other can be seen further to the right above nearer hedgerow vegetation. The turbines present at a prominent, but not spatially dominating, scale from this distance. Combined with their partial screening context, their visual presence is considered to be co-dominant. Aesthetically, the view of the scheme benefits from the clear view of one turbine, as this improves the legibility of its partially revealed counterparts. The foreground fields and hedgerows at the fringe of the settlement contribute to this legibility. This is because the scheme is clearly located in the rural hinterland of the settlement, providing a sense of contextual separation. Nonetheless, the turbines represent the intensification of built development within a section of the view that is currently characterised by a comparative absence of such development. It is not considered that the proposed turbines appear out of place or over-scaled in the context of this rural settlement view. On balance of the factors outlined above, the magnitude of visual impact is deemed to be Medium.	**Moderate/ Negative / Long term**
VP11	**R402 at Ballnamullagh -** This is a partially enclosed view across the R402 regional road that is afforded to east bound road users and a small cluster of roadside dwellings on the northern side of the road.	Medium low	The proposed turbines are substantially screened from here by intervening hedgerow and that will be even more the case during summer months when the trees are in-leaf. But for the hedgerow, the turbines would be seen at a prominent scale from this distance, but with a loose and well-spaced arrangement rising out of	**Moderate-slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
	The view to the southeast is partially contained by a roadside hedgerow that has grown rapidly since the same view was assessed for the 2018 Drehid Wind Farm application where it did not exist at all. Only for the fact that the depicted view is a winter one is there any heavily veiled glimpses of the flat agricultural landscape beyond.		the flat rural landscape. However, only the partial blade sets will be seen rotating above the intervening vegetation in a slightly more ambiguous, but ultimately, more screened scenario. On balance the magnitude of visual impact is deemed to be Medium-low.	
VP12	**Local road at Mucklon -** This is a relatively contained view from a local road immediately to the east of the bogland at Drehid, yet despite the proximity to the bogland there is little evidence of it within the view. This is due to the containment provided by scrubby woodland at the edge of the bog, which also backs onto the series of rural-residential properties that line this section of the road.	Medium low	Only the partial blade sets of two of the proposed turbines can be seen from here, which overlap with each other between the roof of the foreground dwelling and its associated garage. The turbine blades are seen at a noticeable scale, but occupy a relatively small visual envelope in the context of this relatively complex visual setting. Thus, their visual presence is deemed to be sub-dominant. This is not a highly-legible view of the proposed turbines, since they are only partially revealed and overlap with each other. However, the fact that it is only a partial view of two turbine blade sets in the background context of this scene tends to dilute any aesthetic effects. This is also one of only a few locations along this section of road that might afford any view of the proposed development. For the reasons outline above, the magnitude of visual impact is deemed to be Low.	**Slight/ Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP13	**Carbury Castle on Carbury Hill -** 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 sections 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.	High medium	The proposed turbines are fully revealed at a prominent scale to the east. The scheme has a reasonable lateral extent, but in the context of a very broad and vast panorama. Aside from the captivating context of Carbury Castle in the immediate context of this visual setting, the turbines are one of the most distinctive features in the surrounding rural hinterland. Consequently, the visual presence of the turbines is deemed to be in the order of co-dominant to sub-dominant within this view. The view of the turbines in this instance is not without some degree of aesthetic merit. They have a loose linear arrangement that intensifies with distance, creating a sense of perspective and layout depth without a sense of clutter. The turbines also rise out of a singular plinth of land cover tone and are not considered to generate scale conflict with underlying elements. Most importantly, the proposed turbines are not considered to detract from the view of Carbury Castle or Newbury Hall. Overall, it is considered that the magnitude of visual impact is Low from this location.	**Moderate-slight / Negative / Long term**
VP14	**Local road at Collinstown -** This view is afforded over a low roadside ditch and takes in a modest-sized farmed field in the foreground that is defined by a tree-lined hedgerow. Another field is partially visible through and beneath the initial hedgerow, but thereafter the view is	Medium low	Nine of the proposed turbines are visible from here across the north-eastern quarter of the view. They rise to varying degrees above and between the intervening hedgerow vegetation, but generally reveal only partial blade sets. None of the turbines has a markedly greater scale than the others, based on relative proximity and their scale is by no means overwhelming.	**Moderate / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
	fully contained by vegetation. This rural vista is enjoyed by a series of bungalows on the opposite side of the road.		The proposed wind farm is a distinctive feature within the view and has a relatively broad lateral extent, but without a sense of surrounding the viewer. On balance, the visual presence is deemed to be in the order of dominant to co-dominant. The same vegetation that substantially screens the lower sections of the turbines also serves to reduce the legibility of the layout and results in blade sets rotating amongst treetops, which can be slightly visually irritating. Nonetheless, it is also clear to the viewer that this is a consolidated and modest-scale development contained within the broad farmland / bogland landscape to the east; a context in which it does not appear out of place in either scale or function. For the reasons outlined above, the magnitude of visual impact is considered to be Medium.	

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP15	**R402 at Carbury -** 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. It 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 to either side. Beyond the first field to the south of the road can be seen the parkland landscape of Newbury demesne, while the house itself is visible amongst the treeline in the middle distance.	Medium low	The blades of several turbines from the proposed wind farm will be visible to the southeast, between sections of intervening vegetation. This tends to camouflage the turbines somewhat. On the other hand, the movement of their blades may also highlight their location. In the context of the overall vista, the visual presence of the turbines is considered to be in the order of sub-dominant to minimal. The view of turbine blades rotating amongst intervening trees is not aesthetically ideal because it can give rise to visual clutter and contextual ambiguity (i.e. an understanding of where the turbines are located within the landscape). However, this occurs in a small section of the view that will have no bearing on the view of Carbury Castle or Newbury Hall. Indeed, given the limited visibility of the scheme, there is little effect on the overall visual amenity of this setting. On balance of the factors of visual presence and visual amenity described above, the magnitude of visual impact is considered to be Low-negligible at this location.	**Slight-imperceptible / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP16	**Local road at Drehid -** This is a relatively unremarkable view to the north across a lowland context of pastoral farmland in the foreground field that is contained by scrubby hedgerows. Although there is a low degree of enclosure to this view, it is contained at a short distance by the hedgerow vegetation. This is due to the flat nature of the terrain in the vicinity of the bog that lies a short distance beyond.	Medium low	All of the proposed turbines will be potentially visible from here, 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 turbine. From this angle, the turbines appear relatively tightly-spaced. This results in some minor instances of turbine overlap, as well as a degree of visual clutter amongst the more distant of the turbines, which are substantially screened and are much less noticeable than their nearer counterparts. Given the condensed lateral extent of the scheme, there is not a strong sense of being surrounded by turbines because they are contained only within the north-northeast sector of the view. In the context of the broad scale land use patterns in view, the turbines do not appear out of place in either their scale or purpose. On the basis of the reasons described above the magnitude of visual impact is considered to be High-medium.	**Moderate / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP17	**Carbury GAA Ground -** This is a relatively open view across the training fields of Carbury GAA Club, which mostly consist of playing fields, goalposts and floodlights. The facility is contained in the near-middle ground by a consolidated, tree-lined hedgerow. Even this modest degree of openness is not typical within the surrounding area, which has a relatively dispersed, but sizeable, rural population distributed along its local roads and generally shares a more enclosed visual setting (as evidenced in the contextual images that accompany VP17 in the photomontage set).	Medium low	The hubs and partial blade sets of around six of the proposed turbines will rise at a modest scale above the intervening vegetation that populates middle ground rural setting. They are a noticeable and distinctive feature, but not overly prominent and, thus, the visual presence is deemed to be sub-dominant. Whilst the rotation of turbine blades along the top of intervening vegetated skyline can result in a degree of visual clutter and little sense of spatial context for the development, such effects must be balanced against the considerable degree of screening the vegetation provides. This scene reflects a vibrant rural community and, by extension, the productive and diverse rural economy that supports this area. It is not considered that the presence of wind turbines within the background of this view is at odds with the nature of this scene, or unduly detracts from its inherent, rural visual amenity. For the reasons outlined above, the magnitude of visual impact is deemed to be Low.	**Slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP18	**Edenderry -** This is a slightly elevated view to the east, from a green amenity space within a residential housing estate on the eastern slopes of Blundell Hill in Edenderry. Beyond the green and its enclosing, two-storey terraced houses can be seen a broad lowland landscape cloaked in a blanket of conifer plantations and broadleaf vegetation. The latter occurs as a result of field boundary treelines and hedgerows becoming stacked by perspective, thereby hiding the fields between.	Medium low	Three of the proposed turbines reveal full blade sets above the distant vegetated skyline, while the remaining turbines are heavily veiled by intervening treetops and more distant, elevated terrain near Carbury. Although the turbines are a noticeable feature, they have a modest scale at this distance and are seen with a low degree of contrast against the sky. In terms of visual presence, they are a sub-dominant / minimal background feature. Whilst the view of some of the turbines through intervening trees could lead to visual clutter / ambiguity, these will be barely noticeable, especially when compared to their more openly visible counterparts, which have a clear and legible viewing context within the rural hinterland. It is not considered that the distant view of several wind turbines will have any material effect on the visual amenity of residents of this estate, or within the wider context of Edenderry; a town in which there are few opportunities to view the proposed scheme. For the reasons outlined above, the magnitude of visual impact is deemed to be Low-negligible.	**Slight-imperceptible / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP19	**Timahoe Cross Roads -** 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.	Medium low	Although the wireframe image indicates that all of the proposed turbines are potentially visible in the middle distance within the north-northwestern quarter of this view, most of these are almost completely screened by the intervening band of broadleaf trees. Occasional blades and partial blade sets can be seen rising between the tops of these trees. Given the high degree of screening, the proposed wind farm is considered to have a sub-dominant or even minimal visual presence from here, and may not be noticed by passers-by. Aesthetically, the view of partial blade sets 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. However, 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 is absorbed by viewing distance, the degree of screening and the broad nature of the landscape pattern in view. Overall, the magnitude of visual impact is judged to be Low at this location.	**Slight-imperceptible / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP20	**R403 at Derrinturn -** 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.	Medium low	This north-easterly view takes in the majority of the proposed turbines, which are seen at a modest scale from this proximity. Furthermore, only the partial blade sets of these turbines will rise above the intervening tree-lined hedgerow and within a viewing arc of less than 30 degrees. In the context of this vista, the proposed turbines are considered to have a sub-dominant visual presence. The tight lateral extent of the scheme results in a reasonable intensity of development within the segment of the view it occupies and there is little scale differential between the turbines to highlight the depth of the layout. Thus, there is some sense of visual clutter, but this is balanced by the modest visual envelope of the scheme and the degree of screening. Because of this screening, there may also be a minor degree of visual irritation generated by the view of the turbine blades rotating amongst the tops of intervening trees. The proposed wind farm will not appear incongruous in this productive rural landscape setting. On balance of the factors outlined above, the magnitude of visual impact is considered to be Low.	**Slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP21	**Hamilton's Bridge on the Grand Canal -** 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.	Medium	The partial blade sets and blade tips of around eight of the proposed turbines can be seen rising above the dwellings and vegetation to the north-northeast. The rotation of the blades on this vegetated skyline may draw the eye to some degree, but this is a relatively complex portion of the available vista, which is principally focused along the canal corridor to the north and south. Consequently, the visual presence of the turbines is deemed to be sub-dominant. Although the view of turbine blade sets rotating amongst treetops and above rooftops can generate some degree of visual clutter and scale / distance confusion, such effects are diluted by their modest visual presence. Furthermore, the turbines will not detract from the axial views along the canal corridor from this bridge and they are unlikely to be visible from the tow paths or the canal itself. Overall, it is considered that the magnitude of visual impact is Low.	**Slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP22	**R414 at Lullymore East** - This is a vast and strongly horizontal vista across the bog landscape in all directions. This is one of the few locations within the study area where roadside screening does not limit views across the bog landscape to any great 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 significant scale they are the only vertical landscape elements within view. To the north, in the direction of the site, is scrubby cutaway peatland, which eventually gives way to a skyline of more mature hedgerows and treelines within the farmed landscape beyond.	Medium	The blade sets of the proposed turbines are seen at a relatively small scale from this distance, rising above the vegetated skyline to the north. They have a tight lateral extent within the broad context of the view, but this also translates to a reasonable intensity of development. However, the turbines also have a backdrop of sky, against which they have a low degree of contrast. The turbines will not intrude on southerly views towards the hills of the Chair of Kildare and are a distinct background feature in the view across open peatland to the north. Whilst they represent the only noticeable form of built development in this section of the view, this is clearly a productive / formerly productive landscape setting and there is little sense that the turbines detract from the visual amenity at this location. On balance of the factors outlined above, the magnitude of visual impact is considered to be Low-negligible.	**Slight imperceptible / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP23	**Robertstown** - This is a slightly elevated view from the canal bridge at the centre of the picturesque canal-side settlement of Robertstown. The settlement itself occupies the southern aspect of the view and includes shops, houses, boats and a sizeable, historic 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.	High-medium	The majority of proposed turbines can be seen at a modest scale above the plantation forestry in the most distant portion of the vista to the north. Whilst they will be a distinctive and noticeable feature of this aspect of the view, the turbines are only a secondary element of the overall viewing context, which is focused on the complex and aesthetic foreground setting of the canal corridor and settlement. In this context, the visual presence of the turbines is deemed to be sub-dominant. The proposed turbines are seen in a legible manner with their blade sets rotating freely above the tops of the distant forest plantation. There is an instance of three turbines overlapping, but any sense of visual clutter this generates is strongly diluted by the viewing distance and the more-dispersed arrangement of the majority of turbines. Within the context of this settlement and canal view, the proposed turbines appear well placed, clearly within the distant rural landscape and there is little sense that they detract from the visual amenity of the scene. Indeed, within the context of a 'picturesque' setting such as this, it could be argued that the turbines provide a distant feature of interest. Overall, it is considered that the magnitude of visual impact is low at this location.	**Slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP24	**Tower on the Hill of Allen** - 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 becomes 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.	Medium	The proposed turbines are fully revealed in silhouette against a backdrop of sky above a dark plinth of rural landscape pattern that has condensed to a single texture and tone due to the considerable viewing distance. Due to the effects of atmospheric perspective (i.e. fading of distant objects) and the low degree of contrast against the sky, the turbines are not prominent within this vast 360 degree view and bear a modest lateral extent. Nonetheless the turbines have a distinctive form and they will be noticeable in clear conditions with a visual presence in the order of sub-dominant to minimal. Aesthetically, the scheme presents with a clear and simple form with two clusters and only a couple of instances of turbine overlap. Although they are clearly tall structures there is little sense of scale conflict with the underlying landscape pattern, since the latter has morphed in to a singular plinth. On the other hand, there is a strong thematic relationship with the richly diverse working landscape in view and there is little sense that the proposed wind farm detracts from the visual amenity of this scene. Overall, the magnitude of visual impact is deemed to be Low-negligible.	**Slight-imperceptible / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP25	**Local road at Timahoe East** - This is a view from the centre of a substantial area of bog along the local road between Coonagh and Timahoe, located along the intersection of the historic bog railway. The foreground is dominated by scrubby broadleaf trees, which contain the view to the north. The vegetation serves to contain the road corridor. While there are a number of large scale land uses in the surrounds (Drehid Land Fill, Timahoe North Solar Farm), visibility it limited by the regenerating scrub surrounding the viewpoint.	Medium low	Although the wireframe image indicates that all of the proposed turbines are potentially visible in the middle distance within the north-northwestern quarter of this view, most of these are almost completely screened by the intervening band of broadleaf trees. Occasional blades and partial blade sets can be seen rising between the tops of these trees. Given the high degree of screening, the proposed wind farm is considered to have a sub-dominant or even minimal visual presence from here and may not be noticed by passers-by. Aesthetically, partial blade sets 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. However, these effects are strongly diminished in this instance, as in VP25, by the high degree of screening and the reduced level of visual presence this generates. The scale and extent of the turbines is absorbed by viewing distance, the degree of screening and the broad nature of the landscape pattern in view. Overall, the magnitude of visual impact is judged to be Medium-Low at this location.	**Moderate-Slight / Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP26	**Local road at Drehid** - This is a view immediately north of VP25, and 800m south of VP16. Located in a transitional area of wooded scrub on the periphery of the forementioned substantial area of bog between Coonagh and Timahoe. The foreground is dominated by scrubby broadleaf trees, which also serves to contain the road corridor, meaning the longest-distance views are available to the northwest and southeast, although there is a break in the vegetation along a small access road to the northeast, the degree of enclosure is generally high.	Medium low	Similar to the above, due to being c. 600m north along the local road, the wireframe image indicates that all of the proposed turbines are potentially visible in the middle distance within the north-northwestern quarter of this view, most of these are almost completely screened by the intervening band of broadleaf trees. Partial blade sets can be seen rising between the tops of these trees. Given the high degree of screening, and being located peripherally to the road alignment, the proposed wind farm is considered to have a sub-dominant visual presence from here. Aesthetically, the primary issue is the scale which the partial blades are viewed. While a relatively small proportion of the proposal, and each turbine, will be visible, the scale and proximity is evident. At VP25, the partial blade sets popping-up intermittently within the view between treetops can give rise to visual clutter and ambiguity. However, these effects are strongly diminished in this instance by the high degree of screening and the reduced level of visual presence this generates. Overall, the magnitude of visual impact is judged to be Medium-Low at this location.	**Moderate-slight/ Negative / Long term**

VP No.	Existing View	VP Sensitivity	Visual Impact Magnitude	Significance / Quality / Duration of Impact
VP27	**Local road at Drinnanstown North -** This is an elevated view from the Kildare County Development Plan Scenic Route 08, and adjacent to Boston Hill 'Hilltop View'. 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 in the immediate foreground, surrounded by mixed woodland, 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 becomes tightened by perspective to form a dark band of vegetation below the skyline.	Medium	The proposed turbines are fully revealed in silhouette against a backdrop of sky above a dark plinth of rural landscape pattern that has condensed to a single texture and tone due to the considerable viewing distance. Due to the effects of atmospheric perspective (i.e. fading of distant objects) and the low degree of contrast against the sky, the turbines are not prominent within this wide view and bear a modest lateral extent. Nonetheless the turbines have a distinctive form and they will be noticeable in clear conditions with a visual presence in the order of sub-dominant to minimal. Aesthetically, the scheme presents with a clear and simple form with two clusters and only a couple of instances of turbine overlap. Although they are clearly tall structures there is little sense of scale conflict with the underlying landscape pattern, since the latter has morphed in to a singular plinth. On the other hand, there is a strong thematic relationship with the richly diverse working landscape in view and there is little sense that the proposed wind farm detracts from the visual amenity of this scene. Overall, the magnitude of visual impact is deemed to be Low.	**Slight/ Negative / Long term**

APPENDIX 15.2

Methodology Statements for Landscape and Visual Analysis Tools

Appendix 15.2

Methodology Statements for Landscape and Visual Analysis Tools

15.2a Zone of Theoretical Visibility (ZTV) Mapping

15.2b Route Screening Analysis (RSA)

15.2c Photomontage Preparation

15.2 (a) 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 – 147.9 for T1 and 167 m for all remaining turbines ZTV no.2 - Nacelle Height – 109 m
Eye-level height:	1.7 m
Earth Curvature:	Yes

15.2 (b) Route Screening Analysis (RSA)

Basis for Route Screening Analysis (RSA)

Because ZTV 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 Digital Surface Model (DSM) data. Route Screening Analysis bridges the gap for the assessor between the computer generated, theoretical visibility modelling (ZTV maps) and the actual nature of visibility in a given area.

RSA Methodology

For the proposed Drehid Wind Farm, RSA was undertaken for public roads within a 5km radius of turbines. The methodology for the RSA utilises up to date DSM data, which accounts for screening by terrain as well as terrestrial elements such as vegetation and buildings. Sample points are placed along all public roads at 10m intervals with visibility analysis and categorisation determined from each sample point. 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' includes the clear view of less than a full blade rotation of any particular turbine.
Although it predominantly 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 indicates 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.

Statement of Accuracy

The accuracy of the RSA study is limited by the resolution and date of DSM data, which is only a snapshot in an ever changing rural environment and it is also a sample based study rather than an continuous / exhaustive analysis. It needs to be 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 Drehid turbines.

15.2 (c) Photomontage Preparation

Photomontage Methodology

Detail pertaining to the procedure involved in capturing and 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, Dec 2014' by the Scottish Natural Heritage (SNH).

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 360°. 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.