

Sure Partners Limited

ARKLOW BANK WIND PARK
PHASE 2

**ONSHORE GRID
INFRASTRUCTURE**

VOLUME III

Chapter 21 APPENDICES

Appendix 21.2 Cumulative Impact Assessment

ARUP

 **sse**
Renewables

Appendix 21.2

Cumulative Impact

Assessment

Appendix 21.2 Cumulative Impact Assessment

A wide range of existing, under construction and permitted projects in the general vicinity of the proposed development were screened to determine if there was a potential for cumulative effects. The projects which were screened in are addressed below. The assessment of all environmental pathways for each screened-in project, is presented below. It is noted that in the text below “proposed development” refers to the Arklow Bank Wind Park Phase 2 Onshore Grid Infrastructure.

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
<p>Project 1: <i>ABWP Phase 2 Offshore Infrastructure</i></p> <p><i>EIAR in relation to longstop date extension has been submitted</i></p>	<p>Air Quality: Considering the distance from the Arklow Bank Wind Park Phase 2 Offshore Infrastructure works to the proposed development, no significant cumulative effects are predicted during the construction phase.</p> <p>There will be maintenance trips carried out for the offshore infrastructure which may have potential for operational emissions offshore (as outlined in the Arklow Bank Wind Park Phase 2 Offshore Infrastructure EIAR), however, considering there are no significant operational emissions associated with the proposed development and given the distance to the offshore infrastructure, there are no significant cumulative air quality effects predicted during the operational phase.</p>
	<p>Climate: The construction of the Tier 1 elements of the Project have the potential to have a negative cumulative effect on climate in combination with the proposed development during the construction phase due to the additional embodied carbon associated with the materials and construction traffic.</p> <p>When operational, the Tier 1 elements of the overall Arklow Bank Wind Park Phase 2 Project in combination with the proposed development will facilitate the generation of 520MW of renewable energy. This will offset 530,225 tonnes of annual carbon emissions, reduce the reliance on fossil fuels, and help to meet national and international renewable energy targets including EU ETS obligations. It will offset the potential negative cumulative effect during the construction phase and the operational emissions associated with the maintenance of the offshore infrastructure (outlined in the Arklow Bank Wind Park Phase 2 Offshore Infrastructure EIAR). Therefore, there will be a significant positive cumulative effect on climate.</p>
	<p>Land and Soils: As outlined in the EIAR for the Arklow Bank Wind Park Phase 2 Offshore Infrastructure, the development is the subject of an existing foreshore lease, which does not overlap (in terms of area) with either the proposed development or the proposed Operations and Maintenance Facility. The developer for each of these projects will be Sure Partners Limited ensuring co-ordination between the developments, for which the appropriate land acquisition and foreshore consent will be obtained in advance of the works.</p> <p>Considering the distance between each of these developments it is not expected there will be a cumulative demand on land and soils with the proposed development. Therefore, it is not expected that there will be cumulative effects on land and soils for the Tier 1 projects.</p>
	<p>Water: As outlined in the EIAR for the Arklow Bank Wind Park Phase 2 Offshore Infrastructure, the development is the subject of an existing Foreshore Lease, which does not overlap (in terms of area) with either the proposed development or the proposed Operations and Maintenance Facility. The developer for each of these projects will be Sure Partners Limited ensuring co-ordination between the developments, for which the appropriate land acquisition and foreshore consent will be obtained in advance of the works.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Considering the EIAR for the Arklow Bank Wind Park Phase 2 Offshore Infrastructure concludes that there will be imperceptible impact on water and given the distance between each of these developments, it is not expected there will be any cumulative effect on water with the proposed development.</p>
	<p>Noise and Vibration: The ABWP Phase 2 Offshore Infrastructure will be located approximately 6 to 13 km from the shore. There is likely to be overlap with the construction programmes for this scheme and the proposed development such that there will be interactive construction noise effects at common receptors, in particular during night-time offshore piling and onshore HDD activities affecting residential properties near to the landfall site at Johnstown. Cumulative noise levels are equal to but do not exceed the night-time ambient noise levels at the nearest receptor or the night-time noise threshold for construction works, and therefore are also below the evening and daytime thresholds. Under upwind conditions the noise from offshore piling will be up to 10 dB lower and under crosswind conditions up 5 dB lower. Measurements have shown that upwind and crosswind conditions usually occur more than 90% of the time. There will be no negative cumulative effect from these activities. Daytime construction noise levels for the ABWP Phase 2 Offshore Infrastructure are constrained to a limit of 65 dB LAeq, 8 hour. Daytime construction noise levels at nearby receptors from onshore works are predicted to be lower than this at the nearest receptor (48dB LAeq). Should offshore piling noise levels of up to 65 dB LAeq be experienced at the nearest onshore receptor, the addition of onshore piling noise would not result in any additive effect to this limit. There will be no negative cumulative effect from these activities.</p>
	<p>Biodiversity: Potential effects relate primarily to marine habitats and species. The proposed development will not impact on marine habitats or species. However, if construction activities associated with the proposed development occur at the same time as construction activities associated with the ABWP Phase 2 Offshore Infrastructure in proximity to the landfall location, and accidental pollution events were to occur at the same time and in proximity to each other, there is a risk of cumulative accidental pollution effects. With the application of the mitigation measures set out in the CEMP (Appendix 6.1), significant cumulative effects will not occur. Therefore, there is no pathway for cumulative impacts on biodiversity.</p>
	<p>Traffic and Transport: The construction port for the storage, fabrication and delivery of offshore infrastructure has not yet been confirmed. Therefore, no detail relating to anticipated traffic movements or the port is available for this project. However, for the purpose of this report it is assumed that Arklow Port will be used as port for storage. It is likely that the majority of traffic generated from this project will access the port through Junction 21 on the M11 and will not be permitted to travel through the town centre but directed along the R772. Given the distance between this ABWP Phase 2 Offshore Infrastructure project and the proposed development, it is not likely for this project to fall within the zone of influence of the proposed development. No significant cumulative traffic impact effect is expected.</p>
	<p>Landscape and Visual: The proposed ABWP Phase 2 Offshore Infrastructure will have a negligible or minor cumulative effect to landscape and visual amenity by virtue of distance between sites during the construction phase. Where views may encompass both landscape and seascape, any visible elements of the onshore development will be substantially absorbed within the more complex visual context of the rural landscape and will be substantially less noticeable than the more distinctive offshore development. The proposed development will have a negligible or minor cumulative effect by virtue of distance between sites and the offshore and onshore nature of the developments during the operational phase.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed ABWP Phase 2 Offshore Infrastructure in combination with the proposed development. This is due to the distance of the development from this project and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Resource and Waste Management: Given the likely overlap between the construction phases of the proposed development, the Arklow Bank Wind Park Phase 2 Offshore Infrastructure and the OMF there is potential for a cumulative resource and waste management effect during the construction of the proposed development. This could give rise to short term, slight resource and waste management effects due to an increased demand on waste recovery and/or disposal sites. The developer for each of these projects will be Sure Partners Limited ensuring co-ordination between the developments with regards to selecting a suitable waste recovery and/or disposal site.</p> <p>As minimal operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p> <p>Material Assets: As outlined in the EIAR for the Arklow Bank Wind Park Phase 2 Offshore Infrastructure, the development is the subject of an existing foreshore lease, which does not overlap (in terms of area) with either the proposed development or the proposed Operations and Maintenance Facility. The developer for each of these projects will be Sure Partners Limited ensuring co-ordination between the developments, for which the appropriate land acquisition and foreshore consent will be obtained in advance of the works. Considering the distance between each of these developments it is not expected there will be a cumulative demand on services and utilities with the proposed development. Therefore, it is not expected that there will be significant cumulative effects on material assets during the construction phase for the above Tier 1 projects.</p> <p>The overall Project will have a significant long-term positive cumulative effect on renewable energy generation, during the operational phase, by providing an additional supply and reducing reliance on fossil fuels.</p> <p>Population and Human Health: Given the major scale of the proposed ABWP Phase 2 Offshore Infrastructure, there is potential for cumulative effects on population and human health. However, considering there will not be significant effects from construction traffic generated from either development and the distance between the onshore and offshore works, there is no significant negative cumulative effects to population and human health predicted during the construction phase. The cumulative noise effects at the landfall from the combination of onshore HDD works and offshore piling works will not exceed noise thresholds for construction works during daytime or night-time. Therefore, there will be no significant cumulative effects in terms of noise and vibration and population and human health.</p> <p>The construction and operational phases of both developments will create employment opportunities and the associated economic and social benefits, which will have a positive cumulative effect on population and human health in the local area.</p> <p>When operational, the Tier 1 elements of the Project in combination with the proposed development will facilitate the generation of 520MW of renewable energy. This will increase supply, while reducing the reliance on fossil fuels and help to meet national and international renewable energy targets. This will have a significant positive cumulative effect on population and human health.</p> <p>Major Accidents and Disasters: The EIAR for the Arklow Bank Wind Park Phase 2 Offshore Infrastructure describes the major accident and disaster risks from the offshore infrastructure works and the vulnerability of it to major accident and disaster risks. The EIAR also describes the measures in place to minimise these risks and mitigate their consequences. Considering the distance between the proposed development, the Arklow Bank Wind Park Phase 2 Offshore Infrastructure and the Operations and Maintenance Facility, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development and the offshore infrastructure works, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the offshore infrastructure works and the Operations and Maintenance Facility will be vulnerable. The interface between the offshore and onshore infrastructure is the HDD at the landfall. There could be potential for cumulative</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	effects in the vicinity of the High-Water Mark. However, the offshore works to seaward of the HDD will not increase the risks due to cliff collapse or bentonite spillage.
<p>Project 2: <i>ABWP Phase 2 Operations and Maintenance Facility (OMF)</i></p> <p><i>Pending Submission</i></p>	<p>Air Quality: Considering the distance from the Arklow Bank Wind Park Phase 2 Operations and Maintenance Facility (OMF) to the proposed development, no significant cumulative effects are predicted during the construction phase.</p> <p>There will be maintenance trips carried out for the offshore infrastructure from the OMF which may have potential for operational emissions offshore (as outlined in the Arklow Bank Wind Park Phase 2 Offshore Infrastructure EIAR), however, considering there are no significant operational emissions associated with the proposed development and given the distance to the offshore infrastructure and OMF, there are no significant cumulative air quality effects predicted during the operational phase.</p> <p>Climate: The construction of the Tier 1 elements of the Project have the potential to have a negative cumulative effect on climate in combination with the proposed development during the construction phase due to the additional embodied carbon associated with the materials and construction traffic.</p> <p>When operational, the Tier 1 elements of the overall Arklow Bank Wind Park Phase 2 Project in combination with the proposed development will facilitate the generation of 520MW of renewable energy. This will offset 530,225 tonnes of annual carbon emissions, reduce the reliance on fossil fuels, and help to meet national and international renewable energy targets including EU ETS obligations. It will offset the potential negative cumulative effect during the construction phase and the operational emissions associated with the maintenance of the offshore infrastructure (outlined in the Arklow Bank Wind Park Phase 2 Offshore Infrastructure EIAR). Therefore, there will be a significant positive cumulative effect on climate.</p> <p>Land and Soils: The Operations and Maintenance Facility does not overlap with the existing foreshore lease for the offshore infrastructure or the proposed development (in terms of area). The developer for each of these projects will be Sure Partners Limited ensuring co-ordination between the developments, for which the appropriate land acquisition and foreshore consent will be obtained in advance of the works.</p> <p>Considering the distance between each of these developments it is not expected there will be a cumulative demand on land and soils with the proposed development. Therefore, it is not expected that there will be cumulative effects on land and soils for the Tier 1 projects.</p> <p>Water: The Operations and Maintenance Facility does not overlap with the existing foreshore lease for the offshore infrastructure or the proposed development (in terms of area). The developer for each of these projects will be Sure Partners Limited ensuring co-ordination between the developments, for which the appropriate land acquisition and foreshore consent will be obtained in advance of the works.</p> <p>Considering the distance between the developments, it is not expected there will be any cumulative effect on water with the proposed development.</p> <p>Noise and Vibration: The ABWP Phase 2 Operations and Maintenance Facility (OMF) is approximately 2.5 km from the nearest receptor considered in the assessment of the proposed development. Noise and vibration emissions from the OMF are unlikely to result in a negative effect at receptors near to the proposed development. Consequently, the ABWP Phase 2 OMF is not considered to cause any cumulative construction noise or vibration effects greater than the residual construction noise and vibration effects identified for the proposed development.</p> <p>Biodiversity: Potential effects relate primarily to marine habitats and terrestrial ecology. However, given the nature and location of this project, no significant cumulative effects are expected to occur during both the construction and operational phases in combination with the proposed development.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Traffic and Transport: No detail relating to anticipated traffic movements is available for this ABWP Phase 2 OMF project to be located at Arklow Port. It is likely that the majority of traffic generated from this project will access the port through Junction 21 on the M11 and will not be permitted to travel through the town centre but directed along the R772. Given the distance between this ABWP Phase 2 OMF project and the proposed development, it is not likely for this project to fall within the zone of influence of the proposed development. No significant cumulative traffic impact effect is expected.</p>
	<p>Landscape and Visual: The proposed OMF will be located within the harbour area of Arklow town at a distance of c. 3.0km east of the M11 motorway. It is considered that potential cumulative landscape or visual effects will be negligible by virtue of the relative locations of both development sites during both construction and operational phases.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed ABWP Phase 2 Operations and Maintenance Facility (OMF) in combination with the Arklow Bank Wind Park offshore and onshore infrastructure project. This is due to the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: Given the likely overlap between the construction phases of the proposed development, the Arklow Bank Wind Park Phase 2 Offshore Infrastructure and the OMF there is potential for a cumulative resource and waste management effect during the construction of the proposed development. This could give rise to short term, slight resource and waste management effects due to an increased demand on waste recovery and/or disposal sites. The developer for each of these projects will be Sure Partners Limited ensuring co-ordination between the developments with regards to selecting a suitable waste recovery and/or disposal site.</p> <p>As no operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p>
	<p>Material Assets: As outlined in the EIAR for the Arklow Bank Wind Park Phase 2 Offshore Infrastructure, the development is the subject of an existing foreshore lease, which does not overlap (in terms of area) with either the proposed development or the proposed Operations and Maintenance Facility. The developer for each of these projects will be Sure Partners Limited ensuring co-ordination between the developments, for which the appropriate land acquisition and foreshore consent will be obtained in advance of the works. Considering the distance between each of these developments it is not expected there will be a cumulative demand on services and utilities with the proposed development. Therefore, it is not expected that there will be significant cumulative effects on material assets during the construction phase for the above Tier 1 projects.</p> <p>The overall Project will have a significant long-term positive cumulative effect on renewable energy generation, during the operational phase, by providing an additional supply and reducing reliance on fossil fuels.</p>
	<p>Population and Human Health: Given the scale of the proposed ABWP Phase 2 OMF, there is potential for cumulative effects on population and human health. However, considering there will not be significant effects from construction traffic generated from either development and the distance between the proposed works, there is no cumulative effects to population and human health predicted during the construction phase.</p> <p>The construction and operational phases of both developments will create employment opportunities and the associated economic and social benefits, which will have a positive cumulative effect on population and human health in the local area.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>When operational, the Tier 1 elements of the Project in combination with the proposed development will facilitate the generation of 520MW of renewable energy. This will increase supply, while reducing the reliance on fossil fuels and help to meet national and international renewable energy targets. This will have a significant positive cumulative effect on population and human health.</p> <p>Major Accidents and Disasters: Considering the distance between the proposed development, the Arklow Bank Wind Park Phase 2 Offshore Infrastructure and the Operations and Maintenance Facility, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development and the offshore infrastructure works, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the offshore infrastructure works and the Operations and Maintenance Facility will be vulnerable.</p>
<p>Project 3: <i>EirGrid Grid Upgrade Works</i></p> <p><i>Pending Submission</i></p>	<p>Air Quality: Given the nature and scale of the construction activities and construction traffic associated with the EirGrid Grid upgrade works, no significant cumulative air quality effects are predicted during the construction phase.</p> <p>There are no air emission sources or operational traffic associated with the upgrade works or the proposed development, therefore no significant cumulative air quality effects are predicted during the operational phase.</p> <p>Climate: The construction of the Tier 1 elements of the Project have the potential to have a negative cumulative effect on climate in combination with the proposed development during the construction phase due to the additional embodied carbon associated with the materials and construction traffic.</p> <p>When operational, the Tier 1 elements of the overall Arklow Bank Wind Park Phase 2 Project in combination with the proposed development will facilitate the generation of 520MW of renewable energy. This will offset 530,225 tonnes of annual carbon emissions, reduce the reliance on fossil fuels, and help to meet national and international renewable energy targets including EU ETS obligations. It will offset the potential negative cumulative effect during the construction phase and the operational emissions associated with the maintenance of the offshore infrastructure (outlined in the Arklow Bank Wind Park Phase 2 Offshore Infrastructure EIAR). Therefore, there will be a significant positive cumulative effect on climate.</p> <p>Land and Soils: The proposed EirGrid Grid upgrade works will result in the loss of a small quantity of soil and geology. However, the cumulative loss is still considered small on a local scale. Thus, there are no likely significant direct, indirect cumulative impacts of the Eirgrid Upgrade Works in combination with the proposed development on land and soils.</p> <p>The development is located within the sand and gravel aquifer, excavations and some dewatering may be required at the site these will not interact with the impacts identified for the proposed development. Thus, there are no likely significant direct, indirect cumulative impacts of the Eirgrid Grid Upgrade Works in combination with the proposed development on hydrogeology.</p> <p>There are no likely significant direct or indirect cumulative impacts of the proposed development in combination with the Eirgrid Grid upgrade works on land, soils, geology & hydrogeology during the operational phase. From a hydrogeological perspective it is also due to the location of this development from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development.</p> <p>Water: It is expected that the EirGrid grid upgrade works, and the Irish Water upgrade works have the potential to impact water quality in surface waters as a result of surface water runoff washing contaminants and silt into surface water bodies. However, the CEMP for the proposed development includes surface water management measures, which outlines how surface water will be managed during construction and the measures to be taken to prevent any potentially polluting activities from occurring. As a result, no significant cumulative effects in relation to water and hydrology have been identified for the proposed</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>development, in combination with the EirGrid upgrade works and Irish Water upgrade works. This will ensure there are no cumulative effects on water associated with Tier 1 projects during the construction phase.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in combination with the EirGrid upgrade works and Irish Water connection are not expected to be significant.</p>
	<p>Noise and Vibration: Construction works required for the EirGrid Grid Upgrade Works that will occur in proximity to the proposed development will not involve significant noise sources due to the nature of the work (stringing of overhead lines). Consequently, EirGrid Upgrade works are not considered to cause any cumulative construction noise or vibration effects greater than the residual construction noise and vibration effects identified for the proposed development.</p> <p>Given that the only operational noise from the EirGrid Grid Upgrade Works will be an intensification of noise from overhead lines, and this is unlikely to change the character or magnitude of noise in the area, these works are unlikely to result in any cumulative effect to the operational noise at selected receptors of the proposed development.</p>
	<p>Biodiversity: If works are concurrent with the bulk excavation works on the site of the substation, there is potential for cumulative effects, as parts of each project are located close to each other. Should this situation arise, construction activities will be planned and phased, in consultation with the construction management team for the EirGrid Grid Upgrade Works.</p> <p>Given the location of these projects (in areas of relatively low habitat and species value), together with the implementation of best practice standard construction environmental measures, the CEMP for the proposed development as detailed, no significant cumulative effects on biodiversity will result.</p>
	<p>Traffic and Transport: No detail relating to anticipated traffic movements is available for the works associated with the EirGrid Grid Upgrade Works project. It is anticipated that there will only be minor works associated with overhead lines in the vicinity of the proposed development, with more significant substation works required at existing substations within the network (likely Ballybeg substation at a distance of 20km). The cumulative effects are therefore considered imperceptible.</p>
	<p>Landscape and Visual: The proposed development will have a negligible or minor cumulative effect to landscape and visual amenity during the construction and operational phases as the EirGrid grid upgrade works will upgrade existing or similar infrastructure in the area.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Eirgrid Grid Upgrade Works in combination with the proposed development. This is due to the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: It is assumed for the purposes of this assessment that the EirGrid grid upgrade works will be undertaken in parallel with the proposed development works which would have the potential for cumulative effects to resource and waste management. However, considering the nature and scale of the construction works involved, the cumulative effects to resource and waste management are expected to be not significant during the construction phase. Having regard to the imperceptible resource and waste management effect of the proposed development during the operational phase, no likely negative significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Material Assets: It is assumed for the purposes of this assessment that the EirGrid grid upgrade works will be undertaken in parallel with the proposed development works. The EirGrid grid upgrade works will ensure there is enough capacity to meet the demands of the proposed development. This will ensure there are no cumulative effects on material assets associated with Tier 1 projects during operation.</p> <p>Population and Human Health: Given the nature and scale of the proposed EirGrid Grid Upgrade Works in the vicinity of the proposed development, in terms of both construction activities and duration, there is minimal potential for cumulative effects on population and human health. No significant cumulative effects are predicted during the construction phase. The elements of the EirGrid Grid Upgrade Works at a distance from the proposed development are considered not likely to have an effect on population and human health. In terms of electromagnetic fields, the additional contribution from the proposed development to the EirGrid grid upgrade works, can be regarded as having a negligible effect on the cumulative levels.</p> <p>When operational, the Tier 1 elements of the Project in combination with the proposed development will facilitate the generation of 520MW of renewable energy. This will increase supply, while reducing the reliance on fossil fuels and help to meet national and international renewable energy targets. This will have a significant positive cumulative effect on population and human health. With respect to electromagnetic fields, the additional contribution from the proposed development to the EirGrid grid upgrade works, when both are operational, can be regarded as having a negligible effect on the cumulative levels.</p> <p>Major Accidents and Disasters: Considering the nature of the works required for the EirGrid grid upgrade works and the potential low risk scenarios associated with the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the EirGrid upgrade works will be vulnerable. The proposed development together with the EirGrid grid upgrade works is not expected to increase the risk of a major accident or disasters</p>
<p>Project 4: <i>Irish Water Upgrade Works</i></p> <p><i>Pending Submission</i></p>	<p>Air Quality: Given the nature and scale of the construction activities and construction traffic associated with the Irish Water watermain upgrade works, no significant cumulative air quality effects are predicted during the construction phase.</p> <p>There are no air emission sources or operational traffic associated with the watermain upgrade works or the proposed development, therefore no significant cumulative air quality effects are predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the Irish Water watermain upgrade works there are negligible carbon emissions associated with its development in terms of macro-scale carbon contribution. Therefore, the Irish Water watermain upgrade works are not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soils: The proposed Irish Water upgrade works will result in the loss of a small quantity of soil and geology. However, the cumulative loss is still considered small on a local scale. Thus, there are no likely significant cumulative effects from the Irish Water upgrade works in combination with the proposed development on land and soils. From a hydrogeological perspective it is also due to the location of this development from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development.</p> <p>There are no likely significant cumulative effects from the proposed development in combination with the Irish Water upgrade works on land and soils during the operational phase.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Water: It is expected that the EirGrid grid upgrade works, and the Irish Water upgrade works have the potential to impact water quality in surface waters as a result of surface water runoff washing contaminants and silt into surface water bodies. However, the CEMP for the proposed development includes surface water management measures, which outlines how surface water will be managed during construction and the measures to be taken to prevent any potentially polluting activities from occurring. As a result, no significant cumulative effects in relation to water and hydrology have been identified for the proposed development, in combination with the EirGrid upgrade works and Irish Water upgrade works. This will ensure there are no cumulative effects on water associated with Tier 1 projects during the construction phase.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in combination with the EirGrid upgrade works and Irish Water upgrade works are not expected to be significant.</p> <p>Noise and Vibration: The scale of the construction works required for the Irish Water watermain upgrade will not involve significant noise and vibration effects due to the nature of the work. Therefore, it is not expected that the Irish Water upgrade works will cause any significant cumulative noise or vibration effects in combination with the proposed development during the construction phase.</p> <p>There will be no operational noise associated with the Irish Water upgrade works, therefore there is no cumulative operational noise and vibration effects expected in combination with the proposed development.</p> <p>Biodiversity: If the Irish Water upgrade works are concurrent with the bulk excavation works on the site of the substation, there is potential for cumulative effects, as the sites are located close to each other. Should this situation arise, construction activities will be planned and phased, in consultation with the construction management team for the scheme.</p> <p>Given the location of these projects (in areas of relatively low habitat and species value), together with the implementation of best practice standard construction environmental measures, the CEMP for the proposed development as detailed, no significant cumulative effects on biodiversity will result.</p> <p>Traffic and Transport: No detail relating to anticipated traffic movements is available. The water main runs from Arklow Town in a north-westerly direction towards Shelton Abbey. The upgrade is approx. 2.3km from R772 to Shelton Abbey. It is likely that the majority of traffic generated from this project will access the construction area through Junction 21 on the M11 and will not be permitted to travel through the town centre but directed along the R772. No significant cumulative traffic impact effect is expected.</p> <p>Landscape and Visual: The proposed development will have a negligible or minor cumulative effect to landscape or visual amenity as the ABWP Phase 2 Upgrade Work will upgrade existing and similar infrastructure in the area.</p> <p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Irish Water upgrade works in combination with the proposed development. This is due to the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p> <p>Resource and Waste Management: It is assumed for the purposes of this assessment that the Irish Water upgrade works will be undertaken in parallel with the proposed development works which would have the potential for cumulative effects to resource and waste management. However, considering the nature and scale of the construction works involved, the cumulative effects to resource and waste management are expected to be not significant during the</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>construction phase. Having regard to the imperceptible resource and waste management effect of the proposed development during the operational phase, no likely negative significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p> <p>Material Assets: It is assumed for the purposes of this assessment that the Irish Water watermain upgrade works will be undertaken in parallel with the proposed development works. The Irish Water watermain upgrade works will provide the potable water connection to the proposed development which will ensure there is enough capacity to meet the demands of the proposed development. This will ensure there are no cumulative effects on material assets associated with Tier 1 projects during operation.</p> <p>Population and Human Health: Given the nature and scale of the proposed Irish Water Upgrade Works, in terms of both construction activities and duration, there is minimal potential for cumulative effects on population and human health. No significant negative cumulative effects are predicted during the construction phase. The construction phase of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction phase.</p> <p>Major Accidents and Disasters: Considering the nature of the works required for the Irish Water watermain upgrade works and the potential low risk scenarios associated with the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the Irish Water watermain upgrade works will be vulnerable. The proposed development together with the Irish Water upgrade works is not expected to increase the risk of a major accident or disasters.</p>
<p>Project 5: <i>Arklow Wastewater Treatment Plant</i> <i>Permitted</i></p>	<p>Air Quality: Given the distance from the Arklow WwTP to the proposed development, there are no significant cumulative air quality effects predicted during the construction phase. As there are no air emission sources or operational traffic associated with the proposed development, and the distance from the Arklow WwTP to the proposed development, there are no significant cumulative air quality effects are predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the Arklow WwTP there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Arklow WwTP is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soils: The proposed Arklow WwTP will result in the loss of a small quantity of soil and geology and will also require limited excavation of soft soils involving excavation and replacement. The development is proposed in an area of made ground. As outlined in the EIAR, there will be mitigation measures in place to capture and safely dispose of any contaminated material due to previous site use and any contaminated material will be recycled or disposed of at a suitably licensed facility. However, the cumulative loss is still considered small on a local scale. Excavations and some dewatering may be required at the site. These will not interact with the impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils from the Arklow WwTP in combination with the proposed development. There are no likely significant cumulative effects to land and soils from the proposed development in combination with the Arklow WwTP during the operational phase, given the distance between the developments.</p> <p>Water: The Arklow Wastewater Treatment Plant (WwTP) Project and the proposed development will both maintain and implement a site-specific Construction Environmental Management Plan (CEMP) during the construction phase. The CEMPs outline how surface water will be managed during</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>construction and the measures to be taken to prevent any potentially polluting activities from occurring. As a result, no significant cumulative effects in relation to water and hydrology have been identified for the proposed development, in combination with the Arklow WwTP project.</p> <p>The proposed Arklow WwTP would significantly improve the Avoca River water quality during operation and is therefore considered to have a long term significant positive effect on surface water quality. The substation site of the proposed development will be capped with hard standing and site buildings and as part of the remedial strategy a Geosynthetic Clay Liner (GCL) will be installed across the site associated with contaminated made ground. This will prevent rainwater from infiltrating into the contaminated material located beneath the footprint of the site and therefore limit the mobilisation of any contamination from the substation site to adjacent surface waterbodies, namely the Avoca River and Shelton Abbey watercourse. As a result, the operational phase is considered to have a long term slight positive effect on water quality.</p> <p>Therefore, the cumulative effects arising from the operation phases of the Arklow Wastewater Treatment Plant and the proposed development on water quality will be positive.</p> <p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p> <p>Biodiversity: The proposed new Arklow WwTP will discharge the treated effluent to sea, via a 900m long sea outfall. Given that no significant effect on water quality is predicted from the proposed project, no significant cumulative effects on water quality, habitats and species are expected to occur. Therefore, there is no significant cumulative effect to biodiversity predicted in combination with the proposed development.</p> <p>Traffic and Transport: The construction of Arklow WwTP is expected to increase traffic flows on the Ferrybank Road in Arklow town (R772 Dublin Road river crossing connecting Arklow to Junction 20 on the M11) by less than 5% during the peak hour periods, and by less than 3% on an all-day basis. The temporary increase in cumulative traffic volumes from this project will have limited impact on the performance of roads located within the zone of influence of the proposed development and will be not significant. There is no operational cumulative effect expected as there will be no significant operational traffic from the proposed development.</p> <p>Landscape and Visual: The permitted Arklow WwTP project is located within the urban area of Arklow town at a distance of c. 1.5km to 3.0km east of the M11 motorway. It is considered that potential cumulative landscape or visual effects will be negligible by virtue of relative locations of both development sites.</p> <p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Arklow WwTP in combination with the proposed development. This is due to the distance of the development from this project and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p> <p>Resource and Waste Management: Given the likely overlap between the construction phases of the Arklow WwTP and the proposed development there is potential for a cumulative resource and waste management effect during the construction of the proposed development. This could give rise to short term, slight resource and waste management effects due to an increased demand on waste recovery and/or disposal sites.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Considering the imperceptible resource and waste management effect of the proposed development during the operational phase, no negative likely significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p> <p>Material Assets: Considering the distance between the developments there is no cumulative effects predicted in terms of materials assets during the construction phase. The operation of the proposed development is expected to have a positive effect on material assets in terms of increasing energy supply in the local area. The operation of the Arklow WwTP will increase the capacity for foul sewerage in the area. Both developments will allow for further expansion and growth in the area by having a positive cumulative effect on material assets. Given the location of the Arklow WwTP vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p> <p>Population and Human Health: Given the scale of this project, in terms of construction activities, there is potential for cumulative effects on population and human health. However, given the distance from the proposed development, no significant negative cumulative effects are predicted. The construction phase of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health.</p> <p>The operation of the proposed development is expected to have a positive effect on population and human health in terms of increasing energy supply in the local area. The operation of Arklow Wastewater Treatment Plant will increase the capacity for foul wastewater treatment in the area, to 36,000 population equivalent (PE). Both developments will allow for further expansion and growth in the area, which will help to meet the objectives of the Arklow Local Area Plan (LAP) 2018-2024. Therefore, there is potential for a significant positive cumulative effect on population and human health in combination with the proposed development.</p> <p>Major Accidents and Disasters: Considering the distance and well developed existing environment between the Arklow WwTP and the proposed development, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for both projects (as outline in the Arklow WwTP EIAR), no plausible potential major accidents and disasters have been identified, to which the proposed development together with the Arklow WwTP project will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the Arklow WwTP, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 6: <i>BNRG Neon Holdings Limited Solar Farm Johnstown North</i> <i>Permitted</i></p>	<p>Air Quality: Given the nature and scale of the construction activities associated with the solar farm development, there are no significant cumulative air quality effects predicted during the construction phase.</p> <p>There are no air emission sources or operational traffic associated with the proposed development, therefore there are no significant cumulative air quality effects predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the solar farm development there are negligible carbon emissions associated with its development in terms of macro-scale carbon contribution.</p> <p>When operational, the solar farm in combination with the proposed development, as well as a number of new solar farms that are in development in the area, will facilitate additional renewable energy sources which will reduce the reliance on fossil fuels, and help to meet national and international renewable energy targets. It will offset the potential negative cumulative effect during the construction phase and will therefore have a significant positive cumulative effect on climate.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Land and Soils: The BNRG Neon Holdings Limited Solar Farm at Johnstown North will result in the loss of a small quantity of soil. However, the cumulative loss is still considered small on a local scale. Excavations and some dewatering may be required at the site. These will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils predicted during the construction phase.</p> <p>There are no likely significant cumulative effects to land and soils from the proposed development in combination with the BNRG Neon Holdings Limited Solar Farm Johnstown North during the operational phase.</p>
	<p>Water: The proposed development BNRG Neon Holdings Limited Solar Farm Johnstown North borders the landfall site of the proposed development. The solar farm is located to the north west of the watercourse which flows through the landfall site. Therefore, it has been noted that the Solar farm at Johnstown North and the proposed development sites are hydrologically linked. Considering the mitigation measures to be applied during the construction phase of the proposed development, no significant cumulative effects in relation to water and hydrology have been identified during the construction phase of the solar farm in combination with the proposed development.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the BNRG Neon Holdings Limited Solar Farm at Johnstown North, are not expected to be significant.</p>
	<p>Noise and Vibration: The BNRG Solar Farm Johnstown development is due to be constructed between 2021 and 2024. The development is closest to receptor R12. Construction works for the BNRG Solar Farm Johnstown development close to residential dwellings are predicted to have a negative effect but will only occur at close distances for a short duration (up to a week) and therefore will not have a significant effect. Consequently, it is considered that cumulative effects due to construction noise and vibration are unlikely to be greater than the residual construction noise and vibration effects identified for the proposed development.</p>
	<p>Biodiversity: Considering the nature of the works and the distance involved, a temporary, not significant effect due to noise and disturbance could potentially arise in combination with the proposed development. Therefore, there is no significant cumulative effect to biodiversity predicted during the construction phase. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: The construction of both BNRG Neon Holdings Ltd solar farms are expected to result in 48 LV trips/day (96 LV trips during peak construction) and 31 HGV trips/day. These trips will be divided almost evenly between the existing cul-de-sac on Junction 20 on the M11 (Location 3, refer to Figure 13.3) and R772 Dublin Road connecting junction 20 and the L95115 Road (north of Location 4 on Figure 13.3). Considering the traffic volumes on these links, the temporary increase in cumulative traffic from these projects will be not significant. There is no operational cumulative effects predicted as there will be no significant operational traffic from the proposed development.</p>
	<p>Landscape and Visual: The proposed development will have a negligible or minor, localised cumulative effects to landscape and visual amenity with the proposed solar farm developments as the solar farms lie adjacent to the cable route which is underground, and are separated from the above ground structures at the substation site and NETN connection by some distance.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed BNRG Neon Holdings Limited Solar Farm Johnstown North in</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p> <p>Resource and Waste Management: Given the nature and scale of construction works associated with the solar farm and given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region cumulative effects on resource and waste management during the construction phase are predicted to be imperceptible. As no significant operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p> <p>Material Assets: In the event construction of the solar farm development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the existing capacity of local services, the proposed upgrade works and the limited demand from both projects, no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase and the nature of the operations associated with the solar farm development no significant cumulative effects on services and utilities are predicted.</p> <p>Given the location vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p> <p>Population and Human Health: Given the nature and scale of the BNRG Neon Holdings Ltd Solar Farm in Johnstown North, in terms of both construction activities and construction traffic, it is not likely there will be significant potential for cumulative effects on population and human health in combination with the proposed development. The construction and operational phases of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health in the local area.</p> <p>When operational, the solar farm in combination with the proposed development, as well as a number of new solar farms that are in development in the area, will facilitate renewable energy generation which will reduce the reliance on fossil fuels, helping to meet national and international targets in line with Arklow LAP and Wicklow County Development Plan 2016-2022. As such, there is the potential for a significant positive cumulative effect on population and human health.</p> <p>Major Accidents and Disasters: Considering the nature and scale of the works, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the solar farm will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the solar farm, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 7: <i>BNRG Neon Holdings Limited Solar Farm Ballymoney</i></p>	<p>Air Quality: Given the nature and scale of the construction activities associated with the solar farm development, there are no significant cumulative air quality effects predicted during the construction phase.</p> <p>There are no air emission sources or operational traffic associated with the proposed development, therefore there are no significant cumulative air quality effects are predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the solar farm development there are negligible carbon emissions associated with its development in terms of macro-scale carbon contribution.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
<i>Permitted</i>	<p>When operational, the solar farm in combination with the proposed development, as well as a number of new solar farms that are in development in the area, will facilitate additional renewable energy sources which will reduce the reliance on fossil fuels, and help to meet national and international renewable energy targets. It will offset the potential negative cumulative effect during the construction phase and will therefore have a significant positive cumulative effect on climate.</p>
	<p>Land and Soils: The BNRG Neon Holdings Limited Solar Farm at Ballymoney will result in the loss of a small quantity of soil. However, the cumulative loss is still considered small on a local scale. Excavations and some dewatering may be required at the site. These will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils predicted during the construction phase.</p> <p>There are no likely significant cumulative effects to land and soils from the proposed development in combination with the BNRG Neon Holdings Limited Solar Farm Ballymoney during the operational phase.</p>
	<p>Water: The BNRG Neon Holdings Limited Solar Farm Ballymoney lies within 200m of the proposed cable route. It has been noted that the Solar farm at Ballymoney and the proposed development are hydrologically linked through their proximity to the Johnstown North watercourse. Considering the mitigation measures to be applied during the construction phase of the proposed development, no significant cumulative effects in relation to water and hydrology have been identified during the construction phase of the solar farm in combination with the proposed development.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the BNRG Neon Holdings Limited Solar Farm development at Ballymoney, are not expected to be significant.</p>
	<p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p>
	<p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the distance involved and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: The construction of both BNRG Neon Holdings Ltd solar farms are expected to result in 48 LV trips/day (96 LV trips during peak construction) and 31 HGV trips/day. These trips will be divided almost evenly between the existing cul-de-sac on Junction 20 on the M11 and R772 Dublin Road connecting junction 20 and the L95115 Road. Considering the traffic volumes on these links, the temporary increase in cumulative traffic from these projects will be not significant. There is no operational cumulative effects predicted as there will be no significant operational traffic from the proposed development.</p>
	<p>Landscape and Visual: The proposed development will have a negligible or minor, localised cumulative effects to landscape and visual amenity with the proposed solar farm developments as the solar farms lie adjacent to the cable route which is underground, and are separated from the above ground structures at the substation site and NETN connection by some distance.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed BNRG Neon Holdings Limited Solar Farm Ballymoney in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p> <p>Resource and Waste Management: Given the nature and scale of construction works associated with the solar farm and given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region cumulative effects on resource and waste management during the construction phase are predicted to be imperceptible. As no significant operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p> <p>Material Assets: In the event construction of the solar farm development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the existing capacity of local services, the proposed upgrade works and the limited demand from both projects, no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase and the nature of the operations associated with the solar farm development no significant cumulative effects on services and utilities are predicted. Given the location vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p> <p>Population and Human Health: Given the relatively small scale of the BNRG Neon Holdings Ltd Solar Farm in Ballymoney, in terms of both construction activities and construction traffic, it is not likely there will be significant potential for negative cumulative effects on population and human health in combination with the proposed development. The construction and operational phases of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health in the local area. When operational, the solar farm in combination with the proposed development, as well as a number of other new solar farms that are in development in the area, will facilitate renewable energy generation which will reduce the reliance on fossil fuels, helping to meet national and international targets in line with Arklow LAP and Wicklow County Development Plan 2016-2022. As such, there is the potential for a significant positive cumulative effect on population and human health.</p> <p>Major Accidents and Disasters: Considering the nature and scale of the works, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the solar farm will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the solar farm, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 8: Highfield Solar Limited Ballinlea Lower Permitted</p>	<p>Air Quality: Given the nature and scale of the construction activities associated with the solar farm development, there are no significant cumulative air quality effects predicted during the construction phase. There are no air emission sources or operational traffic associated with the proposed development, therefore there are no significant cumulative air quality effects predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the solar farm development there are negligible carbon emissions associated with its development in terms of macro-scale carbon contribution.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>When operational, the solar farm in combination with the proposed development, as well as a number of new solar farms that are in development in the area, will facilitate additional renewable energy sources which will reduce the reliance on fossil fuels, and help to meet national and international renewable energy targets. It will offset the potential negative cumulative effect during the construction phase and will therefore have a significant positive cumulative effect on climate.</p>
	<p>Land and Soils: The proposed Highfields Solar Ltd solar farm at Ballinlea Lower will result in the loss of a small quantity of soil. However, the cumulative loss is still considered small on a local scale. Excavations and some dewatering may be required at the site. These will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils predicted during the construction phase.</p> <p>There are no likely significant cumulative effects to land and soils from the proposed development in combination with the Highfield Solar Ltd solar farm at Ballinlea Lower during the operational phase.</p>
	<p>Water: The proposed Highfield Solar Limited development lies adjacent to the proposed cable route. It has been noted that the solar farm and the proposed development are hydrologically linked as the Templerainy watercourse flows through both Highfield Solar Limited developments. Considering the mitigation measures to be applied during the construction phase of the proposed development, no significant cumulative effects in relation to water and hydrology have been identified during the construction phase of the solar farm in combination with the proposed development.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Highfield Solar Development, are not expected to be significant.</p>
	<p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p>
	<p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the distance involved and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: No detail relating to anticipated traffic movements is available for this Highfield Solar Limited projects. However, based on the description of the works and the level of traffic generation anticipated for the BNRG solar farm above (with a similar size of development), the level of traffic generated during construction works will be negligible. The traffic attributed to this project is most likely to use the R772 Dublin Road. Considering the traffic volumes on this link, the temporary increase in cumulative traffic from this project will be not significant. There is no operational cumulative effect predicted as there is no significant operational traffic from the proposed development.</p>
	<p>Landscape and Visual: The proposed development will have a negligible or minor, localised cumulative effects to landscape and visual amenity with the proposed solar farm development as the solar farms lie adjacent to the cable route which is underground, and are separated from the above ground structures at the substation site and NETN connection by some distance.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Highfield Solar Limited in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p> <p>Resource and Waste Management: Given the nature and scale of construction works associated with the solar farm and given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region cumulative effects on resource and waste management during the construction phase are predicted to be imperceptible. As no significant operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p> <p>Material Assets: It is expected that the construction works for the solar farm will be completed before the commencement of the construction of the proposed development. However, in the event the construction of the solar farm development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the existing capacity of local services, the proposed upgrade works and the limited demand from both projects, no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase and the nature of the operations associated with the solar farm development no significant cumulative effects on services and utilities are predicted. Given the location vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p> <p>Population and Human Health: Given the relatively small scale of the Highfield Solar Ltd in Ballinaclea Lower, in terms of both construction activities and construction traffic, it is not likely there will be significant potential for negative cumulative effects on population and human health in combination with the proposed development. The construction and operational phases of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health in the local area.</p> <p>When operational, the solar farm in combination with the proposed development, as well as a number of other new solar farms that are in development in the area, will facilitate additional renewable energy sources which will increase supply as well as reduce the reliance on fossil fuels, helping to meet national and international targets. As such, there is the potential for a significant positive cumulative effect on population and human health.</p> <p>Major Accidents and Disasters: Considering the nature and scale of the works, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the solar farm will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the solar farm, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 9: <i>Highfield Solar Limited Templerrainy East</i></p>	<p>Air Quality: Given the nature and scale of the construction activities associated with the solar farm development, there are no significant cumulative air quality effects predicted during the construction phase.</p> <p>There are no air emission sources or operational traffic associated with the proposed development, therefore there are no significant cumulative air quality effects predicted during the operational phase.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
<i>Permitted</i>	<p>Climate: Given the nature and scale of the solar farm development there are negligible carbon emissions associated with its development in terms of macro-scale carbon contribution.</p> <p>When operational, the solar farm in combination with the proposed development, as well as a number of new solar farms that are in development in the area, will facilitate additional renewable energy sources which will reduce the reliance on fossil fuels, and help to meet national and international renewable energy targets. It will offset the potential negative cumulative effect during the construction phase and will therefore have a significant positive cumulative effect on climate.</p>
	<p>Land and Soils: The proposed Highfields Solar Ltd solar farm at Templerainy East will result in the loss of a small quantity of soil. However, the cumulative loss is still considered small on a local scale. Excavations and some dewatering may be required at the site. These will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils predicted during the construction phase.</p> <p>There are no likely significant cumulative effects to land and soils from the proposed development in combination with the Highfield Solar Ltd solar farm at Templerainy East during the operational phase.</p>
	<p>Water: The proposed Highfield Solar Limited development lies adjacent to the proposed cable route. It has been noted that the solar farm and the proposed development are hydrologically linked as the Templerainy watercourse flows through both Highfield Solar Limited developments. Considering the mitigation measures to be applied during the construction phase of the proposed development, no significant cumulative effects in relation to water and hydrology have been identified during the construction phase of the solar farm in combination with the proposed development.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Highfield Solar Development, are not expected to be significant.</p>
	<p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p>
	<p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the distance involved and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: No detail relating to anticipated traffic movements is available for this Highfield Solar Limited projects. However, based on the description of the works and the level of traffic generation anticipated for the BNRG solar farm above (with a similar size of development), the level of traffic generated during construction works will be negligible. The traffic attributed to this project is most likely to use the R772 Dublin Road. Considering the traffic volumes on this link, the temporary increase in cumulative traffic from this project will be not significant. There is no operational cumulative effect predicted as there is no significant operational traffic from the proposed development.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Landscape and Visual: The proposed development will have a negligible or minor, localised cumulative effects to landscape and visual amenity with the proposed solar farm developments as the solar farms lie adjacent to the cable route which is underground, and are separated from the above ground structures at the substation site and NETN connection by some distance.</p> <p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Highfield Solar Limited in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p> <p>Resource and Waste Management: Given the nature and scale of construction works associated with the solar farm and given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region cumulative effects on resource and waste management during the construction phase are predicted to be imperceptible. As no significant operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p> <p>Material Assets: It is expected that the construction works for the solar farm will be completed before the commencement of the construction of the proposed development. However, in the event the construction of the solar farm development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the existing capacity of local services, the proposed upgrade works and the limited demand from both projects, no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase and the nature of the operations associated with the solar farm development no significant cumulative effects on services and utilities are predicted. Given the location vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p> <p>Population and Human Health: Given the relatively small scale of the Highfield Solar Ltd in Templarainey East, in terms of both construction activities and construction traffic, it is not likely there will be significant potential for negative cumulative effects on population and human health in combination with the proposed development. The construction and operational phases of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health in the local area. When operational, the solar farm in combination with the proposed development, as well as a number of other new solar farms that are in development in the area, will facilitate additional renewable energy sources which will increase supply as well as reduce the reliance on fossil fuels, helping to meet national and international targets. As such, there is the potential for a significant positive cumulative effect on population and human health.</p> <p>Major Accidents and Disasters: Considering the nature and scale of the works, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the solar farm will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the solar farm, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
Project 10:	Air Quality: Considering the close proximity of the Rappel Enterprises Ltd development to the proposed development and the potential overlap of construction phases, there is potential for cumulative effects on air quality to arise during the construction phase. Given the nature and scale of the

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
<p><i>Rappel Enterprises Limited</i></p> <p><i>Permitted</i></p>	<p>construction activities and construction traffic associated with the Rappel Enterprises Ltd development, no significant cumulative air quality effects are predicted during the construction phase.</p> <p>As there are no significant operational traffic volumes or operational emissions associated with the proposed development there are no cumulative effects to air quality expected during the operational phase.</p>
	<p>Climate: Given the nature and scale of the Rappel Enterprises Ltd development there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Rappel Enterprises Ltd development is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p>
	<p>Land and Soils: Rappel Enterprises Ltd is one of a number of developments within the vicinity of the Avoca River Business Park. The substation works that are to be carried out are on a raised platform level with only localised excavation. This, together with the nature and scale of the other projects within the vicinity of the Avoca River Business Park, means that these projects in combination with the proposed substation will have no likely significant cumulative effect on land and soils during the construction phase.</p> <p>There are no significant cumulative effects on land and soils predicted during operation.</p>
	<p>Water: Rappel Enterprises Ltd is one of a number of developments within the vicinity of the Avoca River Business Park. No significant impacts are likely following the implementation of appropriate mitigation measures and adherence to the CEMP for the proposed development. Thus, there are no likely significant cumulative effects from the proposed Rappel Enterprises Ltd development in combination with the proposed development in relation to water and hydrology during construction.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Rappel Enterprises Ltd development, are not expected to be significant.</p>
	<p>Noise and Vibration: Rappel Enterprises Industrial Unit project is proposed to have a building located between the onshore 220kV substation site and a receptor (approximately 150 m away from the receptor). Due to likely construction activities, noise is unlikely to be an issue from this scheme. Consequently, it is considered that cumulative effects due to construction noise are unlikely to be greater than the residual construction noise and vibration effects identified for the proposed development.</p> <p>Due to the likely operational activities (light industry), noise is unlikely to be an issue from this scheme. Consequently, it is considered that cumulative effects due to operational noise are unlikely to be greater than the residual operational effects identified for the proposed development.</p>
	<p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the limited scope of the project and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: The Rappel Enterprises Limited facility is part of multiple projects planned at the Avoca River Business Park. No detail relating to anticipated traffic movements is available for this proposed office development however, based on the description of the works and standards provided by</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Wicklow County Council for the operational phase, traffic during operation is expected to be higher than traffic during construction. Based on the project floor area, this project is assumed to result in roughly 65 LV trips/day during its operational phase.</p> <p>At a wider level, the construction of this project simultaneously with projects planned at the same location will result in greater traffic flows, including heavy goods vehicles on the R772 Dublin Road, the L2180 Beech Road and the L6179 Kilbride road. The developments with overlapping construction durations within the vicinity of the Avoca River Business Park will co-ordinate construction traffic management plans which will be prepared and agreed with Wicklow County Council. This will result in short-term, negative but not significant cumulative effects.</p> <p>As no significant operational traffic is expected from the proposed development there is no cumulative effects to traffic expected during the operational phase.</p>
	<p>Landscape and Visual: Considering the relative scale of the Rappel Enterprises Ltd development, the nature of both developments and the character of the receiving environment within an industrial setting the proposed development will have a negligible or minor cumulative effect to landscape and visual amenity during the construction and operational phases.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Rappel Enterprises Ltd in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: The Rappel Enterprises Ltd development is one of a number of developments within the vicinity of the Avoca River Business Park. Therefore, there is potential for an increase in demand on resource and waste management during the construction phase, when these developments are considered cumulatively. However, given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region the cumulative effects to resource and waste management are expected to be minor, temporary, negative during the construction phase. Taking into consideration the imperceptible resource and waste management effect of the proposed development during the operational phase, no likely significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p>
	<p>Material Assets: The Rappel Enterprises Ltd development is one of a number of developments within the vicinity of the Avoca River Business Park. Therefore, given the proximity to the proposed development, in the event construction of the Rappel Enterprises Ltd development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the existing capacity of local services and utilities no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase there are no significant cumulative effects on services and utilities predicted. Given the nature and scale of the Rappel Enterprises Ltd development, no significant cumulative effects on land use are expected during the construction or operational phase.</p>
	<p>Population and Human Health: Given the nature and scale of this project, in terms of both construction activities and construction traffic, it is not likely there will be significant potential for cumulative effects on population and human health in combination with the proposed development. The construction and operational phases of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction and operational phases.</p>
	<p>Major Accidents and Disasters: Considering the proximity to the proposed substation and that it is assumed for the purposes of this assessment that the construction durations overlap there is the potential for a major road accident to occur. However, given the limited construction traffic associated with the</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>proposed development, the implementation of the Construction Traffic Management Plan, which is included in the CEMP, requiring the contractor to coordinate with the other construction projects in the area, no significant cumulative effects have been identified which would result in the proposed development, together with this project being vulnerable to or causing a major accident and disaster.</p> <p>Considering the nature and scale of the Rappel Enterprises Ltd no incidents have been identified, which would result in the proposed development, together with this project, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 11: <i>MaZo Architecture</i> <i>Permitted</i></p>	<p>Air Quality: Given the nature of the works and the distance from the MaZo Architecture development to the proposed development, no significant cumulative effects are predicted during the construction phase.</p> <p>As there are no changes in traffic volumes and no air emission sources associated with the operation of the proposed development, no significant cumulative effects are predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the MaZo Architecture development there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the MaZo Architecture development is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soils: The MaZo Architecture development will result in the loss of a small quantity of soil. However, the cumulative loss is still considered small on a local scale. Excavations and some dewatering may be required at the site. These will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils predicted during the construction phase.</p> <p>There are no likely significant cumulative effects to land and soils from the proposed development in combination with the MaZo Architecture development during the operational phase.</p> <p>Water: The MaZo Architecture development is located over 500m south east of the proposed development and south of the Avoca River. The MaZo Architecture development and the proposed development are not hydrologically linked.</p> <p>The CEMP for the proposed development includes surface water management measures, which outlines how surface water will be managed during construction and the measures to be taken to prevent any potentially polluting activities from occurring. As a result, no significant cumulative effects in relation to water and hydrology have been identified for the proposed development in combination with the MaZo Architecture development.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the MaZo Architecture development at Lamberton, are not expected to be significant.</p> <p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the limited scope of the project, the distance involved and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: No detail relating to anticipated traffic movements is available for this MaZo Architecture project. However, given the distance between this project and the proposed development, it is not likely for this project to fall within the zone of influence of the proposed development. Construction vehicles are most likely to access the project site through Junction 21 on the M11. The temporary increase in traffic will be imperceptible. There is no operational cumulative effect predicted as there will be no significant operational traffic generated from the proposed the development.</p>
	<p>Landscape and Visual: Considering the nature of both developments and the relative locations of the developments there will be a negligible or minor cumulative effect to landscape and visual amenity during the construction and operational phases.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed MaZo Architecture in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: Given the nature and scale of construction works associated with the MaZo Architecture development and given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region cumulative effects on resource and waste management during the construction phase are predicted to be imperceptible. As no significant operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p>
	<p>Material Assets: In the event the construction of the MaZo Architecture development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the distance from the proposed development and the existing capacity of local services, no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase no significant cumulative effects are predicted. Given the location vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p>
	<p>Population and Human Health: Given the nature and scale of this project, in terms of both construction activities and construction traffic, as well as the distance from the proposed development, it is not predicted that there will be significant potential for cumulative effects on population and human health in combination with the proposed development. The construction phase of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction phase. There are no significant cumulative effects to population and human health predicted during the operational phase.</p>
	<p>Major Accidents and Disasters: Considering the nature and scale of the works, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the MaZo Architecture development will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the MaZo Architecture development, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
<p>Project 12: <i>Crag Digital Avoca Limited Data Centre</i></p> <p><i>Permitted</i></p>	<p>Air Quality: As outlined in the Crag Digital Avoca Ltd data centre EIAR, there is potential for cumulative effects to arise due to the construction works which have the potential to generate construction dust. However, considering the dust mitigation measures outlined for both the Crag Digital Avoca Ltd development (as included in the EIAR) and the proposed development, it is not likely to give rise to any significant effects.</p> <p>During the operational phase there will be gas engines and diesel-fuelled back-up generator sets in the data centre. However, as there are no air emissions associated with the operation of the proposed development, no significant cumulative effects are predicted.</p>
	<p>Climate: Given the nature and scale of the Crag Digital Avoca Ltd datacentre there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Crag Digital Avoca Lt datacentre is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p>
	<p>Land and Soils: The Crag Digital Avoca Ltd data centre is one of a number of developments within the vicinity of the Avoca River Business Park. The substation works that are to be carried out are on a raised platform level with only localised excavation. Sure Partners Limited will ensure co-ordination with Crag Digital Avoca Ltd for the duration of the construction works to minimise any potential effects. This, together with the nature and scale of the projects within the vicinity of the Avoca River Business Park, means that these projects in combination with the proposed substation will have no likely significant cumulative effect on land and soils during the construction phase.</p> <p>There are no significant cumulative effects on land and soils predicted during operation.</p>
	<p>Water: Impacts to the water environment have the potential to occur during the construction phase of the Crag Digital Avoca Ltd data centre development and impact surface waters. The EIAR for the Crag Digital Avoca Ltd data centre development notes that potential impacts on water during the construction phase includes sedimentation, accidental spills and leaks. Mitigation measures are proposed during the construction phase to ensure no significant impact on the water environment. During construction of the proposed development there will be the potential for the surface water runoff to wash contaminants into the existing drainage system and watercourses. Similarly, runoff from material storage areas and vehicles could mobilise pollutants into the surface water system.</p> <p>No significant impacts are likely following the implementation of appropriate mitigation measures and adherence to the mitigation measures for both projects. Thus, there are no likely significant direct or indirect cumulative impacts of the proposed Crag Data Centre development in combination with the proposed development in relation to water and hydrology.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Crag Digital Avoca Ltd Data Centre, are not expected to be significant.</p>
	<p>Noise and Vibration: The Crag Digital Avoca Ltd Data Centre will be part of Avoca River Business Park so cumulative construction effects may affect receptors that are also located in the Avoca River Business Park. The EIAR noise chapter prepared for the permitted data centre concludes that construction phase noise and vibration will result in no significant effects on nearby sensitive receptors. The use of the mitigation measures detailed within the noise chapter and those proposed for the proposed development would reduce any cumulative effects as far is reasonably practicable. Consequently, it is considered that cumulative effects due to construction noise and vibration are unlikely to be greater than the residual construction noise and vibration effects identified for the proposed development.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>To address cumulative operational noise effects with the Crag Digital Avoca Ltd Data Centre permitted application, noise mitigation is required as part of the onshore 220kV substation. A proposed reduction of sound power levels for the harmonic filters and the 33kV STATCOM reactors (e.g. selection of quieter plant; enclosures; louvres; sound shields, reactor top hats; dynamic vibration absorbers; or active noise cancelling) will be employed by the manufacturer as part of the onshore 220kV substation detailed design so as to avoid cumulative noise levels exceeding the NG4 criteria at surrounding receptors. Noise generated from the operational substation site will be periodically reviewed. It is proposed that operational noise emissions due to the proposed development are subject to a planning condition that covers the most onerous cumulative assessment.</p> <p>Biodiversity: If the Crag Digital Avoca Ltd Data Centre works are concurrent with the bulk excavation works on the site of the proposed substation, there is potential for cumulative effects, as the sites are located close to each other. Should this situation arise, construction activities will be planned and phased, in consultation with the construction management team for the scheme.</p> <p>During the construction and operational phase the project has sufficient physical separation from the site of the proposed development to reduce the potential for cumulative noise and vibration effects and surface water effects to a negligible level.</p> <p>Discharges from both this project and the proposed development are governed by strict limits to ensure compliance with quality standards. No long-term cumulative impact on water quality will occur.</p> <p>Given the location of these projects (in areas of relatively low habitat and species value), together with the implementation of good practice standard construction environmental measures, the CEMP for the proposed development as detailed, no significant cumulative effects on biodiversity will result.</p> <p>Following completion of construction works no cumulative effect will occur.</p> <p>Traffic and Transport: The Crag Digital Avoca Limited Data Centre is part of multiple projects planned at the Avoca River Business Park. The construction phase of this project will result in a maximum of 320 LV trips/day and a maximum of 46 HGVs trips/day. This will only be for one month and then the total number of site operatives will reduce significantly during the remaining months of construction.</p> <p>At a wider level, the construction of this project simultaneously with projects planned at the same location will result in greater traffic flows, including heavy goods vehicles on the R772 Dublin Road, the L2180 Beech Road and the L6179 Kilbride road. The developments with overlapping construction durations within the vicinity of the Avoca River Business Park will co-ordinate construction traffic management plans which will be prepared and agreed with Wicklow County Council. This will result in short-term, negative but not significant cumulative effects.</p> <p>As no significant operational traffic is expected from the proposed development there is no cumulative effects to traffic expected during the operational phase.</p> <p>Landscape and Visual: The Crag Digital Avoca Ltd data centre development will have a substantially larger footprint than the substation and will be characterised as a large scale and enclosed high-tech building facility with smaller scale ancillary components. The proposed data centre development will represent a greater intensification of industrial development at the Avoca River Business Park as perceived and viewed primarily from along the Vale Road and from the M11 overbridge.</p> <p>The Crag Digital Avoca Ltd data centre will have a negligible cumulative effect to landscape and visual amenity in combination with the proposed development by virtue of relative locations of both development sites within the established industrial lands within the low lying and generally secluded valley setting.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Crag Digital Avoca Ltd Data Centre in combination with the proposed development. This is due to the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: The Crag Digital Avoca Ltd development is one of a number of developments within the vicinity of the Avoca River Business Park. Therefore, there is potential for an increase in demand on resource and waste management during the construction phase, when these developments are considered cumulatively. However, given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region the cumulative effects to resource and waste management are expected to be minor, temporary, negative during the construction phase. Taking into consideration the imperceptible resource and waste management effect of the proposed development during the operational phase, no likely significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p>
	<p>Material Assets: Given the scale of the Crag Digital Avoca Ltd Data Centre and the proximity to the proposed development, there is potential for cumulative effects to material assets in combination with the proposed development and a number of permitted and proposed developments within the vicinity of the Avoca River Business Park. There is potential for an increase in demand on services and utilities. However, given the existing capacity of local services, the proposed upgrade works and the limited demand from the developments individually, no significant cumulative effects on services and utilities are predicted during construction. The substation works that are to be carried out are on existing artificial surfaces in the Avoca River Business Park which is in an area zoned for 'employment.' The Developer will ensure co-ordination with Crag Digital Avoca Ltd for the duration of the construction works to minimise any potential effects. Therefore, no significant cumulative effects to material assets are expected during the construction phase.</p> <p>Taking into consideration the low demand from the proposed development on services and utilities during the operational phase and the other proposed developments, as well as the increased electricity capacity from the operation of the overall Project, there are no significant cumulative effects on services and utilities predicted during operation.</p>
	<p>Population and Human Health: Given the proximity to the proposed development, there is potential for cumulative effects to population and human health. However, given the nature of the construction works and the mitigation measures for air quality, noise, vibration and traffic, that will be implemented by both developers, as outlined in their relevant EIARs, there are no significant cumulative effects to population and human health predicted. The construction phase of both developments will create employment opportunities and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction phase.</p> <p>However, there is potential for cumulative operational effects, with the proposed Crag Digital Avoca Ltd data centres. Mitigation is required, in the form of additional noise reduction on plant/equipment, to ensure that cumulative operational noise levels are below the NG4 criteria at all receptors. The cumulative operational noise predictions show that noise levels are likely to be at or below the NG4 criteria at all receptors during all periods and therefore are unlikely to lead to a significant negative effect.</p> <p>The operation of the proposed development, in combination with the permitted and proposed Crag Digital Avoca Ltd developments, is expected to have an overall positive, long-term effect on the immediate area through continued employment opportunities and the associated economic and social benefits.</p>
	<p>Major Accidents and Disasters: During the construction phase of the Crag Digital Avoca Ltd data centre there is potential for cumulative effects in relation to major accidents and disasters, due to the proximity to the proposed substation and the permitted data centre, on the assumption that there will be some</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>overlap in the construction durations. During the operational phase there is potential for cumulative effects to major accidents and disasters, considering the data centre's close proximity to the proposed substation. There is potential for cumulative effects caused by gas explosion, fire and /or explosion for which the risks and consequences may be exacerbated due to the proximity of both developments.</p> <p>While the EIAR for the permitted data centre did not include an assessment in relation to major accidents and disasters, the EIAR which accompanied the new data centre planning application identified the potential risk of fire from diesel storage or electrical equipment. This risk is mitigated, by the proposed firewater storage tank and pump house located on the site which would supply the water mist suppression system in the data halls, the sprinkler systems in the emergency generator and a ring main with hydrant connections covering all site areas (as included in the EIAR). A similar system will be implemented for the permitted data centre.</p> <p>Due to the low likelihood of such an event occurring, the stringent protective measures in place for the proposed development, and the protective measures in place for both the permitted and the proposed Crag Digital Avoca Ltd data centres (as included in the EIAR); the potential for a significant cumulative effect to occur is low.</p>
<p>Project 13: <i>Ardale Properties Limited Housing Estate</i></p> <p><i>Permitted</i></p>	<p>Air Quality: Given the nature of the works and the distance from the Ardale Properties Ltd housing estate development to the proposed development, no significant cumulative effects are predicted during the construction phase.</p> <p>As there are no changes in traffic volumes and no air emission sources associated with the operation of the proposed development, no significant cumulative effects are predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the Ardale Properties Ltd housing estate there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Ardale Properties Ltd housing estate is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soils: The Ardale Properties Ltd development will result in the loss of a small quantity of soil. However, the cumulative loss is still considered small on a local scale. Excavations and some dewatering may be required at the site. These will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils predicted during the construction phase.</p> <p>There are no likely significant cumulative effects to land and soils from the proposed development in combination with the Ardale Properties Ltd development during the operational phase.</p> <p>Water: The Ardale Properties Ltd development is located over 500m south east of the proposed development and south of the Avoca River. The Ardale Properties development and the proposed development are not hydrologically linked.</p> <p>The CEMP for the proposed development includes a surface water management measures, which outlines how surface water will be managed during construction and the measures to be taken to prevent any potentially polluting activities from occurring. As a result, no significant cumulative effects in relation to water and hydrology have been identified for the proposed development, in combination with the Ardale Properties Ltd development works.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Ardale Properties Ltd development, are not expected to be significant.</p>
	<p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p>
	<p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the limited scope of the project, the distance involved and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: No detail relating to anticipated traffic movements is available for this Ardale Properties Ltd Housing Estate project. However, given the distance between this project and the proposed development, it is not likely for this project to fall within the zone of influence of the proposed development. Construction vehicles are most likely to access the project site through the Junction 21 on the M11. The temporary increase in traffic will be imperceptible. There is no operational cumulative effect expected as there is no significant operational traffic from the proposed development.</p>
	<p>Landscape and Visual: Considering the nature of both developments and the relative locations of the developments there will be a negligible cumulative effect to landscape and visual amenity during the construction and operational phases.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Ardale Properties Ltd Housing Estate in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: Given the nature and scale of construction works associated with the Ardale Properties Ltd development and given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region cumulative effects on resource and waste management during the construction phase are predicted to be imperceptible. As no significant operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p>
	<p>Material Assets: It is expected that the construction works for the Ardale Properties Ltd development will be completed before the commencement of the construction of the proposed development. However, in the event the construction of the Ardale Properties Ltd development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the distance from the proposed development and the existing capacity of local services, no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase no significant cumulative effects are predicted. Given the location vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p>
	<p>Population and Human Health: Given the nature and scale of this project, in terms of both construction activities and construction traffic, as well as the distance from the proposed development, it is not predicted that there will be significant potential for cumulative effects on population and human health in combination with the proposed development. The construction phase of both developments will create employment opportunities in Arklow and the</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction phase. There are no significant cumulative effects to population and human health predicted during the operational phase.</p> <p>Major Accidents and Disasters: Considering the nature and scale of the works, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the Ardale Properties Ltd development will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the Ardale Properties Ltd development, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 14: <i>Harmony Timber Solutions Ltd Office and Factory</i></p> <p><i>Permitted</i></p>	<p>Air Quality: Considering the close proximity of the Harmony Timber Solution Ltd development to the proposed development and the potential overlap of construction phases, there is potential for cumulative effects on air quality to arise during the construction phase. Given the nature and scale of the construction activities and construction traffic associated with the Harmony Timber Solutions Ltd development, no significant cumulative air quality effects are predicted during the construction phase.</p> <p>As there are no significant operational traffic volumes or operational emissions associated with the proposed development there are no cumulative effects to air quality expected during the operational phase.</p> <p>Climate: Given the nature and scale of the Harmony Timber Solutions Ltd office and factory development there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Harmony Timber Solutions Ltd office and factory development is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soils: Harmony Timber Solutions Ltd is one of a number of developments within the vicinity of the Avoca River Business Park. The substation works that are to be carried out are on a raised platform level with only localised excavation. This, together with the nature and scale of the other projects within the vicinity of the Avoca River Business Park, means that these projects in combination with the proposed substation will have no likely significant cumulative effect on land and soils during the construction phase.</p> <p>There are no significant cumulative effects on land and soils predicted during operation.</p> <p>Water: Harmony Timber Solutions Ltd is one of a number of developments within the vicinity of the Avoca River Business Park. No significant impacts are likely following the implementation of appropriate mitigation measures and adherence to the CEMP for the proposed development. Thus, there are no likely significant cumulative effects from the proposed Harmony Timber Solutions Ltd development in combination with the proposed development in relation to water and hydrology during construction.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Harmony Timber Solutions Ltd development, are not expected to be significant.</p> <p>Noise and Vibration: The Harmony Timber Solutions Office and Factory is located to the southwest of the onshore 220kV substation site and in close proximity to a receptor. As the receptor is approximately 600 m from the onshore 220kV substation site, it is considered to be sufficiently separated such that negative effects due to construction works are unlikely. As such, negative cumulative construction noise and vibration effects due to the Harmony Timber Solutions Office and Factory are unlikely.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Harmony Timber Solutions Office and Factory development is proposed to be located approximately 200 m away from the receptor. Due to likely operational activities (timber frame assembly), noise is unlikely to be an issue from this scheme. Consequently, it is considered that cumulative effects due to operational noise are unlikely to be greater than the residual operational effects identified for the proposed development.</p>
	<p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the limited scope of the project and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: The Harmony Timber Solution Limited Office and Factory is part of multiple projects planned at the Avoca River Business Park. No detail relating to anticipated traffic movements is available for this proposed Harmony Timber Solutions Office and Factory development. However, based on the description of the works and standards provided by Wicklow County Council for the operational phase, traffic during operation is expected to be higher than traffic during construction. Based on the project floor area, this project is assumed to result in roughly 75 LV trips/day during its operational phase.</p> <p>At a wider level, the construction of this project simultaneously with projects planned at the same location will result in greater traffic flows, including heavy goods vehicles on the R772 Dublin Road, the L2180 Beech Road and the L6179 Kilbride road. The developments with overlapping construction durations within the vicinity of the Avoca River Business Park will co-ordinate traffic management plans which will be prepared and agreed with Wicklow County Council. This will result in short-term, negative but not significant cumulative effects.</p> <p>As no significant operational traffic is expected from the proposed development there is no cumulative effects to traffic expected during the operational phase.</p>
	<p>Landscape and Visual: The proposed development will have a negligible cumulative effect to landscape and visual amenity by virtue of the location of both sites within the established industrial lands within the low lying and generally secluded valley setting.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Harmony Timber Solution Ltd Office and Factory in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: The Harmony Timber Solutions Ltd development is one of a number of developments within the vicinity of the Avoca River Business Park. Therefore, there is potential for an increase in demand on resource and waste management during the construction phase, when these developments are considered cumulatively. However, given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region the cumulative effects to resource and waste management are expected to be minor, temporary, negative during the construction phase. Taking into consideration the imperceptible resource and waste management effect of the proposed development during the operational phase, no likely significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p>
	<p>Material Assets: The Harmony Timber Solutions Ltd development is one of a number of developments within the vicinity of the Avoca River Business Park. Therefore, given the proximity to the proposed development, in the event construction of the Harmony Timber Solutions Ltd development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the existing capacity of local services and utilities no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase there</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>are no significant cumulative effects on services and utilities predicted. Given the nature and scale of the Harmony Timber Solutions Ltd development, no significant cumulative effects on land use are expected during the construction or operational phase.</p> <p>Population and Human Health: Given the nature and scale of this project, in terms of both construction activities and construction traffic, it is not likely there will be significant potential for cumulative effects on population and human health in combination with the proposed development. The construction and operational phases of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction and operational phases.</p> <p>Major Accidents and Disasters: Considering the proximity to the proposed substation and that it is assumed for the purposes of this assessment that the construction durations overlap there is the potential for a major road accident to occur. However, given the limited construction traffic associated with the proposed development, the implementation of the Construction Traffic Management Plan, which is included in the CEMP, requiring the contractor to coordinate with the other construction projects in the area, no significant cumulative effects have been identified which would result in the proposed development, together with this project being vulnerable to or causing a major accident and disaster.</p> <p>Considering the nature and scale of the Harmony Timber Solutions Ltd no incidents have been identified, which would result in the proposed development, together with this project, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 15: <i>Sigma Aldrich Ireland Limited</i></p> <p><i>Permitted</i></p>	<p>Air Quality: Given the nature of the works and the distance from the Sigma Aldrich Ireland Ltd development to the proposed development, no significant cumulative effects are predicted during the construction phase.</p> <p>As there are no changes in traffic volumes and no air emission sources associated with the operation of the proposed development, no significant cumulative effects are predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the Sigma Aldrich Ireland Ltd development there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Sigma Aldrich Ireland Ltd development is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soils: The Sigma Aldrich Ireland Ltd development may result in the loss of a small quantity of soil. However, the cumulative loss would still be considered small on a local scale. If excavations and dewatering are required at the site, these will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils predicted during the construction phase.</p> <p>There are no likely significant cumulative effects to land and soils from the proposed development in combination with the Sigma Aldrich Ireland Ltd development during the operational phase.</p> <p>Water: The Sigma Aldrich Ireland Ltd development is located over 800m from the proposed substation site. The CEMP for the proposed development includes a surface water management measures, which outlines how surface water will be managed during construction and the measures to be taken to prevent any potentially polluting activities from occurring. As a result, no significant cumulative effects in relation to water and hydrology have been identified for the proposed development, in combination with the Sigma Aldrich Ireland Ltd development works.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Sigma Aldrich Ireland Ltd development, are not expected to be significant.</p>
	<p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p>
	<p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the distance involved and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: No detail relating to anticipated traffic movements is available for this storage facility. However, based on the description of the works and the level of traffic generation anticipated the level of traffic generated during construction works will be negligible. The temporary increase in traffic will be imperceptible.</p>
	<p>Landscape and Visual: The proposed development will have a negligible cumulative effect to landscape and visual amenity by virtue of the distance between the sites and with both sites located within established lands.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Sigma Aldrich Ireland Ltd development in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: Given the nature and scale of construction works associated with the Sigma Aldrich Ireland Ltd development and given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region cumulative effects on resource and waste management during the construction phase are predicted to be imperceptible. As no significant operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p>
	<p>Material Assets: Given the nature and scale of the Sigma Aldrich Ireland Ltd development, the distance from the proposed development and the existing capacity of local services, no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase no significant cumulative effects are predicted. Given the location vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p>
	<p>Population and Human Health: Given the nature and scale of this project, in terms of both construction activities and construction traffic, it is not likely there will be significant potential for cumulative effects on population and human health in combination with the proposed development. The construction and operational phases of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction and operational phases.</p>
	<p>Major Accidents and Disasters: Considering the nature and scale of the works, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development, no plausible potential major accidents and disasters have been</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>identified, to which the proposed development together with the Sigma Aldrich Ireland Ltd development will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the Sigma Aldrich Ireland Ltd development, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 16: <i>Wexford Bus and Stoneleigh Development Limited Park and Ride Facility</i> <i>Permitted</i></p>	<p>Air Quality: Given the nature of the works and the distance from the Wexford Bus and Stoneleigh Development Ltd development to the proposed development, no significant cumulative effects are predicted during the construction phase. If the construction of the Park and Ride and the proposed development occur at the same time, given the distance between sites and the fact that the Park and Ride is located adjacent to the M11, any cumulative impact on air quality from construction traffic is not expected to be significant.</p> <p>As there are no changes in traffic volumes and no air emission sources associated with the operation of the proposed development, no significant cumulative effects are predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the Wexford Bus and Stoneleigh Development Ltd there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Wexford Bus and Stoneleigh Development Ltd is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soils: The Park and Ride development may result in the loss of a small quantity of soil. However, the cumulative loss would still be considered small on a local scale. If excavations and dewatering are required at the site, these will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely significant cumulative effects to land and soils predicted during the construction phase.</p> <p>There are no likely significant cumulative effects to land and soils from the proposed development in combination with the Park and Ride development during the operational phase.</p> <p>Water: The Park and Ride development is located adjacent to the proposed cable route. The CEMP for the proposed development includes a surface water management measures, which outlines how surface water will be managed during construction and the measures to be taken to prevent any potentially polluting activities from occurring. As a result, no significant cumulative effects in relation to water and hydrology have been identified for the proposed development, in combination with the Park and Ride development works.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Park and Ride development, are not expected to be significant.</p> <p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p> <p>Biodiversity: A temporary, not significant effect due to noise and disturbance could potentially arise. However, due to the limited scope of the project, the distance involved and the limited scope for significant potential effects, no cumulative effect on biodiversity is expected to occur during the construction phase in combination with the proposed development. Following completion of construction works no cumulative effect will occur.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Traffic and Transport: No detail relating to anticipated traffic movements is available for this Park and Ride facility. However, based on the description of the works, the level of traffic generation anticipated for this project will be greatest during operation. The daily trip generation by the facility is expected to be in the region of 340 LVs which will lead to a 3% increase in traffic along the R772 Dublin Road. Considering the traffic volumes on this link, the increase in cumulative traffic from this project will be not significant.</p> <p>Landscape and Visual: Considering the nature of both developments and the relative locations of the developments there will be a negligible cumulative effect to landscape and visual amenity during the construction and operational phases.</p> <p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Wexford Bus and Stoneleigh Ltd development in combination with the proposed development. This is due to the fact that any direct negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p> <p>Resource and Waste Management: Given the nature and scale of construction works associated with the Wexford Bus and Stoneleigh Development Ltd development and given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region cumulative effects on resource and waste management during the construction phase are predicted to be imperceptible. As no significant operational waste is associated with the proposed development, no significant cumulative effects on resource and waste management are predicted.</p> <p>Material Assets: In the event the construction of the Wexford Bus and Stoneleigh Ltd development and the proposed development overlap there is potential for an increase in demand on services and utilities. However, given the nature and scale of the Wexford Bus and Stoneleigh Ltd development and the existing capacity of local services, no significant cumulative effects are predicted. Taking into consideration the low demand from the proposed development during the operational phase no significant cumulative effects are predicted. Given the location vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p> <p>Population and Human Health: Given the nature and scale of this project, in terms of both construction activities and construction traffic, it is not likely there will be significant potential for cumulative effects on population and human health in combination with the proposed development. The construction and operational phases of both developments will create employment opportunities in Arklow and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction and operational phases.</p> <p>Major Accidents and Disasters: Considering the nature and scale of the works, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for the proposed development, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the Wexford Bus and Stoneleigh Development Ltd development will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the Wexford Bus and Stoneleigh Development Ltd development, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 17: <i>Crag Digital Avoca Limited Data</i></p>	<p>Only one Crag Digital data centre development will be built – either the permitted one or the one described in this application. The cumulative effects, outlined for Project 12 Crag Digital Avoca Limited permitted data centre, apply to this new application, with specific cumulative operational noise effects and landscape and visual character noted below.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
<p><i>Centre - amended application</i></p> <p><i>Pending approval</i></p>	<p>Noise: The cumulative operational noise predictions above show that noise levels are likely to be at or below the NG4 criteria at all receptors at all times during the day and therefore are unlikely to lead to a significant negative effect. There are some cases where the cumulative level is higher than the pre-existing background noise level, notably during night-time and therefore may lead to an adverse impact on nearby residential receptors. Given the context of low background levels, low ambient noise levels, and low predicted operational noise levels, the negative effect is not considered to be significant.</p> <p>Landscape and Visual: The data centre development will have a substantially larger footprint than the substation and will be characterised as a large scale and enclosed high-tech building facility with smaller scale ancillary components. The currently proposed revised data centre development occupies substantially the same site area as the permitted scheme. While its buildings are not as high as the permitted scheme, it nonetheless presents as being similar in character and magnitude.</p>
<p>Project 18:</p> <p><i>Crag Digital Avoca Limited 110kV Substation</i></p> <p><i>Pending approval</i></p>	<p>Air Quality: Considering the close proximity to the proposed development (immediately adjacent to the substation site) there is potential for cumulative effects from dust during the construction phase. However, there are stringent mitigation measures in place for the Crag Digital Avoca Ltd 110kV Substation (as included in the EIAR), the permitted and proposed Crag Digital data centres and the proposed development in order to control dust emissions during the construction phase. Therefore, there are no significant cumulative effects predicted.</p> <p>There are no significant operational effects on air quality associated with the proposed Crag Digital 110 kV substation, so no significant cumulative operational effects on air quality are predicted, with the proposed development and with the proposed and permitted data centre developments.</p> <p>Climate: Given the nature and scale of the Crag Digital Avoca Ltd 110kV substation there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Crag Digital Avoca Ltd 110kV substation is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soils: The proposed Crag Digital Avoca Limited 110kV Substation is proposed in an area of made ground. It is possible that some made ground material may need to be disposed of to a suitably licenced waste facility. The substation works that are to be carried out are on a raised platform level with only localised excavation. The developer will ensure co-ordination with Crag Digital Avoca Ltd for the duration of the construction works to minimise any potential effects. This, together with the nature and scale of the other proposed developments in the vicinity of the Avoca River Business Park, means that there will be no likely significant cumulative effects with the proposed development on land and soils during the construction phase.</p> <p>There are no significant cumulative effects on land and soils predicted during operation.</p> <p>Water: The Crag Digital Avoca Ltd 110kV substation one of a number of developments within the vicinity of the Avoca River Business Park. No significant impacts are likely following the implementation of appropriate mitigation measures and adherence to the CEMP for the proposed development. Thus, there are no likely significant cumulative effects from the proposed Crag Digital Avoca Ltd 110kV substation development in combination with the proposed development in relation to water and hydrology during construction.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in-combination with the Crag Digital Avoca Ltd 110kV substation development, are not expected to be significant.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Noise and Vibration: A new 110kV GIS Substation has been included in the modelling and cumulative assessment as part of the Crag Digital Avoca Ltd Data Centre (ref. 18940) permitted development. The location of the new proposed alternate location for this substation is a location to the west of what is assessed in this model and this alternate location will not notably change noise levels experienced at noise receptors. Consequently, it is considered that cumulative effects due to operational noise will not be greater than the residual operational effects identified for the proposed development.</p> <p>Biodiversity: If works are concurrent with the bulk excavation works on the site of the substation, there is potential for cumulative effects, as the sites are located close to each other. Should this situation arise, construction activities will be planned and phased, in consultation with the construction management team for the scheme. During the construction and operational phases, the project has sufficient physical separation from the site of the proposed development to reduce the potential for cumulative noise and vibration effects and surface water effects to a negligible level.</p> <p>Discharges from both this project and the proposed development are governed by strict limits to ensure compliance with quality standards. No long-term cumulative impact on water quality will occur.</p> <p>Given the location of these projects (in areas of relatively low habitat and species value), together with the implementation of good practice standard construction environmental measures, the CEMP for the proposed development as detailed, no significant cumulative effects on biodiversity will result.</p> <p>Following completion of construction works no cumulative effect will occur.</p> <p>Traffic and Transport: The Crag Digital Avoca Limited 110kV substation is part of multiple projects planned at the Avoca River Business Park. No detail relating to anticipated traffic movements is available for this proposed Crag Digital Avoca Ltd 110kV Substation project. However, based on the description of the works, the project is assumed to result in the same number of trips expected during the construction phase of the proposed development's substation. A total of 103 LV and 259 HGV trips/day are therefore anticipated for this project (refer to Table 13.8). There is no OHL construction work associated with this project. However, the same level of traffic generation is assumed for a robust evaluation.</p> <p>At a wider level, the construction of this project simultaneously with projects planned at the same location will result in greater traffic flows, including heavy goods vehicles on the R772 Dublin Road, the L2180 Beech Road and the L6179 Kilbride road. The developments with overlapping construction durations within the vicinity of the Avoca River Business Park will co-ordinate traffic management plans which will be prepared and agreed with Wicklow County Council. This will result in short-term, negative but not significant cumulative effects.</p> <p>As no significant operational traffic is expected from the proposed development there is no cumulative effects to traffic expected during the operational phase.</p> <p>Landscape and Visual: The proposed 110kV substation development associated with the permitted and proposed data centre developments will be located to the immediate northwest of the data centre and immediately west of the proposed 220kV substation. It is of modest scale relative to the 220kV substation and the data centre developments and will be visually absorbed within the industrial setting.</p> <p>The proposed development will have a negligible cumulative effect to landscape and visual amenity by virtue of relative scale, adjacency and similarity in nature of both developments.</p> <p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Crag Digital Avoca Ltd 110kV Substation in combination with the proposed development. This is due to the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Resource and Waste Management: The Crag Digital Avoca Ltd 110kV substation development is one of a number of developments within the vicinity of the Avoca River Business Park. Therefore, there is potential for an increase in demand on resource and waste management during the construction phase, when these developments are considered cumulatively. However, given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region the cumulative effects to resource and waste management are expected to be minor, temporary, negative during the construction phase. Taking into consideration the imperceptible resource and waste management effect of the proposed development during the operational phase, no likely significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p> <p>Material Assets: Considering the proximity of the Crag Digital Avoca Ltd 110kV substation to the proposed development, there is potential for cumulative effects to material assets in combination with the proposed development and a number of permitted and proposed developments within the vicinity of the Avoca River Business Park. There is potential for an increase in demand on services and utilities. However, given the existing capacity of local services, the proposed upgrade works and the limited demand from the developments individually, no significant cumulative effects on services and utilities are predicted during construction. The substation works that are to be carried out are on existing artificial surfaces in the Avoca River Business Park which is in an area zoned for ‘employment.’ The Developer will ensure co-ordination with Crag Digital Avoca Ltd for the duration of the construction works to minimise any potential effects. Therefore, no significant cumulative effects to material assets are expected during the construction phase.</p> <p>Taking into consideration the low demand from the proposed development on services and utilities during the operational phase and the other proposed developments, as well as the increased electricity capacity from the operation of the overall Project, there are no significant cumulative effects on services and utilities predicted during operation.</p> <p>Population and Human Health: Given the proximity to the proposed development, there is potential for cumulative effects to population and human health. However, given the nature of the construction works and the mitigation measures for air quality, noise, vibration and traffic, that will be implemented by both developers, as outlined in their relevant EIARs, there are no significant cumulative effects to population and human health predicted. The construction phase of both developments will create employment opportunities and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction phase. The operation of the proposed development, in combination with the permitted and proposed Crag Digital Avoca Ltd developments, is expected to have an overall positive, long-term effect on the immediate area through continued employment opportunities and the associated economic and social benefits.</p> <p>Major Accidents and Disasters: Considering the proximity to the proposed development, there is potential for a cumulative effect in relation to major accidents and disasters during the construction phases of the proposed development, the 110kV substation and the permitted data centre facility. The cumulative effects identified for the permitted data centre and the proposed development have the potential to be further exacerbated, if the 110kV substation receives permission and is constructed at the same time. Notwithstanding, due to the low likelihood of such an event occurring and the stringent protective measures in place for the proposed development, the potential for a cumulative effect of this nature to occur is very low.</p> <p>The operational risks associated with the Crag Digital Avoca Ltd 110kV substation are considered similar to those of the proposed substation. Considering its close proximity and the proximity of the permitted data centre there is potential for cumulative effects during the operational phase caused by fire and /or explosion.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>The risks and consequences may be exacerbated due to facilities being side by side. If such an event were to occur at more than one facility at the same time the associated consequence would also be increased. However, due to the low likelihood of such an event occurring and the stringent protective measures in place for the proposed development the potential for a cumulative effect of this nature to occur is low.</p> <p>It is assumed that SF₆ gas will be utilised in the proposed 110kV substation, similar to the proposed development with the same potential to leak in small amounts. The proposed Crag Digital Avoca Ltd datacentre (amended application) EIAR notes the use of SF₆ and concludes a leak is not considered a significant major accident. Consequently, considering the stringent mitigation measures in place for the proposed development and the imperceptible overall effects to climate from a single leak, no significant cumulative effects have been identified which would result in the proposed development, together with the Crag Digital 110kV substation and the Crag Digital Avoca Ltd datacentre causing major climate effects due to SF₆ leaks.</p>
<p>Project 19: <i>Arklow Flood Relief Scheme</i></p> <p><i>Pending submission</i></p>	<p>Air Quality: Given the distance from the Arklow Flood Relief Scheme to the proposed development, there are no significant cumulative air quality effects predicted during the construction phase.</p> <p>As there are no air emission sources or operational traffic associated with the proposed development, and the distance from the Arklow Flood Relief Scheme to the proposed development, there are no significant cumulative air quality effects are predicted during the operational phase.</p> <p>Climate: Given the nature and scale of the Arklow Flood Relief Scheme there are negligible carbon emissions associated with its development and operation in terms of macro-scale carbon contribution. Therefore, the Arklow Flood Relief Scheme is not considered to have notable effect regarding government targets and the EU ETS obligations on its own or in combination with the proposed development. As such, there are no cumulative effects to climate predicted during the construction or operational phases.</p> <p>Land and Soil: The proposed Arklow Flood Relief Scheme is proposed in an area of made ground. Material will likely need to be disposed of or recovered at a suitably licenced waste facility. In addition, small quantities of soil will be lost, this is likely to be small on a local scale. No other significant impacts on land and soils are likely following the implementation of appropriate mitigation measures. Excavations and dewatering may be required at the site. These will not interact with the impacts identified for the proposed development. There are no cumulative effects predicted from a hydrogeological perspective due to the location from the proposed development (e.g. distant or downgradient of the proposed development), the nature and extent of the development and the interaction with impacts identified for the proposed development. Thus, there are no likely cumulative effects from the Arklow Flood Relief Scheme in combination with the proposed development on land and soils during the construction phase.</p> <p>There are no likely cumulative effects from the proposed development in combination with the Arklow Flood Relief Scheme on land and soils during the operational phase.</p> <p>Water: It is possible that the construction of the proposed Arklow Flood Relief Scheme may take place in parallel with the construction of the proposed development (should the proposed Arklow Flood Relief Scheme be submitted, receive consent and commence construction in a timely manner). The concurrent construction of both developments may exacerbate effects on the hydrology and flooding.</p> <p>Mitigation measures will be implemented to mitigate any significant flood risk during construction of works in and around the Avoca River. The construction works to the existing flood defence embankment and nearby construction of the proposed Arklow Flood Relief Scheme may generate the potential for direct and indirect short term significant negative effects on the hydrology of the Avoca River during construction for those reasons outlined above.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>No significant impacts are likely following the implementation of appropriate mitigation measures and adherence to the CEMP for the proposed development. Thus, there are no likely significant direct, indirect cumulative impacts of the proposed Arklow Flood Relief Scheme in combination with the proposed development in relation to water and hydrology.</p> <p>As the effect of the proposed development on water and hydrology during the operation phase will not be significant, any potential cumulative effects arising, in combination with the Arklow Flood Relief Scheme, are not expected to be significant.</p>
	<p>Noise and Vibration: Cumulative impacts during construction have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 200 m from selected sensitive receptors. Cumulative impacts during operation have been screened out, assuming that negative noise and vibration effects are unlikely at distances greater than 1 km from receptors where operational effects have been identified closest to OGI substation.</p>
	<p>Biodiversity: The flood relief scheme has sufficient physical separation from the site of the proposed development to reduce the potential for cumulative noise and vibration effects and surface water effects to a negligible level.</p> <p>If the flood relief works are concurrent with the bulk excavation works on the site of the substation, there is potential for cumulative effects, as the sites are located close to each other. Should this situation arise, construction activities will be planned and phased, in consultation with the construction management team for the flood relief scheme.</p> <p>Given the location of these projects (in areas of relatively low habitat and species value), together with the implementation of best practice standard construction environmental measures, the CEMP for the proposed development as detailed, no significant cumulative effects on biodiversity will result.</p> <p>Following completion of construction works no cumulative effect will occur.</p>
	<p>Traffic and Transport: The construction of Arklow Flood Relief Scheme is expected to result in a maximum of 358 trips daily (LV+HGV). This is translated in an increase in traffic flows on the R772 Dublin Road of less than 2.2% on an all-day basis. The temporary increase in traffic volumes from this project will have limited impact on the performance of the R772 Dublin Road and will therefore be not significant. As there is no significant operational traffic associated with the proposed development there will be no significant cumulative effect predicted.</p>
	<p>Landscape and Visual: The proposed Arklow Flood Relief Scheme project is located within the urban area of Arklow town at a distance of c. 1.5km to 3.0km east of the M11 motorway. It is considered that potential cumulative landscape or visual effects will be negligible by virtue of relative locations of both development sites.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no negative likely significant direct, indirect cumulative impacts have been identified in relation to the proposed Arklow Flood Relief Scheme in combination with the proposed development. This is due to the distance of the development from this project and the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p>
	<p>Resource and Waste Management: Given the likely overlap between the construction phases of the Arklow Flood Relief Scheme and the proposed development there is potential for a cumulative resource and waste management effect during the construction of the proposed development. This could give rise to short term, slight resource and waste management effects due to an increased demand on waste recovery and/or disposal sites.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>Considering the imperceptible resource and waste management effect of the proposed development during the operational phase, no negative likely significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p> <p>Material Assets: Considering the distance between the developments there is no cumulative effects predicted in terms of materials assets during the construction phase. There will be a low demand on material assets from both development during the operational phase, therefore no cumulative effects to materials assets are predicted.</p> <p>Given the location of the Arklow FRS vis a vis the proposed development, no significant cumulative effects on land use are expected during the construction or operational phase.</p> <p>Population and Human Health: Given the scale of the Arklow Flood Relief Scheme, in terms of both construction activities and construction traffic, there is potential for cumulative effects on population and human health. However, given the distance from the proposed development, no significant effects are predicted. The construction phase of both developments will create employment opportunities and the associated economic and social benefits, which will have a positive cumulative effect on population and human health during the construction phase.</p> <p>The operation of the proposed development is expected to have a positive effect on population and human health in terms of increasing energy supply in the local area. The operation of the proposed Arklow Flood Relief Scheme will provide flood defences in Arklow. Both developments will allow for further expansion and growth in the area, which will help to meet the objectives of the Arklow LAP. Therefor there is potential for a positive cumulative effect on population and human health in combination with the proposed development.</p> <p>Major Accidents and Disasters: Considering the distance and well developed existing environment between the Arklow FRS and the proposed development, the potential low risk scenarios associated with the proposed development and the robust mitigation measures to be implemented for both projects, no plausible potential major accidents and disasters have been identified, to which the proposed development together with the Arklow FRS project will be vulnerable. Additionally, no incidents have been identified, which would result in the proposed development, together with the Arklow FRS, causing a major accident or disaster on or outside the proposed development area during the construction or operational phase.</p>
<p>Project 20: <i>Maintenance and/or repair of Avoca River Business Park Flood Embankment</i></p> <p><i>Pending submission of any required approvals</i></p>	<p>Air Quality: The required maintenance or reinforcement works, will be undertaken in advance of the substation construction, with ongoing maintenance and repair thereafter, subject to regular inspection and monitoring. As any required works are not expected to overlap with the construction of the substation there are no significant cumulative effects to air quality expected. As there are no significant operational traffic volumes or operational emissions associated with the proposed development there are no cumulative effects to air quality expected during the operational phase.</p> <p>Climate: The cumulative effect of any additional maintenance and repair works to the additional flood defence embankment works in combination with the proposed development will ensure that the Avoca River Business Park (including the proposed development) remain resilient to climate change, with protection to the 0.1% AEP 1 in 1000 years plus Mid-Range Future Scenario allowance for climate change as detailed in the Flood Risk Assessment. This will help to meet the objectives of the Wicklow County Development Plan 2016-2022 and the Arklow Local Area Plan 2018-2024, contributing to a significant positive effect to climate in terms of climate resilience.</p> <p>Land and Soils: These maintenance or reinforcement works, if required, will require the importation of cohesive soils to reinforce the embankment to the extent necessary. The installation of driven sheet piles for flood defences (if this methodology is used) will lead to a localised permanent change in the groundwater flow and levels within the locally important aquifers in the vicinity of the proposed flood defence structure.</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>However, given that any required maintenance or reinforcement works will be undertaken in advance of the substation construction, and given that, following the implementation of mitigation measures, the proposed development will have an imperceptible effect on land and soils, the proposed development in combination with the possible further flood defence maintenance works, is considered to be not significant.</p> <p>There will be a requirement for ongoing maintenance and repair of the flood defence works throughout the operational phase. As there are no significant operational effects of the proposed development on land and soils, no significant cumulative effects are predicted.</p>
	<p>Water: As the construction of any required maintenance or reinforcement works will be completed ahead of the proposed development, and, as the proposed development is not expected to result in any significant effects on water quality, no significant cumulative effects are expected, during the construction phase.</p> <p>In relation to flood risk, the cumulative effect of any additional maintenance and repair works to the overall Avoca River Business Park flood defence embankment works in combination with the proposed development is that any residual flood risk, associated with a potential breach of the embankment or groundwater seepage will be minimised, in advance of the substation construction. There will also be an ongoing inspection, monitoring and maintenance programme for the Avoca River Business Park. This is considered a long term, positive cumulative effect in terms of flood risk.</p>
	<p>Noise and Vibration: The maintenance and/or repair of Avoca River Business Park Flood Embankment works will be undertaken in advance of the proposed development substation construction, with ongoing maintenance and repair thereafter. The construction duration will not overlap with the construction of the proposed development, so there will be no cumulative impact to noise and vibration.</p>
	<p>Biodiversity: The construction duration will not overlap with the construction of the proposed development, with any repair works done in advance of the development construction and ongoing maintenance and repairs thereafter (during the operation of the proposed development). Therefore, there will be no in-combination effects with the proposed development from noise and/or vibration.</p> <p>Given the location of these projects (in areas of relatively low habitat and species value), together with the implementation of best practice standard construction environmental measures and the CEMP for the proposed development as detailed, no significant cumulative effects on biodiversity will result.</p>
	<p>Traffic and Transport: As any required works are not expected to overlap with the construction of the substation there are no significant cumulative effects to traffic and transportation expected during any required maintenance and repair works.</p> <p>During operation of the proposed development, there will be an ongoing inspection, maintenance and repair programme for the flood defence embankment. Any works required to the embankment will have some associated traffic. However, as there are no significant operational traffic volumes associated with the proposed development, there are no significant cumulative effects on traffic and transportation expected during the operational phase.</p>
	<p>Landscape and Visual: Should maintenance and repair works to the existing flood embankment around the business park be required, such works will be localised to specific lengths of the existing embankment. It is understood that works are expected to include increasing the width of the embankment on the business park side so as to facilitate a corresponding increase in the top level of the embankment. Pending site investigation works, it may be necessary to introduce sheet piles along the centreline of the embankment to ensure stability. It is considered that potential cumulative landscape or visual effects of these works will not be significant.</p>
	<p>Archaeology, Architecture and Cultural Heritage: From an archaeological, architectural and cultural heritage perspective, no likely significant cumulative effects have been identified in relation to the maintenance and/or repair of Avoca River Business Park Flood Embankment in combination with the proposed</p>

Plan/Project Ref No	Potential Cumulative Impacts on Environmental Factors
	<p>development. This is due to the fact that any negative impacts upon the archaeological, architectural and cultural heritage resource arising from the proposed development will be fully mitigated.</p> <p>Resource and Waste Management: There is potential for an increase in demand on resource and waste management as a result of both the proposed development and the potential maintenance and repair works, although as noted, any embankment works will be completed in advance of the proposed development. However, given the existing capacity of waste recycling and/or disposal facilities and the availability of construction materials in the region the cumulative effects to resource and waste management are expected to be minor, temporary, negative during the construction phase.</p> <p>During the operational phase of the proposed development, an inspection, maintenance and repair programme of the flood embankment at the Avoca River Business Park will be undertaken on an ongoing basis and if any maintenance or repair works are required, these will be carried out. Taking into consideration the imperceptible resource and waste management effect of the proposed development during the operational phase, no likely significant cumulative resource and waste management effects are identified during the operational phase of the proposed development.</p> <p>Material Assets: There is potential for an increase in demand on services and utilities. However, considering the construction durations will not overlap and given the existing capacity of local services, no significant cumulative effects on services and utilities are predicted during construction.</p> <p>Taking into consideration the low demand from the proposed development on services and utilities during the operational phase, there are no significant cumulative effects on material assets predicted during operation. Any maintenance and repair works will ensure that the flood embankment is not subject to a potential breach, ensuring the protection of the Avoca River Business Park from any potential residual flood risk.</p> <p>Population and Human Health: The required maintenance or reinforcement works, will be undertaken in advance of the substation construction, with ongoing maintenance and repair thereafter, subject to regular inspection and monitoring. As the works are not expected to overlap with the construction of the substation there are no significant cumulative effects to population and human health expected. As there are no significant operational traffic volumes, operational air emissions or noise emissions associated with the proposed development there are no cumulative effects to population and human health expected during the operational phase.</p> <p>Major Accidents and Disasters: The inspection, maintenance and repair programme for the flood defence embankment at the Avoca River Business Park, in combination with the proposed development flood protection works will ensure that the Avoca River Business Park (including the proposed development) remain resilient to climate change, with protection to the 0.1% AEP 1 in 1000 years plus Mid-Range Future Scenario allowance for climate change as detailed in the Flood Risk Assessment. This will ensure that the Avoca River Business Park and the proposed development are protected from future flood events and as a result reduces the vulnerability of the proposed development to major accidents and disasters. This results in a positive effect to major accidents and disasters in terms of vulnerability.</p> <p>No major accidents and disaster risks have been identified, which would result in a cumulative increase in the vulnerability of the flood defence works in the Avoca River Business Park and the proposed development to major accidents and disasters.</p> <p>No likely risks of a major accident/disaster occurring are identified in respect of the proposed development. Thus, no cumulative effects are identified for the flood defence works in the Avoca River Business Park.</p>