



BALDONNELL 110KV SUBSTATION
ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)
APPENDIX 2-1 SCHEDULE OF MITIGATION MEASURES

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1.0 SCHEDULE OF MITIGATION MEASURES

1.1 INTRODUCTION

Mitigation of potential impacts has been incorporated into the proposed development either by avoidance of potential impacts or by the design of the proposed development (as described in Chapter 5, Consideration of Alternatives). Where relevant, these measures are detailed in each chapter of the EIAR.

In addition, during the construction and operational phases of the development, all personnel working on the project will be responsible for the environmental control of their work and will perform their duties in accordance with the requirements and procedures of the Construction Environmental Management Plan (CEMP).

During the construction phase of the development, all works associated with the construction of the proposed substation will be undertaken with due regard to the guidance contained within CIRIA Document C741 'Environmental Good Practice on Site' (CIRIA, 2015).

1.2 SCHEDULE OF MITIGATION MEASURES FROM EIAR

This section provides a summary of mitigation measures proposed within each chapter of the EIAR.

1.2.1 Mitigation Measures Chapter 7 – Population & Human Health

Item	Mitigation Measure	Project Stage
Chapter 7 – Population & Human Health		
7.1	No specific mitigation or monitoring measures are proposed for the construction phase in terms of population and human health outside of those specified in the respective technical chapters of the EIAR as referenced in Section 7.1 of Chapter 7.	Construction Phase
7.2	No specific mitigation or monitoring measures are proposed for the operational phase in terms of population and human health outside of those specified in the respective technical chapters of the EIAR as referenced in Section 7.1 of Chapter 7.	Operational Phase
7.3	It is envisaged that the proposed substation will be operational for at least 25 years and on cessation of activities, the plant will either be redeveloped / upgraded and continue in its current use as a substation, or the site will be redeveloped in an alternative form. In the event where the substation is decommissioned, details of provisions to decommission and render safe or remove all materials, waste, ground, plant, or equipment contained on or in the site that may result in environmental pollution will be agreed and undertaken as required by the relevant planning conditions.	Decommissioning Phase

	No specific mitigation or monitoring measures related to decommissioning are proposed in terms of population and human health outside of those specified in the respective technical chapters of the EIAR.	
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1.2.2 Mitigation Measures Chapter 8 – Land, Soils & Geology

Item	Mitigation Measure	Project Stage
Chapter 8 - Land, Soils & Geology		
8.1	<p>The disturbance and excavation of soil, subsoil and bedrock is an unavoidable effect of the development, but every effort will be made to ensure that the amount of earth materials excavated is kept to a minimum in order to limit the effect on the geological aspects of the site. The management of geological materials and spoil is an important component of controlling dust and sediment and erosion control. Excavated soils and bedrock will only be moved short distances from the point of extraction and will be used locally for landscaping. Landscaping areas will be sealed and levelled using the back of an excavator bucket to prevent erosion. The upper vegetative layer will be stored with the vegetation part of the sod facing the right way up to encourage growth of plants and vegetation at the surface of the landscaped soils.</p> <p>These measures will prevent the erosion of soil in the short and long term. Soils, overburden, and rock will be reused on site to reinstate any excavations where appropriate. To ensure slope stability, excavations will be battered back (sloped) to between 1:1 and 1:2 depending on depth and type of material. All excavation works during the construction stage will be monitored by an experienced engineer.</p> <p>Mitigation measures will be put in place during the construction of the scheme to reduce the likelihood of an excavation collapsing. Mitigation measures include construction of a granular berm or temporary sheet pile wall to support the clays during construction. There is a very low risk of landslide (high factor of safety) which is further reduced by implementation of the mitigation measures.</p>	Construction Phase
8.2	<p>The CEMP (Appendix 3-2 of this EIAR) provides details on measures and mitigation in relation to the management of fuels and oils on site. These include:</p> <ul style="list-style-type: none"> Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station; 	

	<ul style="list-style-type: none"> • Mobile bowzers, tanks and drums will be stored in secure, bunded, impermeable storage area, away from drains and open water; • Fuel containers will be stored within a secondary containment system e.g., bund for static tanks or a drip tray for mobile stores; • Ancillary equipment such as hoses, pipes will be contained within the bund; • Taps, nozzles or valves will be fitted with a lock system; • Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage; • Only designated trained operators will be authorised to refuel plant on site; • An emergency plan for the construction phase to deal with emergency accidents or spills is contained within the CEMP (Appendix 3-2 of this EIAR); and • An emergency spill kit with oil boom and absorbers will be kept on site in the event of an accidental spill. All site operatives will be trained in its use. 	
8.3	<p>The materials to be encountered are likely to be relatively stable during the excavation for the infrastructure foundations. A physical barrier can be implemented between the excavations and the potentially unstable material at unstable conditions, in the form of a granular berm or sheet piles. The long-term stability of the area around the proposed development will be achieved by filling the area back up to existing ground level following installation of the foundation and sealing the subsoil environment with artificial surfaces with managed drainage network.</p> <p>Excavation works will be monitored by a suitably qualified and experienced geotechnical engineer or engineering geologist. The earthworks will not be scheduled to be carried out during severe weather conditions.</p> <p>Following these mitigation measures, the resultant effect will not be significant, permanent or negative.</p>	Construction Phase
8.4	<p>Fuel will be bunded in accordance with the requirements set out in the EPA publication, 'Storage and Transfer of Materials for Scheduled Activities' (2004), which states bunds are to contain 110% of the volume of the tank in the event of a tank rupture.</p> <p>The operational team will carry out maintenance works and will put in place mitigation measures to reduce the risk of hydrocarbon or oil spills during the operational phase of the substation.</p>	Operational Phase

	<p>The proposed mitigation measures during the operational phase are as follows:</p> <ul style="list-style-type: none"> • Minimal refuelling or maintenance of operational vehicles or plant will take place on site. • Potential impact of spillages and/ or leaks will be mitigated against by proper management and design of plant including impermeable bunded areas, were required. All storage areas will be designed in accordance with current oil storage regulations, local fire authority requirements and in accordance with BS8007:1987, Code of Practice for design of concrete structures for retaining aqueous liquids; and • Fuel Storage areas where required will be bunded appropriately for the fuel storage volume for the time period of the operation and fitted with a storm drainage system and an appropriate oil interceptor; and • On site re-fuelling will be undertaken using a double skinned bowser with spill kits on the ready for accidental leakages or spillages 	
8.5	<p>It is intended that soils (topsoil) and subsoils will be reused for site landscaping.</p> <p>In order to minimise the potential impacts to Land Use, the following mitigation measures are proposed:</p> <ul style="list-style-type: none"> • Minimising areas for earthworks thereby reducing land take requirements; • Restricting areas for construction works and temporary storage to a minimum within site boundary; • The handling, storage and re-use of excavated materials are of importance during the construction phase of the project. Stockpiles will be located away from the watercourses and drainage ditches. Topsoil and subsoils will be stored near the landscaping and in the reinstatement of development site areas. Topsoil will be stockpiled no higher than 2.5m and follow the recommendations set out in the NRA Guidelines for the Management of Waste from National Road Construction Projects (NRA, 2014); 	Operational Phase
8.6	<p>Decommissioning will comprise the removal of all over ground elements.</p> <p>The site roadways / access roads may be in use for additional purposes to the operation of or future use of the</p>	Decommissioning Phase

	<p>development area (e.g., for commercial access/ egress) by the time the decommissioning of the project is to be considered, and therefore the site roads will remain in-situ for future use. Some of the hardstand material will be removed where required, and along with the substation foundations, covered in topsoil and revegetated. The substation and grid connection infrastructure will form part of the permanent national grid network.</p> <p>The risks associated with leaving roads and site entrance in-situ are relatively low. The decommissioning phase will not require any significant works that will impact the land and soils environment.</p> <p>A fuel management plan to avoid contamination by fuel leakage during decommissioning works will be implemented as per the construction phase mitigation measures.</p> <p>Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant. Some of the impacts will be avoided by leaving elements of the Proposed Development in place where appropriate. The foundations will be rehabilitated by covering with local topsoil in order to regenerate vegetation which will reduce runoff and sedimentation effects. Roads and site entrances will be maintained for future users. Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures in Section 8.5.1.</p>	Decommissioning Phase
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1.2.3 Mitigation Measures Chapter 9 – Hydrology & Hydrogeology

Item	Mitigation Measure	Project Stage
Chapter 9 – Hydrology & Hydrogeology		
9.1	<p>In order to mitigate potential impacts during the construction phase, best practice construction methods will be implemented in order to prevent water (surface water and groundwater) pollution. A CEMP (Appendix 3-2 of the EIAR) was developed for the project to ensure adequate protection of the water environment. All personnel working on the project will be responsible for the environmental control of their work and will perform their duties in accordance with the requirements and procedures of the CEMP.</p> <p>During the construction phase, all works associated with the construction of the development and associate grid connection to the substation will be undertaken in accordance with the</p>	Construction Phase

	<p>guidance contained within CIRIA Document C741 'Environmental Good Practice on Site' (CIRIA, 2015). Any groundwater encountered will be managed and treated in accordance with CIRIA C750, 'Groundwater control: design and practice' (CIRIA, 2016).</p> <p>All mitigation and management measures outlined hereunder will be incorporated into the CEMP (Appendix 3-2 of the EIAR). Mitigation measures are incorporated into the CEMP and will be incorporated into the specification for the Civil Engineering Works contract. The implementation of the Surface Water Management Plan will be overseen by a suitably qualified ecologist/engineer and will be regularly audited throughout the construction phase. The assigned ecologist/engineer will be required to stop works on site if he/she is of the opinion that a mitigation measure or corrective action is not being appropriately or effectively implemented.</p>	<p>Construction Phase</p>
<p>9.2</p>	<p>It is recommended that local surface water features in the immediate vicinity of the site boundary are monitored pre-construction and during construction to take account of any variations in the quality of the local surface water and groundwater environment as a result of activities related to the proposed development. Monitoring of Baldonnell Stream (for water quality and turbidity) subject to Profile Park consent, will be undertaken pre-construction and during the construction period. A programme of inspection and maintenance will be designed, and dedicated construction personnel assigned to manage this programme. A checklist of the inspection and maintenance control measures will be developed, with records kept.</p> <p>During the construction phase, field testing and laboratory analysis of a range of parameters will be undertaken at adjacent watercourses, specifically following heavy rainfall events (i.e., weekly, monthly and event based as appropriate).</p>	<p>Construction Phase</p>
<p>9.3</p>	<p>To minimise any impact on the underlying subsurface strata from material spillages, all oils and solvents used during construction will be stored within specially constructed dedicated bunded areas. Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take</p>	

	<p>place in a designated area of the site, away from surface water gullies or drains. Spill kits and hydrocarbon absorbent packs will be stored in this area and operators will be fully trained in the use of this equipment. For certain vehicles which are less mobile, refuelling may need to occur elsewhere on site. A spill kit will be stored with the bowser and the person operating the bowser will be trained in their use. When not in use this will be stored in the designated area of the construction compounds.</p> <p>All construction waste will be sorted and stored in on-site skips, prior to removal by a licensed waste management contractor.</p>	
9.4	<p>Concrete is required for the construction of the development infrastructure foundations. After concrete is poured at a construction site, the chutes of ready mixed concrete trucks must be washed out to remove the remaining concrete before it hardens. Wash out of the main concrete bottle will not be permitted on site; wash out is restricted only to chute wash out of trucks, mixers and concrete pumps. Wash down and washout of the concrete transporting vehicles will take place at an appropriate facility offsite.</p> <p>The best management practice objectives for concrete chute washout are to collect and retain all the concrete washout water and solids in leak proof containers or impermeable lined wash out pits, so that the wash material does not reach the soil surface and then migrate to surface waters or into the groundwater. The collected concrete washout water and solids will be emptied on a regular basis. Washout will be undertaken at the construction compounds.</p>	Construction Phase
9.5	<p>With regards to on-site storage and handling of potentially pollutant materials:</p> <ul style="list-style-type: none"> • Fuels and chemicals will be stored within bunded areas as appropriate to guard against potential accidental spills or leakages. The bund area will have a volume of at least 110 % of the volume of such materials stored; • All on-site refuelling will be carried out by a trained competent operative; • Mobile measures such as drip trays and fuel absorbent mats kept with all plant and bowsers and 	Construction Phase

	<p>will be used as required during all refuelling operations;</p> <ul style="list-style-type: none"> • A spill kit will be stored with the bowser and the person operating the bowser will be trained in their use; • All equipment and machinery will have regular checking for leakages and quality of performance, and will carry spill kits; • Any servicing of vehicles will be confined to designated and suitably protected areas such as construction compounds; and • Additional drip trays and spill kits will be kept available on site, to ensure that any spills from vehicles are contained and removed off site. 	
9.6	<p>Runoff will be maintained at Greenfield (pre-development) runoff rates. The layout of the development has been designed to collect surface water runoff from hardstanding areas within the development and discharge to associated surface water attenuation adjacent to the proposed infrastructure. It will then be managed by gravity flow at Greenfield runoff rates.</p> <p>Silt fences installed along the eastern boundary of the proposed development to ensure there is no runoff into Baldonnell Stream. Silt fences will be constructed using a permeable filter fabric (Hy-Tex Terrastop Premium silt fence or similar), which will be installed as per the manufacturer's guidelines and will be maintained until vegetation on the disturbed ground has been re-established. Once installed, the silt fence will be inspected regularly (daily) during construction and more frequently (hourly) during heavy rainfall (i.e., if there is a yellow weather warning in place or if the rainfall is greater than 5mm in a 1-hour period).</p> <p>Suspended solid (silt) removal features will be implemented in accordance with CIRIA C697 SuDS Manual, and CIRIA C648 Control of water pollution from linear construction projects.</p>	Construction Phase
9.7	<p>Interceptor drains/diversion ditches will be installed ahead of the main earthworks activities to minimise the effects of collected water on the stripped/exposed soils once earthworks commence. This drainage will integrate into the existing site drainage. These drainage ditches will be installed on the upgradient boundary of the areas affected by the foundation edge earthworks operations and installed ahead</p>	Construction Phase

	<p>of the main foundation construction operations commencing. They will generally follow the natural flow of the ground. The interceptor drains will intercept any storm water surface runoff and collect it to the existing low points in the ground, allowing the clean water flows to be transferred independently through the works without mixing with the construction drainage.</p>	
<p>9.8</p>	<p>Infrastructure drainage/swales are required to control runoff from the running surface to lower water levels in the subgrade, to control surface water and to carry this flow to outlet points. Swales will be installed in advance of the main construction phase and will provide additional storage of storm water where located along gradient.</p> <p>Swales will be re-vegetated by hydro-seeding with indigenous seed mix as soon as is practicable following excavation. This will reduce the flow velocity, treat potential pollutants, increase filtration and silt retention.</p> <p>All stockpiled material will be side cast, battered back and profiled to reduce rainfall erosion potential. The stockpiling of materials will be carefully supervised as per the mitigation measures listed in Section 8.5.1 within Chapter 8, Land, Soils and Geology.</p> <p>A number of ephemeral drainage features (drains) are also present on site. These appear dry except during dry weather. Culverting of these will only take place during dry weather periods. Culverts will be designed to be of a size adequate to carry expected peak flows. Culverts will be installed to conform, wherever possible, to the natural slope and alignment of the drainage line. Where required, culverts will be buried at an appropriate depth below the channel bed and the original bed material placed at the bottom of the culvert. The sizing of any new internal drainage crossings will maintain existing depth of flow and channel characteristics.</p>	<p>Construction Phase</p>
<p>9.9</p>	<p>Excavated material will not be stockpiled or side-cast within 10m of a watercourse. Appropriate steps will be taken to prevent soil/dirt generated during the grid connection route works from being transported on the public road. Road sweeping vehicles will be used to ensure that the public road network remains free of soil/dirt from the location of the grid connection when required. This will reduce the potential for sedimentation of surface watercourses locally.</p>	<p>Construction Phase</p>

	<p>Further mitigation measures will be incorporated in the CEMP in Appendix 3-2 of the EIAR. There will be no natural watercourse crossings along the grid connection route.</p>	
<p>9.10</p>	<p>Due to the limited quantities of fuel on site, and 110% bunded fuel storage and appropriate chemical storage, the potential for a significant spillage of hydrocarbons is negligible and does not give risk to a major accident or disaster. Notwithstanding the negligible risk of serious spillage, additional spillage protection measures are included in the mitigation measures for the proposed development. In the unlikely event of a minor spill, the spill will be collected at the dedicated refuelling hardstand area, with collection only to be completed by trained operatives, and with spill kits to be made readily available. Additional measures in relation to hydrocarbon or oil spills are further discussed in Section 9.6.4. and mitigation measures in relation to potential contaminants are outlined in Section 9.5.</p> <p>Due to the nature of Profile Park being an urban environment, in the unlikely event of a fire, there is no significant additional fire risk due to the separation distances from any fuel sources such as hydrocarbons and chemicals. In the event of substation infrastructure fire, there is minimal potential for fire spread due to the proposed design (i.e., hardstand areas) and to the firefighting protection system in place, which is based on the National Fire Protection Association (NFPA) standards.</p> <p>The volumes of hydrocarbons and chemical storage will be kept to a minimum (as required), subject to a COSHH (Control of Substances Hazardous to Health) assessment and in compliance with the requirements of REACH, i.e., European Communities Regulation 1907/2006 for the Regulation, Evaluation, Authorisation and Restriction of Chemicals. Operators will receive specific training on the handling, containment, use, and disposal of all hazardous substances on site.</p> <p>Baldonnell Stream is located within the site boundary. There are no streams in close proximity to the substation location. There is, therefore, no risk of significant impact on the surface water from substation fire.</p> <p>It can be concluded that the risk of major accidents associated with this development and hydrological/hydrogeological factors is very low and would not cause unusual, significant or adverse effects on the hydrological or hydrogeological environment during the construction, operational and decommissioning phases.</p>	<p>Construction Phase</p>

9.11	<p>The operational team will carry out maintenance works such as servicing of the infrastructure, upkeep of access, any hardstand and sealed areas (i.e., foundations for development buildings, car park, bunded structures), ensuring drainage system remains functional throughout the operation of the development.</p> <p>Mitigation for the operational maintenance works include regular scheduled maintenance works, regular inspections of all project elements with any unscheduled repairs or maintenance arising to be undertaken.</p> <p>The potential impact of hydrocarbon or oil spills during the operational phase of the development are limited by the size of the fuel tank of vehicles used on the site. Mitigation measures for the potential release of hydrocarbons or oil spills include:</p> <ul style="list-style-type: none"> • The plant and vehicles to attend site should be regularly inspected or at least prior to the scheduled site visit to be free from leaks and fit for purpose; • Fuels stored on site will be minimised, any storage areas will be bunded appropriately for the fuel storage volume for the time period of the operation; • Operational team to be competent and trained in an emergency plan for the operation phase to deal with accidental spillages; and • Spill kits will be available to deal with accidental spillages. 	Operational Phase
9.12	<p>All fuel will be stored in bunded areas. The bund capacity will be sufficient to accommodate 110% of the largest tank's maximum. The exception to this being double walled tanks equipped with leak detection, which do not require additional retention.</p> <p>It is proposed to discharge all the surface water to the soakaway but when the flow of water within the pipe exceeds the infiltration rate, excess water will be directed to the existing surface water infrastructure on the power plant site. Further treatment will be provided through the detention basin under the car parking and a petrol interceptor before discharging to the stream.. Regular bund testing will be undertaken in accordance with BAT guidance.</p>	Operational Phase

	In order to comply with CRU requirements, low sulphur diesel oil will be stored as a backup fuel. The tanks will be bunded in accordance with the requirements set out in the EPA publication, 'Storage and Transfer of Materials for Scheduled Activities' (2004), which states bunds are to contain 110% of the volume of the tank in the event of a tank rupture.	
9.13	Surface water runoff will be generated from all surfaces within the facility that are exposed to rainwater or to which water is applied in order to clean. This includes all hardstanding surfaces, roofs, and other impermeable surfaces. All surface water will be discharged to the ground.	Operational Phase
9.14	Domestic type wastewater effluent will be generated on site. An approximate volume of 1m ³ /day of domestic type wastewater was identified as the maximum domestic wastewater flow which may be generated on site. Wastewater will be pumped to an existing holding tank which will be maintained, monitored and emptied to a licensed facility.	
9.15	<p>Operators will receive specific training on the handling, containment, use, and disposal requirements for all potentially polluting products on site. All chemicals stored on site will be subject to a COSHH (Control of Substances Hazardous to Health) assessment and in compliance with the requirements of REACH, i.e., European Communities Regulation 1907/2006 for the Regulation, Evaluation, Authorisation and Restriction of Chemicals. Chemicals will be managed in accordance with European Chemicals Agency's Guidance for Downstream Users (2014). Final selection of bulk chemicals will be subject to an assessment of trace elements to ensure that they are within acceptable limits. In addition to this:</p> <ul style="list-style-type: none"> • All potentially polluting substances, including waste, will be stored in designated areas, in appropriate UN approved containers within bunds, drip trays, or spill pallets, as deemed necessary; • All containers and bunds will be inspected regularly to ensure they have not become damaged or degraded; • Hazardous compressor cleaning products will be segregated in a locked cabinet with limited access to 	Operational Phase

	<p>prevent misuse. This cabinet will be made of suitably fire rated material;</p> <ul style="list-style-type: none"> • All areas on site with potentially polluting substances will be hardstanding with drainage networks directing run-off to contained areas; • Accidental spillages will be contained and cleaned immediately by suitably trained personnel; • Spill equipment stocks will be stored at strategic locations around the site. Stocks will be subject to regular inventory checks. Incidents, accidents, and near-misses will be recorded on site and notified to the appropriate authorities in accordance with licence requirements; and • An Emergency Incident Response Plan will be developed and implemented in consultation with the local emergency services. This plan will include emergency response contact details for site personnel and emergency services, maps and plans of the facility, emergency procedures, chemical inventories, and equipment lists. 	Operational Phase
9.16	<p>A dedicated private fire ring main and hydrants, will be installed as part of the adjacent power station, that will serve the proposed substation. They will comply with IS 391:2020 Fire mains for buildings - Installation, commissioning, maintenance, and testing. A minimum of seven hydrants are being provided on the site, three of which are within close proximity of the proposed substation and on a route accessible by fire appliances. The hydrants will comply with the requirements of BS 750:2012 Specification for underground fire hydrants and surface box frames and covers. All hydrants will be conspicuously marked in accordance with BS 3251:1976 Specification of indicator plates for fire hydrants and emergency water supplies. The hydrants will be located such that they are not less than 6m or more than 46m from a building, and the distance from a hydrant to a vehicle access roadway or hard standing for fire appliances is not more than 30m.</p> <p>A water storage tank will be provided on the power station site to ensure the security of the water supply for operational and firefighting needs. The tank shall serve both the ring main and hydrants. The latest calculations as provided to Irish Water, indicate that the water tank shall have a dedicated firefighting water storage capacity of circa 545m³, which will provide water at a rate of 75L/minute for 90 minutes.</p>	Operational Phase

<p>9.17</p>	<p>In the event that the facility is decommissioned, the following programme will be implemented:</p> <ul style="list-style-type: none"> • All plant equipment and machinery will be emptied, dismantled, and stored under appropriate conditions until it can be sold. If a buyer cannot be found, the material will be recycled or disposed of through licensed waste contractors and hauliers. If plant and machinery is required to be cleaned on site prior to removal, all necessary measures will be implemented to prevent the release of contaminants; • All waste will be removed from the facility; • The site and all associated buildings will be secured; and • Waste will be recycled wherever possible. Licensed waste contractors will control all waste movement, recycling, and disposal operations. <p>Details of provisions to decommission and render safe or remove all materials, waste, ground, plant, or equipment contained on or in the site that may result in environmental pollution will be agreed with the Environmental Protection Agency as part of the Industrial Emissions Licensing process.</p> <p>Mitigation measures applied during decommissioning activities will be similar to those applied during construction where relevant. Mitigation measures to avoid contamination by accidental fuel leakage and compaction of soil by on-site plant will be implemented as per the construction phase mitigation measures in Section 9.4.3.</p> <p>These impacts have therefore been assessed as similar to the construction phase. Mitigation measures for the construction phase will therefore also be implemented during decommissioning.</p>	<p>Decommissioning Phase</p>
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1.2.4 Mitigation Measures Chapter 10 – Air Quality and Climate

Item	Mitigation Measure	Project Stage
Chapter 10 - Air Quality and Climate		
10.1	<p>The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the dust mitigation measures. The key aspects of controlling dust are listed below. Full details of the dust mitigation measures can</p>	<p>Construction Phase</p>

	<p>be found in Section 10.10. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site.</p> <p>In summary the measures which will be implemented will include:</p> <ul style="list-style-type: none"> • Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic. • Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions. • Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads. • Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph. • Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary. • Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. • During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions. <p>At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.</p>	<p>Construction Phase</p>
<p>10.2</p>	<p>There are no mitigation measures proposed for the operational phase of the proposed development.</p>	<p>Operational Phase</p>

1.2.5 Mitigation Measures Chapter 11 – Noise

Item	Mitigation Measure	Project Stage
Chapter 11- Noise and Vibration		
<p>11.1</p>	<p>The contract documents shall specify that the Contractor undertaking the construction of the works will be obliged to</p>	<p>Construction Phase</p>

	<p>take specific noise abatement measures when deemed necessary to comply with the recommendations of BS 5228-1:2009+A1:2014 <i>Code of practice for noise and vibration control on construction and open sites – Noise</i>. The following list of measures will be considered, where necessary, to ensure compliance with the relevant construction noise criteria:</p> <ul style="list-style-type: none"> • No plant used on site will be permitted to cause an on-going public nuisance due to noise. • The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. • All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract. • Compressors will be attenuated models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. • Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use. • Any plant, such as generators or pumps, which is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen. • During the construction programme, supervision of the works will include ensuring compliance with the limits detailed in Table 11-1 using methods outlined in BS 5228- 1:2009+A1:2014 <i>Code of practice for noise and vibration control on construction and open sites – Noise</i>. • The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 7:00hrs and 19:00hrs weekdays and between 9:00hrs and 13:00hrs on Saturdays. However, to ensure that optimal use is made of good weather period or at critical periods within the programme (i.e. concrete pours) or to accommodate delivery of large turbine component along public routes it could be necessary on occasion to work outside of these hours. Any such out of hours working will be agreed in advance with the local Planning Authority. 	<p>Construction Phase</p>
<p>11.2</p>	<p>Vibration associated with construction activities will be limited to the values set out in Table 11-3. It should be noted that these limits are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause</p>	<p>Construction Phase</p>

	<p>cosmetic damage.</p> <p>Site investigations have indicated that no piling activities are anticipated. Therefore, no mitigation measures are proposed.</p> <p>On review of the likely vibration levels associated with construction activities, it is concluded that the construction of the proposed development is not expected to give rise to vibration that is either significantly intrusive or capable of giving rise to structural or cosmetic damage to buildings.</p> <p>In the unlikely event of vibration levels giving rise to human discomfort, in order to minimise such impacts, the following measures shall be implemented during the construction period:</p> <p>A clear communication programme will be established to inform closest building occupants in advance of any potential intrusive works which may give rise to vibration levels likely to exceed perceptible levels. The nature and duration of the works will be clearly set out in all communication circulars.</p> <ul style="list-style-type: none"> • Alternative less intensive working methods and/or plant items shall be employed, where feasible. • Appropriate vibration isolation shall be applied to plant, where feasible. • Cut off trenches to isolate the vibration transmission path shall be installed where required. • Monitoring will be undertaken at identified sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values. 	<p>Construction Phase</p>
<p>11.3</p>	<p>Noise from external plant will be minimised by the following measures:</p> <ul style="list-style-type: none"> • Purchasing low noise generating equipment, and; • Incorporating appropriately specified in line attenuators for stacks and exhausts where necessary. <p>With due consideration as part of the detailed design process, this approach will result in the site operating well within the constraints of the best practice guidance noise limits that have been adopted as part of this detailed assessment.</p>	<p>Operational Phase</p>
<p>11.4</p>	<p>The mitigation measures that will be considered in relation to any decommissioning of the site are the same as those proposed for the construction phase of the development, i.e. as per Section 11.5.1 (see Chapter 11 of the EIAR).</p>	<p>Decommissioning Phase</p>

1.2.6 Mitigation Measures Chapter 12 – Biodiversity

Item	Mitigation Measure	Project Stage
Chapter 12 – Biodiversity		
12.1	A Construction Environmental Management Plan (CEMP) has been prepared and is included within this Planning Application. All mitigation measures outlined within this chapter will be included within the CEMP. The CEMP is included in Appendix 3-2 of this EIAR.	Construction Phase
12.2	A suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the appointed Contractor. The ECoW will oversee all construction works and monitor any possible sources for impacts for the duration of the construction programme. The ECoW will inspect the construction phase of the proposed development is undertaken in strict agreement with the methods prescribed within the CEMP and will have the power to stop the works in case any activities/works are not compliant.	Construction Phase
12.3	A pre-construction botanical survey will be carried out within the optimal survey period (April to September) prior to construction works commencing. The survey will be required to determine the presence of any protected or invasive flora, which may occur in the intermediate time or which may have been missed during the initial botanical survey undertaken outside the optimal survey period. In the event that a Flora Protection Order (FPO) or Red Listed plant species is identified within the footprint of the works area, appropriate mitigation such as translocation will be implemented. In the event that an invasive plant species, listed in Part 1 of the Third Schedule of S.I No. 477/2011 – European Communities (Birds and Natural Habitats) Regulations 2011 is recorded, a site-specific Invasive Species Management Plan will be prepared. Further details on the management of invasive species and pathogens are outlined in Section 12.7.1.56.	
12.4	The proposed construction work areas will be demarcated prior to construction works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas within the proposed development site. Construction vehicles will be restricted to designated access tracks to avoid impacting adjacent habitats and to ensure that soil	

	<p>compaction is restricted to these tracks. All temporary disturbed ground will be fully reinstated following the completion of the works.</p>	
12.5	<p>In order to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitat) Regulations (2011), the appointed Contractor will ensure biosecurity measures are implemented throughout the construction phase to prevent the introduction and translocation of invasive species.</p> <p>The following mitigation measures are prescribed to control the translocation or spread of invasive species and / or pathogens:</p> <ul style="list-style-type: none"> • No invasive plant species were recorded within the proposed development, however in the event that proposed construction works are delayed more than 18 months, a pre construction invasive species survey will be undertaken. In the event that an invasive plant species, listed in Part 1 of the Third Schedule of S.I No. 477/2011 – European Communities (Birds and Natural Habitats) Regulations 2011 is recorded, a site-specific Invasive Species Management Plan (ISMP) will be prepared. • Prior to arrival all machinery and equipment used during the construction works will be thoroughly cleaned and then dried using a high-pressured steam cleaning, with water >65 °C, in addition to the removal of all vegetation material. Disinfectant, such as a Virkon® Aquatic solution, will be used. The appointed Contractor will establish and clearly delineate a bunded cleaning/washing area. • No removed material or run-off will be allowed to enter any water bodies (e.g. Baldonnell Stream). • Evidence that all machinery and equipment has been cleaned will be required to be on file for review by the statutory authorities and the appointed ECoW. 	Construction Phase
12.6	<p>Measures to prevent accidental spillage/leakage of chemicals and pollutants and uncontrolled runoff of contaminated surface water and sediment are outlined in Chapter 8 – Land, Soils and Geology and in Chapter 9 – Hydrology and Hydrogeology. The implementation of these control measures will ensure that there is no potential for impacts to ecological receptors in the receiving environment. A summary of the sediment and pollution control measures which will be implemented are provided hereunder.</p>	Construction Phase

	<p>Silt fences will be installed along the eastern boundary of the proposed development to ensure there is no runoff into Baldonnell Stream. Silt fences will be constructed using a permeable filter fabric (Hy-TEX Terrastop Premium silt fence or similar), which will be installed as per the manufacturer's guidelines and will be maintained until vegetation on the disturbed ground has been re-established. Once installed, the silt fence will be inspected regularly (daily) during construction and more frequently (hourly) during heavy rainfall (i.e., if there is a yellow weather warning in place or if the rainfall is greater than 5mm in a 1-hour period).</p> <p>All concrete will be mixed off site and poured in place at site. All concrete browsers will be washed down at a dedicated concrete washout onsite located within the construction compound or offsite. Concrete washings will not be disposed of onsite to any surface or ground water features. All washings will be removed offsite and treated at a licensed facility. No chemicals that are deleterious to aquatic organisms will be used in cleaning works. All raw, uncured waste concrete must be cured at a designated location within the construction compound or offsite.</p> <p>Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles / equipment will take place in designated hard surface, bunded areas within this construction compound or offsite only. If it is not possible to bring machinery to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations in order to contain any spillages that may occur. Refuelling will only occur within the construction compound or offsite.</p>	<p>Construction Phase</p>
<p>12.7</p>	<p>The area which provides suitable bird nesting habitat (i.e., wet grassland) will not be removed, cleared or trimmed between the 1st March and 31st August, to avoid impacts on nesting birds protected under the Wildlife Acts and/or Birds Directive. Where the construction programme does not allow this time restriction to be observed, then these areas will be inspected by a qualified ecologist for the presence of breeding birds prior to commencement of the construction works. Where any nests are found, the appointed ECoW will provide recommendations as to whether a license is required for vegetation removal and will detail the process for obtaining such derogation from the NPWS.</p>	<p>Construction Phase</p>

12.8	During the operational phase, site personnel will follow best practice measures as outlined in Chapter 9 – Hydrology and Hydrogeology when undertaking site visits and maintenance works.	Operational Phase
12.9	All new lighting proposed at the substation site will be designed in accordance with the Bat Conservation Ireland guidelines ' <i>Bats and Lighting Guidance Notes: Planners, Engineers, Architects and Developers</i> ' (BCI, 2010). Lighting will only be switched on when manned; it should be noted the proposed development will comprise a generally unmanned facility. Light shields and directional lighting will be used to minimise light spill. All lighting will be directed away from Baldonnell Stream and away from treelines and hedgerows.	
12.10	Impacts during the decommissioning phase are expected to be of similar type and magnitude to those anticipated during the construction phase, but generally of a shorter duration. Therefore, the same mitigation measures implemented during the construction phase, will be applied during the decommissioning works.	Decommissioning Phase

1.2.7 Mitigation Measures Chapter 13 – Cultural Heritage

Item	Mitigation Measure	Project Stage
Chapter 13 – Cultural Heritage		
13.1	<p>All topsoil/overburden removal within the compound area will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH).</p> <p>No archaeological mitigation is required for the section of development that is located in the profile park development and the existing road way to the north.</p> <p>The mitigation measure identified above would also function as a monitoring system during construction to allow the further assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures.</p>	Construction Phase

13.2	As there are no potential impacts on the cultural heritage resource, no mitigation is deemed necessary.	
13.3	No mitigation relating to the operational phase and the archaeological and cultural heritage resource is required.	Operational Phase

1.2.8 Mitigation Measures Chapter 14 – Landscape / Townscape and Visual

Item	Mitigation Measure	Project Stage
Chapter 14 – Landscape and Visual		
14.1	The main mitigation by avoidance measure employed in this instance is the siting of the proposed development in a robust, appropriately zoned business park that will avail of screening from existing and imminent built form and vegetation to minimise open visibility from within the study area. No other specific landscape and visual mitigation measures are deemed necessary in this instance.	Construction Phase

1.2.9 Mitigation Measures Chapter 15 -Traffic and Transportation

Item	Mitigation Measure	Project Stage
Chapter 15 – Traffic and Transportation		
15.1	The following are measures that will be implemented to mitigate the traffic and transportation effects of the proposed development: <ul style="list-style-type: none"> • Photographic survey of haul roads again, immediately prior to commencement of construction; and • Continuous monitoring of haul roads throughout the construction phase 	Construction Phase
15.2	The following are measures that will be implemented to mitigate the impact associated with the facility: <ul style="list-style-type: none"> • Maintenance of warning signage on the approach to the entrance; • Monitoring of parking requirements during the operational phase with additional spaces to be provided if required; and; • Maintenance of site entrance ensuring visibility splays remain unobstructed. 	Operational Phase
15.3	The potential effects of decommissioning the site on the capacity and operation of the receiving road network are not	Decommissioning Phase

	considered to be potentially significant effects. No specific mitigation is considered necessary.	
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1.2.10 Mitigation Measures Chapter 16 – Material Assets

Item	Mitigation Measure	Project Stage
Chapter 16 – Material Assets		
16.1	There are no mitigation measures relating to existing properties outside of Profile Park. Within Profile Park, impacts on the neighbouring Digital Realty data centre will be mitigated in accordance with the Construction and Environmental Management Plan (CEMP) which is included in Appendix 3-2. In summary, the application of general construction best practise will ensure limited nuisance is experienced at this location.	Construction Phase
16.2	The proposed works will require the crossing of road infrastructure and the opening of the road to lay underground electrical cables and a gas pipeline. Chapter 15 (Traffic and Transport) details specific mitigation measures to be undertaken during the construction phase to eliminate and reduce any impacts on the road network.	
16.3	During the project detailed design stage, further consultation will be undertaken with all communication utility providers to confirm the current locations of their infrastructure. This information will be considered in the detailed design of the project and the infrastructure avoided where possible.	
16.4	While it is unlikely that any cranes used during construction will reach the level of the aerodrome’s Inner Horizontal Surface, it will be necessary, under S.I. 215 of 2005 – ‘Irish Aviation Authority (Obstacles to Aircraft in Flight) Order’, for prior notification of the use of any cranes to be submitted, at least 30 days in advance, to the Irish Aviation Authority and to Casement Aerodrome.	
16.5	All impacts will be mitigated in accordance with the CEMP which is included in Appendix 3-2. In summary, the application of general construction best practise will ensure limited nuisance is experienced at this location.	
16.6	No specific mitigation measures are required during the construction phase with regards to geological resources.	

16.7	Mitigation measures for the protection of watercourses are detailed in Chapter 9 (Hydrology & Hydrogeology) and will be adhered to throughout the construction phase.	Construction Phase
16.8	<p>Consideration will be given to the sustainable sourcing of all materials. Materials will be reused where possible. The methodologies chosen at design stage, will result in a decrease in the amount of imported material, which in turn will reduce the impact of traffic on the surrounding roads and will result in less demand on non-renewable sources such as quarries.</p> <p>Other mitigation measures which will be employed in relation to raw materials are as follows:</p> <ul style="list-style-type: none"> • Design will be optimised to minimise the requirements for raw materials; • Materials will be reused where possible; • Raw materials will be sourced locally where possible; and • Raw materials will be managed in accordance with the CEMP for construction. 	
16.9	There are no mitigation and monitoring measures required during the operation of the proposed Baldonnell Substation.	Operational phase

1.2.11 Mitigation Measures Chapter 17 – Major Accidents and Disasters

Item	Mitigation Measure	Project Stage
Chapter 17 – Major Accidents and Disasters		
17.1	The proposed development and the gas fired power plant will be constructed, operated and decommissioned in accordance with all relevant planning, building and environmental licencing codes to prevent risks from extreme weather conditions.	Construction Phase
17.2	Implementation of CEMP during Construction, EIAR and IE licence conditions during operations, and Decommissioning Management Plan during decommissioning to prevent pollution to soils/ groundwater/ surface water.	
17.3	All transformers are fitted with protection systems to protect against faults and prevent explosion.	Operational Phase
17.4	Where refuelling is to take place on site it will be in an impermeable bunded area which will be subject to regular inspection and integrity testing in accordance with Industrial Emissions licencing requirements.	

17.5	Pipes, bunds and storage facilities will be regularly checked for deterioration, damage and leaks. Integrity testing and the maintenance of all abatement, control and monitoring equipment will be incorporated into the onsite maintenance programmes.	Operational Phase
17.6	Follow fire prevention policy procedures.	
17.7	The proposed development and the gas fired power plant will be constructed, operated and decommissioned in accordance with all relevant planning, building and environmental licencing codes to prevent risks from extreme weather conditions.	Decommissioning Phase
17.8	Implementation of CEMP during Construction, EIAR and IE licence conditions during operations, and Decommissioning Management Plan during decommissioning to prevent pollution to soils/ groundwater/ surface water.	

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