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Our Ref: *11069*

5th October 2022

Planning Department
South Dublin County Council
County Hall,
Tallaght,
Dublin 24

Re Profile Park Power Plant– Planning Compliance (SD21A/0167)

Dear Sir or Madam,

On behalf of our client Greener Ideas Limited, TOBIN Consulting Engineers is pleased to submit this planning compliance report regarding 17. no conditions attached to planning permission Reg. Ref.: SD21A/0167. On the 30th of August 2022, Greener Ideas Limited (GIL) received planning permission to develop a gas fired peaking power plant at a site located in Profile Park, Dublin 22.

As you know, the need for gas fired peaking power plants on the Irish electricity grid has grown, as renewable forms of power generation increase their penetration onto the system. The variability of renewable power generation increases EirGrid's challenge to operate an efficient, safe, and secure electricity system. This is especially the case in the greater Dublin region, where demand is growing rapidly, and where there is expected to be a large increase in offshore wind power generation by 2030.

Given the increased need for this type of development and in light of the current circumstances relating to electricity supply, Greener Ideas Limited, will begin works on site week commencing the 10th of October 2022. We would therefore politely request for compliance agreements to be prioritised in so far as possible.

We trust the enclosed information is sufficient to demonstrate compliance and would request acknowledgement of the same at your earliest convenience. Should you have any questions or queries, please do not hesitate to get in contact.

Yours sincerely,

Louise Byrne
Planner
For and on behalf of TOBIN Consulting Engineers

Block 10-4, Blanchardstown Corporate Park,
Dublin D15 X98N
Tel: + 353 (0)1 8030401 Louise.byrne@tobin.ie

Enclosed: Final Grant
Planning Compliance Report

An Rannóg Talamhúsáide, Pleanála agus Iompair
Land Use, Planning & Transportation Department

Telephone: 01 4149000 Fax: 01 4149104 Email: planningdept@sdublincoco.ie

Comhairle Contae Átha Cliath Theas
South Dublin County Council

TOBIN Consulting Engineers
Block 10-4
Blanchardstown Corporate Park
Dublin
D15 X98N

NOTIFICATION TO GRANT PERMISSION
PLANNING & DEVELOPMENT ACT, 2000 (as amended) AND PLANNING REGULATIONS THEREUNDER

Final Grant Order No.:	**1111**	Date of Final Grant:	**30-Aug-2022**
Decision Order No.:	**0918**	Date of Decision:	**19-Jul-2022**
Register Reference:	**SD21A/0167**	Date:	**25-May-2022**

Applicant: Shane Minehane, Greener Ideas Limited

Development: Construction of a gas fired power plant with an electrical output of up to 125MW with associated balance of plant, equipment and buildings including; an Engine Hall building with a height of 18.9m, comprising 6 gas engines and ancillary infrastructure; an Electrical Annex Building with a height of 18.7m; a Workshop building with a height of 5. 1m; a Tank Farm building with a height of 5.68m; a Security hut with a height of 3.27m; an Exhaust Stack with a height of 31.8m; a Gas AGI including a kiosk with height of 3.3m; Radiator Coolers with a height of 8.46m; 2 electrical transformers with a height of 4.98m; Tanks including 2 x Diesel Oil Storage Tanks (volume of 2500m3 combined); SCR Urea Tank (26m3); Lube Oil Storage Tank (26m3); Lube Oil Maintenance Tank (26m3); Pilot Oil Tank (26m3); Fire Water Storage Tank (1000m3); Effluent Collecting Tank (26m3); Underground Surface Water Attenuation Tank (490m3); 2 new access onto the existing private road network with Profile Park; 12 parking spaces, footpaths, landscaping; fencing and all other associated site development plant and equipment and other works including surface water and foul wastewater drainage. An EIAR was submitted with this application.

Location: Profile Park, Baldonnel, Dublin 22

Time extension(s) up to and including:

Additional Information Requested/Received: 19-Aug-2021, 07-Apr-2022 / 11-Mar-2022, 25-May-2022

A Permission has been granted for the development described above, subject to the following conditions.

Conditions and Reasons:

1. Development to be in accordance with submitted plans and details.
   The development shall be carried out and completed in its entirety in accordance with the plans, particulars and specifications lodged with the application, and as amended by Further Information received on 11 March 2022, Clarification of Further Information received on 7

April 2022, save as may be required by the other conditions attached hereto.
REASON: To ensure that the development shall be in accordance with the permission, and that effective control be maintained.

2. Materials.
(a) Notwithstanding the submitted details, the materials and finishes of all proposed structures and including the flues shall be submitted for written agreement with the Planning Authority prior to commencement of work on site.
(b) The applicant shall submit for the written agreement of the Planning Authority details of the flues at a scale of not less than 1:20. The applicant shall liaise with the Planning Authority regarding appropriate materials, prior to the commencement of development.
REASON: In the interest of visual amenity.

3. Roads.
1. Prior to the commencement of development, the applicant shall submit a developed Construction Traffic Management Plan for the written agreement of the Planning Authority.
2. Prior to the commencement of development, the applicant shall submit a developed Construction & Demolition Waste Management Plan (C&DWMP) for the written agreement of the Planning Authority.
3. Prior to the commencement of development, a Public Lighting Design for the development must be submitted and agreed by the Public Lighting team of SDCC.
4. A Mobility Management Plan is to be completed within six months of opening of the proposed development. The Mobility Management Plan shall be submitted for the written agreement of the Planning Authority.
5. The applicant shall provide a 5% of vehicular parking spaces for mobility impaired users, and 10% vehicular parking spaces to be equipped with electrical charging points,
a. Car parking spaces dedicated for electrical charging shall be demarcated with "RRM 034" as per Chapter 7 Road Markings
REASON: In the interest of sustainable transport.

4. Waste Heat.
(a) Proposals for waste-heat recovery and ongoing delivery to a local heat-network shall be provided and implemented on site as relevant, in conjunction with the commencement and operation of the proposed development. Prior to the commencement of development, a timeframe for implementation of waste heat proposals shall be submitted for the written agreement of South Dublin County Council, unless otherwise agreed in writing.
(b) Such proposals shall include all necessary infrastructure for waste heat recovery from the proposed development and delivery through a primary waste-heat water circuit to either, the boundaries of the site or to an Energy Centre (when constructed as part of local heat network distribution) for connection to heat network. Such proposals shall be submitted for the written agreement of South Dublin County Council, unless otherwise agreed in writing.
(c) Where waste heat recovery and utilisation proposals have been explored and, subject to the written agreement of South Dublin County Council, have been deemed to be technically or otherwise unfeasible, details of future proofing of the building fabric, heat recovery and conversion systems and safeguarding of pipework/infrastructures routes up to the site boundaries to facilitate future waste heat connection to a local district heating network, shall be submitted for the written agreement of South Dublin County Council or as otherwise agreed in writing.
REASON: To promote the utilisation and sharing of waste heat and comply with Policy E5 of the South Dublin County Development Plan 2016-2022.

5. Irish Water.
(a) All works shall comply with the Irish Water Standard Details and Code of Practice for

Water Infrastructure.
(b) All works shall comply with the Irish Water Standard Details and Code of Practice for WasteWater Infrastructure.
REASON: In the interest of public health and to ensure adequate water/wastewater facilities.

6. Surface Water.
(a) Prior to commencement of development, the applicant shall submit a drawing showing where and how surface water discharge from site will be limited to a maximum of 3.8 litres/second.
(b) Prior to the commencement of development, the applicant shall submit revised drawings which provide adequate SuDS and omit the underground attenuation and petrol interceptors, unless otherwise agreed in writing by the Planning Authority.
(c) All fuel storage proposals on site shall comply with the Greater Dublin Regional Code of Practice for Drainage Works Section 17. All process water and any effluent from the development shall not discharge to the surface water drainage network.

7. Drainage.
(a) There shall be complete separation of the foul and surface water drainage systems, both in respect of installation and use.
(b) All new precast surface water manholes shall have a minimum thickness surround of 150mm Concrete Class B.
(c) All works for this development shall comply with the requirements of the Greater Dublin Regional Code of Practice for Drainage Works.
REASON: In the interests of public health, the proper planning and sustainable development of the area and in order to ensure adequate water supply and drainage provision.

8. Archaeological Monitoring, Recording and Reporting
1. The applicant is required to engage the services of a suitably qualified archaeologist to carry out archaeological excavation and monitoring under licence at the development site. No sub-surface work should be undertaken in the absence of the archaeologist without his/her express consent;
2. Full archaeological excavation ('preservation by record') will be conducted by the archaeologist of pit identified in a previous phase of testing at the site. The immediate area around the feature shall be stripped of topsoil under archaeological supervision to identify any possible additional associated archaeological features in its immediate vicinity;
3. All topsoil removal and associated groundworks shall be monitored by the archaeologist. No sub-surface work should be undertaken in the absence of the archaeologist without his/her express consent;
4. Should significant archaeological features be found, any works which would affect them shall cease pending agreement with the Department as to how they are to be dealt with. Where archaeological material/features are shown to be present, preservation in situ, preservation by record (excavation), or further monitoring may be required;
5. Having completed the work, the archaeologist shall submit a written report to the Planning Authority and to the Department.
REASON: To facilitate the recording and protection of any items of archaeological significance that the site may possess.

9. Signage.
No advertising sign(s) or structure(s) (including any signs installed to be visible through windows), banners, canopies, flags, or other projecting elements shall be erected except those, which are exempted development, without the prior approval of the Planning Authority or An Bord Pleanála on appeal.
REASON: In the interest of visual amenity, compliance with development plan policies and

the proper planning and sustainable development of the area.

10. Ecology.
    (i) Prior to the commencement of any permitted development, the developer shall engage the services an independent, qualified ecologist to implement the management recommendations of the Biodiversity Management Plan.
    (ii) The applicant shall inform the planning authority in writing of the appointment and name of the consultant, prior to commencement of development.
    (iii) The ecologist shall inform the planning authority in writing when the recommendations of the BMP have been implemented. This shall include the creation of wildlife shelters, bat boxes, bird boxes, hibernaculae, invertebrate banks and their final locations.
    REASON: In the interest of protecting the ecology and biodiversity.

11. Mitigation Measures
    The mitigation measures and commitments identified in the Environmental Impact Assessment Report (EIAR) and other plans and particulars submitted with the planning applciation, as amended by the additional information received on 11 March 2022 and Clarification of Further Information received on 7 April 2022, shall be implemented in full by the developer, except as otherwise may be required in order to comply with other condiitons.
    REASON: In the interest of the protection of the environment.

12. Further Development.
    No additional development shall take place above roof parapet level, including lift motor enclosures, air handling equipment, storage tanks, ducts or other external plant, telecommunication aerials, antennae or equipment, unless authorised by a further grant of planning permission.
    REASON: To protect the visual amenities of the area.

13. Department of Defence.
    (a) Given the proximity to Casement Aerodrome, operation of cranes should be coordinated with Air Corps Air Traffic Services, no later than 28 days before use, contactable at airspaceandobstacles@defenceforces.ie or 01-4037681
    (b) Due to the proximity to Casement Aerodrome, the developer should produce a Wildlife Aviation Impact Assessment and implement adequate bird control measures during the construction phase to mitigate the effects of birds on Air Corps flight operations.
    (c) Due to the proximity to Casement Aerodrome, mitigations may be required in relation to the management of wildlife attracted to attenuation ponds or other water features. Should negative effects of bird activity on Irish Air Corps operations arise, the owner must put measures in place to mitigate these effects to an acceptable level.
    (d) Due the proximity to Casement Aerodrome, Military Air Traffic Services requests an Aviation Impact Assessment on all potential emissions. Prior to the commencement of development, the applicant shall submit this assessment for the written agreement of the Planning Authority. The assessment should cover the possible effects of exhaust plumes or any other associated impact on flight operations at Casement Aerodrome.
    REASON: In the interests of aviation safety.

14. Inland Fisheries.
    (a) The applicant shall ensure that best practice should be implemented at all times in relation to any activities that may impact on surface water or riparian habitats. Any discharges to surface streams present on or near the site must not impact negatively on the system. Comprehensive surface water management measures must be implemented at the construction and operational stage to prevent any pollution of local surface waters. Prior to the commencement of development, the applicant shall submit a statement for the written

agreement of the Planning Authority indicating how they comply in this regard.
(b) Prior to the commencement of development, the applicant shall submit a site-specific Construction Environmental Management Plan (CEMP) for the written agreement of the Planning Authority. This should identify potential impacts and mitigating measures on the aquatic environment, it should provide a mechanism for ensuring compliance with environmental legislation and statutory consents. The CEMP should detail and ensure Best Construction Practices including measures to prevent and control the introduction of pollutants and deleterious matter to surface water either directly or indirectly through the storm water drainage network and measures to minimise the generation of sediment and silt.
(c) The applicant shall ensure construction works are planned in a manner which prevents extensive tracts of soils from being exposed at any time and arrangements must be made for the control and management of any contaminated water resulting from construction.
(d) The applicant shall ensure that that the receiving foul and storm water infrastructure has adequate capacity to accept predicted volumes from this development during construction and post construction phases with no negative repercussions for the quality of any receiving waters.
(e) The applicant shall ensure compliance with Inland Fisheries guidelines.
(f) All discharges must be in compliance with the European Communities (Surface Water) Regulations 2009 and the European Communities (Groundwater) Regulations 2010.
REASON: In the interests of protecting the natural environment.

15. Environmental Health
    1. Noise due to the normal operation of the proposed development, expressed as Laeq over 15 minutes at the façade of a noise sensitive location, shall not exceed the daytime background level by more than 10 dB(A) and shall not exceed the background level for evening and night time. Clearly audible and impulsive tones at noise sensitive locations during evening and night shall be avoided irrespective of the noise level.
    2. During the construction / demolition phase of the development, Best Practicable Means shall be employed to minimise air blown dust being emitted from the site. This shall include covering skips and slack-heaps, netting of scaffolding, daily washing down of pavements or other public areas, and any other precautions necessary to prevent dust nuisances.
    3. Prior to commencement of the development the applicant is required to submit an Acoustic Verification report to the Environmental Health Department of South Dublin County Council. The report must confirm whether the development is capable of complying with Council's standard operational noise criteria, set out below:
    Noise due to the normal operation of the proposed development, expressed as Laeq over 15 minutes at the façade of a noise sensitive location, shall not exceed the daytime background level by more than 10 dB(A) and shall not exceed the background level for evening and night time.
    (a) This Acoustic Verification report should comprise of noise monitoring data at any noise sensitive locations. It should also include the cumulative noise level whereby the existing noise levels are included in the assessment of the developments overall impact.
    (b) The Acoustic Verification report should include performance specifications for any changes/modifications which have been incorporated in order to reduce operational noise levels during the night time period.
    The report must include a statement certifying whether the development or proposed use is fully capable of complying with the requirements of the noise control conditions and criteria as set out within the planning consent.
    4. No heavy construction equipment/machinery (to include pneumatic drills, construction vehicles, generators, etc) shall be operated on or adjacent to the construction site before 07:00 hours on weekdays and 09:00 on Saturdays nor after 19:00 hours on weekdays and 1300 hours

on Saturdays, nor at any time on Sundays, Bank Holidays or Public Holidays.
Any work outside of these hours shall only be permitted following a written request to the Planning Authority and subsequent receipt of the written consent of the Planning Authority, having regard to the reasonable justification and circumstances and a commitment to minimise as far as practicable any unwanted noise outside the hours stated above.

5. The development shall be so operated that there will be no emissions of malodours, gas, dust, fumes or other deleterious materials, no noise vibration on site so as would give reasonable cause for annoyance to any person in any adjoining unit or public place in the vicinity.
REASON: In the interests of public health and residential amenity.

16. Services to be Underground.
All public services to the proposed development, including electrical, information and communications technology (ICT) telephone and street lighting cables and equipment shall be located underground throughout the entire site.
REASON: In the interests of the visual amenities of the area, the proper planning and sustainable development of the area and compliance with the Council's Development Plan.

17. Financial Contribution.
The developer shall pay to the Planning Authority a financial contribution of €179,644.44 (one hundred and seventy nine thousand six hundred and forty four euros and forty four cents), in respect of public infrastructure and facilities benefiting development within the area of the Planning Authority, that is provided, or intended to be provided by or on behalf of the authority, in accordance with the terms of the Development Contribution Scheme 2021 - 2025, made under Section 48 of the Planning and Development Acts 2000-2011 (as amended).
The contributions under the Scheme shall be payable prior to commencement of development or as otherwise agreed in writing by the Council. Contributions due in respect of permission for retention will become payable immediately on issue of the final grant of permission.
Contributions shall be payable at the index adjusted rate pertaining to the year in which implementation of the planning permission is commenced.
REASON: The provision of such facilities will facilitate the proposed development. It is considered reasonable that the payment of a contribution be required, in respect of public infrastructure and facilities benefiting development in the area of the Planning Authority and that is provided, or that is intended will be provided, by or on behalf of the Local Authority.
NOTE RE: CONDITION - Please note that with effect from 1st January 2014, Irish Water is now the statutory body responsible for water services. Further details/clarification can be obtained from Irish Water at Tel. 01 6021000 or by emailing customerservice@water.ie.

NOTE: The applicant is advised that under the provisions of Section 34 (13) of the Planning and Development Act 2000 (as amended) a person shall not be entitled solely by reason of a permission to carry out any development.

NOTE: The applicant is advised that in the event of encroachment or oversailing of adjoining property, the consent of the adjoining property owner is required.

NOTE: The requirements of the HSE Environmental Health Officer shall be ascertained prior to the commencement of development in the interest of public health.

NOTE: The applicant is advised that where industrial effluent is produced or stored a licence may be required under the provisions of the Waste Management Act.

NOTE: The applicant/developer is advised that the most up to date South Dublin County Council Taking in Charge Policy and associated documents can be found at the following location https://www.sdcc.ie/en/services/planning/commencement-and-completion/completion/taking-in-charge-policy-standards.

NOTE: The applicant shall notify the Irish Aviation Authority and the Department of Defence regarding any cranes likely to penetrate ICAO surfaces.

NOTE: Notwithstanding any grant of planning permission; if an applicant requires permission to access local authority land (e.g. public footpaths, public open space or roadways) in order to access utilities, or for any other reason; please apply via https://maproadroadworkslicensing.ie/MRL/ for a licence from the Local Authority to carry out those works.

(1) All buildings must be designed and constructed in accordance with the Building Regulations 1997.
(2) Building Control Regulations require a Commencement Notice. Please log onto www.localgov.ie and click on BCMS link.
(3) A Fire Safety Certificate must be obtained from the Building Control Authority, where applicable.
(4) Free Standing Walls must be designed and constructed in accordance with IS 325: Code of Practice for use of Masonry Part 1: Structural use of reinforced Masonry. The Owner must also ensure that the construction of all walls is supervised by a competent person.

Signed on behalf of South Dublin County Council.

_____31-Aug-2022

for Senior Planner

TOBIN
CONSULTING ENGINEERS
BUILT ON KNOWLEDGE

Profile Park Power Plant

Planning Compliance Report

Application Reference: SD21A/0167

Profile Park Power Plant

Planning Compliance Report Application Reference: SD21A/0167

Document Control Sheet	
Document Reference	11069
Report Status	Issue
Report Date	05/10/2022
Current Revision	D02
Client:	GREENER IDEAS LIMITED
Client Address:	C/O Centrica Business Solutions, 1 Seapoint Building, 44-45 Clontarf Road, Dublin 3, D03 F4A7
Project Number	11069

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Revision	Description	Author:	Date	Reviewed By:	Date	Authorised by:	Date
D02	Issue	Various	27/09/2022	ST	28/09/22	LB	05/10/22
TOBIN Consulting Engineers							

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Appendices

1.0 INTRODUCTION

Greener Ideas Limited (GIL) has received planning permission to develop a gas fired peaking power plant at a site located in Profile Park, Dublin 22.

On behalf of our client, GIL, TOBIN Consulting Engineers has prepared this Planning Compliance Report for submission to South Dublin County Council with the purpose of providing compliance information for the 17. no conditions attached to planning approval Reg. Ref.:SD21A/0167. The remainder of this report is set out under the following headings:

- Condition 1: General Compliance
- Condition 2: Materials
- Condition 3: Roads
- Condition 4: Waste Heat
- Condition 5: Irish Water
- Condition 6: Surface Water
- Condition 7: Drainage
- Condition 8: Archaeological Monitoring, Reporting and Recording
- Condition 9: Signage
- Condition 10: Ecology
- Condition 11: Mitigation Measures
- Condition 12: Further Development
- Condition 13: Department of Defence
- Condition 14: Inland Fisheries
- Condition 15: Environmental Health
- Condition 16: Services to be Underground
- Condition 17: Financial Contribution

2.0 CONDITIONS & COMPLIANCE

2.1 CONDITION 1: GENERAL COMPLIANCE

Development to be in accordance with submitted plans and details. The development shall be carried out and completed in its entirety in accordance with the plans, particulars and specifications lodged with the application, and as amended by Further Information received on 11th of March 2022, Clarification of Further Information received on 7th of April 2022, save as may be required by the other conditions attached hereto.

REASON: To ensure that the development shall be in accordance with the permission, and that effective control be maintained.

2.1.1 Condition 1 Compliance

GIL note the attachment of this condition to the planning approval and understand that the development will be carried out and completed in its entirety in accordance with the plans, particulars and specifications lodged with the application, and as amended by Further Information received on 11th of March 2022, Clarification of Further Information received on 7th of April 2022, save as may be required by the other conditions attached hereto.

2.2 CONDITION 2 MATERIALS

(a) Notwithstanding the submitted details, the materials and finishes of all proposed structures and including the flues shall be submitted for written agreement with the Planning Authority prior to commencement of work on site.
(b) The applicant shall submit for the written agreement of the Planning Authority details of the flues at a scale of not less than 1:20. The applicant shall liaise with the Planning Authority regarding appropriate materials, prior to the commencement of development.

REASON: In the interest of visual amenity.

2.2.1 Condition 2 Compliance

For items (a) and (b) above, it is anticipated that detailed design and finished materials, as well as detail of flue design, will be developed during the detailed design stage of the development. On this basis, it was agreed with Sarah Watson of South Dublin County Council on September 1st, to submit these details once available. This is expected to be Q1 of 2023.

2.3 CONDITION 3 ROADS

1. Prior to the commencement of development, the applicant shall submit a developed Construction Traffic Management Plan for the written agreement of the Planning Authority.
2. Prior to the commencement of development, the applicant shall submit a developed Construction & Demolition Waste Management Plan (C&DWMP) for the written agreement of the Planning Authority.
3. Prior to the commencement of development, a Public Lighting Design for the development must be submitted and agreed by the Public Lighting team of SDCC.
4. A Mobility Management Plan is to be completed within six months of opening of the proposed development. The Mobility Management Plan shall be submitted for the written agreement of the Planning Authority.
5. The applicant shall provide a 5% of vehicular parking spaces for mobility impaired users, and 10% vehicular parking spaces to be equipped with electrical charging points,
a. Car parking spaces dedicated for electrical charging shall be demarcated with "RRM 034"

as per Chapter 7 Road Markings

REASON: In the interest of sustainable transport.

2.3.1 Condition 3 Compliance

1. Please refer to Appendix 1, which contains a high-level Construction Traffic Management Plan (CTMP). This report will be passed to the appointed building contractor with a request to provide a developed CTMP. Upon completion of a developed CTMP, GIL will pass this report to South Dublin County Council for approval.

2. Please refer to Appendix 2, which contains a Construction & Demolition Waste Management Plan (CD&DWMP).

3. It is anticipated that a Public Lighting Design for the development will be developed during the detailed design stage of the development. On this basis, and similar to condition 2 above, it was agreed with Sarah Watson of South Dublin County Council on September 8th, to submit these details once available. This is expected to be Q1 of 2023.

4. A Mobility Management Plan will be completed within six months of opening of the proposed development and submitted to the Planning Authority for written agreement.

5. This will be addressed under item 4 above.

2.4 CONDITION 4 WASTE HEAT

(a) Proposals for waste-heat recovery and ongoing delivery to a local heat-network shall be provided and implemented on site as relevant, in conjunction with the commencement and operation of the proposed development. Prior to the commencement of development, a timeframe for implementation of waste heat proposals shall be submitted for the written agreement of South Dublin County Council, unless otherwise agreed in writing.
(b) Such proposals shall include all necessary infrastructure for waste heat recovery from the proposed development and delivery through a primary waste-heat water circuit to either, the boundaries of the site or to an Energy Centre (when constructed as part of local heat network distribution) for connection to heat network. Such proposals shall be submitted for the written agreement of South Dublin County Council, unless otherwise agreed in writing.
(c) Where waste heat recovery and utilisation proposals have been explored and, subject to the written agreement of South Dublin County Council, have been deemed to be technically or otherwise unfeasible, details of future proofing of the building fabric, heat recovery and conversion systems and safeguarding of pipework/infrastructures routes up to the site boundaries to facilitate future waste heat connection to a local district heating network, shall be submitted for the written agreement of South Dublin County Council or as otherwise agreed in writing.

REASON: To promote the utilisation and sharing of waste heat and comply with Policy E5 of the South Dublin County Development Plan 2016-2022.

2.4.1 Condition 4 Compliance

GIL are currently looking into items (a), (b) and (c) above, and hope to engage with South Dublin County Council on the matter as soon as possible.

2.5 CONDITION 5 IRISH WATER

(a) All works shall comply with the Irish Water Standard Details and Code of Practice for Water Infrastructure.
(b) All works shall comply with the Irish Water Standard Details and Code of Practice for Waste Water Infrastructure.

REASON: In the interest of public health and to ensure adequate water/wastewater facilities.

2.5.1 Condition 5 Compliance

This condition is noted by GIL and is included on page 16 of the enclosed Construction Environmental Management Plan (CEMP):
(a) All works will comply with the Irish Water Standard Details and Code of Practice for Water Infrastructure.
(b) All works will comply with the Irish Water Standard Details and Code of Practice for Waste Water Infrastructure.

Please refer to Appendix 3 for the Construction Environmental Management Plan.

2.6 CONDITION 6 SURFACE WATER

(a) Prior to commencement of development, the applicant shall submit a drawing showing where and how surface water discharge from site will be limited to a maximum of 3.8 litres/second.
(b) Prior to the commencement of development, the applicant shall submit revised drawings which provide adequate SuDS and omit the underground attenuation and petrol interceptors, unless otherwise agreed in writing by the Planning Authority.
(c) All fuel storage proposals on site shall comply with the Greater Dublin Regional Code of Practice for Drainage Works Section 17. All process water and any effluent from the development shall not discharge to the surface water drainage network.

2.6.1 Condition 6 Compliance

With regards to item (a) above, please see Appendix 4 for an updated site layout plan no. 11063-2010_P04, which shows the location of the proposed Hydrobrake at manhole S14. The design head for the Hydrobrake is 1.80m.

With regards to item (b) above, the originally proposed underground attenuation tank has now been omitted from the design and replaced with a cleaned crushed stone detention basin to allow for storage of surface water runoff, treatment and infiltration of stored water into the groundwater. Please see Appendix 4 for updated plan no.s 11069-2010_P04 and 11069_2036_P05.

With regards to the proposed introduction of a petrol interceptor, we note that SDCC's SUDs guide requires a risk assessment and consultation with the appropriate licencing authority for sites with a 'High Pollution Hazard Level'. We would consider the proposed use of the power plant and associated use and storage of fuels and oils on site, to be a site of high pollution hazard level. For this reason and in anticipation of a request from the EPA for a petrol interceptor, we are proposing to retain a petrol interceptor for the design of this site. GIL are familiar with the upkeep and maintenance of petrol interceptors through the management of a similar powerplant site, the Whitegate Power Plant. If it would be of assistance to South Dublin County Council, GIL are happy to provide a protocol setting out a maintenance procedure for the petrol interceptor at this site.

Lastly, fuel storage on site will comply with section 17 of the Greater Dublin Regional Code of Practice. All storage tanks will have an impermeable surround (bund). The bunds will be capable of holding 110% the volume of the storage tanks plus an additional 200mm in depth to allow for rainwater.

2.7 CONDITION 7 DRAINAGE

(a) There shall be complete separation of the foul and surface water drainage systems, both in respect of installation and use.
(b) All new precast surface water manholes shall have a minimum thickness surround of 150mm Concrete Class B.
(c) All works for this development shall comply with the requirements of the Greater Dublin Regional Code of Practice for Drainage Works.

REASON: In the interests of public health, the proper planning and sustainable development of the area and in order to ensure adequate water supply and drainage provision.

2.7.1 Condition 7 Compliance

This condition is noted by GIL and is included on page 17 of the enclosed Construction Environmental Management Plan (CEMP):
(a) There will be complete separation of the foul and surface water drainage systems, both in respect of installation and use.
(b) All new precast surface water manholes will have a minimum thickness surround of 150mm Concrete Class B.
(c) All works for this development will comply with the requirements of the Greater Dublin Regional Code of Practice for Drainage Works.

Please refer to Appendix 3 for the Construction Environmental Management Plan.

2.8 CONDITION 8 ARCHAEOLOGICAL MONITORING, RECORDING AND REPORTING

1. The applicant is required to engage the services of a suitably qualified archaeologist to carry out archaeological excavation and monitoring under licence at the development site. No subsurface work should be undertaken in the absence of the archaeologist without his/her express consent;
2. Full archaeological excavation ('preservation by record') will be conducted by the archaeologist of pit identified in a previous phase of testing at the site. The immediate area around the feature shall be stripped of topsoil under archaeological supervision to identify any possible additional associated archaeological features in its immediate vicinity;
3. All topsoil removal and associated groundworks shall be monitored by the archaeologist. No sub-surface work should be undertaken in the absence of the archaeologist without his/her express consent;
4. Should significant archaeological features be found, any works which would affect them shall cease pending agreement with the Department as to how they are to be dealt with. Where archaeological material/features are shown to be present, preservation in situ, preservation by record (excavation), or further monitoring may be required;
5. Having completed the work, the archaeologist shall submit a written report to the Planning Authority and to the Department.

REASON: To facilitate the recording and protection of any items of archaeological significance that the site may possess.

2.8.1 Condition 8 Compliance

1. GIL has engaged the services of IAC Archaeology, to carry out archaeological excavation and monitoring under licence at the development site. No subsurface work will be undertaken in the absence of the archaeologist without his/her express consent;
2. Full archaeological excavation ('preservation by record') will be conducted by the archaeologist of pit identified in a previous phase of testing at the site. The immediate area around the feature shall be stripped of topsoil under archaeological supervision to identify any possible additional associated archaeological features in its immediate vicinity;
3. All topsoil removal and associated groundworks shall be monitored by IAC Archaeology. No sub-surface work should be undertaken in the absence of the archaeologist without his/her express consent;
4. Should significant archaeological features be found, any works which would affect them will cease pending agreement with the Department as to how they are to be dealt with. Where archaeological material/features are shown to be present, preservation in situ, preservation by record (excavation), or further monitoring may be required;
5. Having completed the work, IAC Archaeology will submit a written report to the Planning Authority and to the Department.

2.9 CONDITION 9 SIGNAGE

No advertising sign(s) or structure(s) (including any signs installed to be visible through windows), banners, canopies, flags, or other projecting elements shall be erected except those, which are exempted development, without the prior approval of the Planning Authority or An Bord Pleanála on appeal.

REASON: In the interest of visual amenity, compliance with development plan policies and4 the proper planning and sustainable development of the area.

2.9.1 Condition 9 Compliance

This condition is noted by GIL and is included on page 22 of the enclosed Construction Environmental Management Plan (CEMP):
No advertising signs or structures (including any signs installed to be visible through windows), banners, canopies, flags, or other projecting elements shall be erected except those, which are exempted development, without the prior approval of the Planning Authority or An Bord Pleanála on appeal.

Please refer to Appendix 3 for the Construction Environmental Management Plan.

2.10 CONDITION 10 ECOLOGY

(i) Prior to the commencement of any permitted development, the developer shall engage the services an independent, qualified ecologist to implement the management recommendations of the Biodiversity Management Plan.
(ii) The applicant shall inform the planning authority in writing of the appointment and name of the consultant, prior to commencement of development.
(iii) The ecologist shall inform the planning authority in writing when the recommendations of the BMP have been implemented. This shall include the creation of wildlife shelters, bat boxes, bird boxes, hibernaculae, invertebrate banks and their final locations.

REASON: In the interest of protecting the ecology and biodiversity.

2.10.1 Condition 10 Compliance

(i) GIL has engaged the services of Biosphere Environmental Services to implement the management recommendations set out in the enclosed Construction Environmental Management Plan (CEMP). If there is any change to the appointed Ecologist, GIL will inform South Dublin Council of this change.
(ii) GIL has appointed Brian Madden of Biosphere Environmental Service. As above, should this appointment change, GIL will inform South Dublin Council accordingly.
(iii) The ecologist shall inform the planning authority in writing when the recommendations of the CEMP have been implemented.

2.11 CONDITION 11 MITIGATION MEASURES

The mitigation measures and commitments identified in the Environmental Impact Assessment Report (EIAR) and other plans and particulars submitted with the planning application, as amended by the additional information received on 11 March 2022 and Clarification of Further Information received on 7 April 2022, shall be implemented in full by the developer, except as otherwise may be required in order to comply with other conditions.

REASON: In the interest of the protection of the environment.

2.11.1 Condition 11 Compliance

The mitigation measures and commitments identified in the Environmental Impact Assessment Report (EIAR) and other plans and particulars submitted with the planning application, as amended by the additional information received on 11th of March 2022 and Clarification of Further Information received on 7th of April 2022, will be implemented in full.

2.12 CONDITION 12 FURTHER DEVELOPMENT

No additional development shall take place above roof parapet level, including lift motor enclosures, air handling equipment, storage tanks, ducts or other external plant, telecommunication aerials, antennae or equipment, unless authorised by a further grant of planning permission.

REASON: To protect the visual amenities of the area.

2.12.1 Condition 12 Compliance

As set out above, the detailed design of the development has still to be undertaken and it is hoped that at detailed design stage details regarding the parapet level of the building will be confirmed. This is expected to take place during Q1 2023. GIL would hope to engage directly with South Dublin Council to confirm any details with respect to the roof parapet level.

2.13 CONDITION 13 DEPARTMENT OF DEFENCE

(a) Given the proximity to Casement Aerodrome, operation of cranes should be coordinated with Air Corps Air Traffic Services, no later than 28 days before use, contactable at airspaceandobstacles@defenceforces.ie or 01-4037681
(b) Due to the proximity to Casement Aerodrome, the developer should produce a Wildlife Aviation Impact Assessment and implement adequate bird control measures during the construction phase to mitigate the effects of birds on Air Corps flight operations.
(c) Due to the proximity to Casement Aerodrome, mitigations may be required in relation to the management of wildlife attracted to attenuation ponds or other water features. Should negative

effects of bird activity on Irish Air Corps operations arise, the owner must put measures in place to mitigate these effects to an acceptable level.
(d) Due the proximity to Casement Aerodrome, Military Air Traffic Services requests an Aviation Impact Assessment on all potential emissions. Prior to the commencement of development, the applicant shall submit this assessment for the written agreement of the Planning Authority. The assessment should cover the possible effects of exhaust plumes or any other associated impact on flight operations at Casement Aerodrome.

REASON: In the interests of aviation safety.

2.13.1 Condition 13 Compliance

Please refer to Appendix 5, which contains an Aviation Report to address items (a), (b), (c) and (d) above. GIL note the location of the development and its proximity to Casement Aerodrome. Should any details contained within the Aviation report change, such as cranes, and so on, GIL will inform South Dublin County Council of the same and any other relevant state agencies and bodies.

2.14 CONDITION 14 INLAND FISHERIES

(a) The applicant shall ensure that best practice should be implemented at all times in relation to any activities that may impact on surface water or riparian habitats. Any discharges to surface streams present on or near the site must not impact negatively on the system. Comprehensive surface water management measures must be implemented at the construction and operational stage to prevent any pollution of local surface waters. Prior to the commencement of development, the applicant shall submit a statement for the written agreement of the Planning Authority indicating how they comply in this regard.
(b) Prior to the commencement of development, the applicant shall submit a site-specific Construction Environmental Management Plan (CEMP) for the written agreement of the Planning Authority. This should identify potential impacts and mitigating measures on the aquatic environment, it should provide a mechanism for ensuring compliance with environmental legislation and statutory consents. The CEMP should detail and ensure Best Construction Practices including measures to prevent and control the introduction of pollutants and deleterious matter to surface water either directly or indirectly through the storm water drainage network and measures to minimise the generation of sediment and silt.
(c) The applicant shall ensure construction works are planned in a manner which prevents extensive tracts of soils from being exposed at any time and arrangements must be made for the control and management of any contaminated water resulting from construction.
(d) The applicant shall ensure that that the receiving foul and storm water infrastructure has adequate capacity to accept predicted volumes from this development during construction and post construction phases with no negative repercussions for the quality of any receiving waters.
(e) The applicant shall ensure compliance with Inland Fisheries guidelines.
(f) All discharges must be in compliance with the European Communities (Surface Water) Regulations 2009 and the European Communities (Groundwater) Regulations 2010.

REASON: In the interests of protecting the natural environment.

2.14.1 Condition 14 Compliance

Please refer to Appendix 3, which contains a Construction Environmental Management Plan (CEMP), outlining an approach to all items above.

GIL will ensure compliance with Inland Fisheries guidelines and all discharges will be in compliance with the European Communities (Surface Water) Regulations 2009 and the European Communities (Groundwater) Regulations 2010. This is set out on page 35-36 of the enclosed Construction Environmental Management Plan (CEMP).

2.15 CONDITION 15 ENVIRONMENTAL HEALTH

1. Noise due to the normal operation of the proposed development, expressed as Laeq over 15 minutes at the façade of a noise sensitive location, shall not exceed the daytime background level by more than 10 dB(A) and shall not exceed the background level for evening and night time. Clearly audible and impulsive tones at noise sensitive locations during evening and night shall be avoided irrespective of the noise level.
2. During the construction / demolition phase of the development, Best Practicable Means shall be employed to minimise air blown dust being emitted from the site. This shall include covering skips and slack-heaps, netting of scaffolding, daily washing down of pavements or other public areas, and any other precautions necessary to prevent dust nuisances.
3. Prior to commencement of the development the applicant is required to submit an Acoustic Verification report to the Environmental Health Department of South Dublin County Council. The report must confirm whether the development is capable of complying with Council's standard operational noise criteria, set out below:
Noise due to the normal operation of the proposed development, expressed as Laeq over 15 minutes at the façade of a noise sensitive location, shall not exceed the daytime background level by more than 10 dB(A) and shall not exceed the background level for evening and night time.
(a) This Acoustic Verification report should comprise of noise monitoring data at any noise sensitive locations. It should also include the cumulative noise level whereby the existing noise levels are included in the assessment of the developments overall impact.
(b) The Acoustic Verification report should include performance specifications for any changes/modifications which have been incorporated in order to reduce operational noise levels during the night time period.
The report must include a statement certifying whether the development or proposed use is fully capable of complying with the requirements of the noise control conditions and criteria as set out within the planning consent.
4. No heavy construction equipment/machinery (to include pneumatic drills, construction vehicles, generators, etc) shall be operated on or adjacent to the construction site before 07:00 hours on weekdays and 09:00 on Saturdays nor after 19:00 hours on weekdays and 1300 hours on Saturdays, nor at any time on Sundays, Bank Holidays or Public Holidays. Any work outside of these hours shall only be permitted following a written request to the Planning Authority and subsequent receipt of the written consent of the Planning Authority, having regard to the reasonable justification and circumstances and a commitment to minimise as far as practicable any unwanted noise outside the hours stated above.
5. The development shall be so operated that there will be no emissions of malodours, gas, dust, fumes or other deleterious materials, no noise vibration on site so as would give reasonable cause for annoyance to any person in any adjoining unit or public place in the vicinity.

REASON: In the interests of public health and residential amenity.

2.15.1 Condition 15 Compliance

This condition is noted by GIL and is included on page 26-27 and section 5.1 of the of the enclosed Construction Environmental Management Plan (CEMP). Please refer to Appendix 3 for the Construction Environmental Management Plan.

With respect to item 3 above, the detailed design of the development has still to be undertaken and it is hoped that at detailed design stage details regarding the Acoustic Verification Report will be confirmed. This is expected to take place during Q1 2023.

2.16 CONDITION 16 SERVICES TO BE UNDERGROUND

All public services to the proposed development, including electrical, information and communications technology (ICT) telephone and street lighting cables and equipment shall be located underground throughout the entire site.

REASON: In the interests of the visual amenities of the area, the proper planning and sustainable development of the area and compliance with the Council's Development Plan.

2.16.1 Condition 16 Compliance

This condition is noted by GIL and is included on page 18 of the enclosed Construction Environmental Management Plan (CEMP):
All public services to the proposed development, including electrical, information and communications technology (ICT) telephone and street lighting cables and equipment will be located underground throughout the entire site.

Please refer to Appendix 3 for the Construction Environmental Management Plan.

2.17 CONDITION 17 FINANCIAL CONTRIBUTION

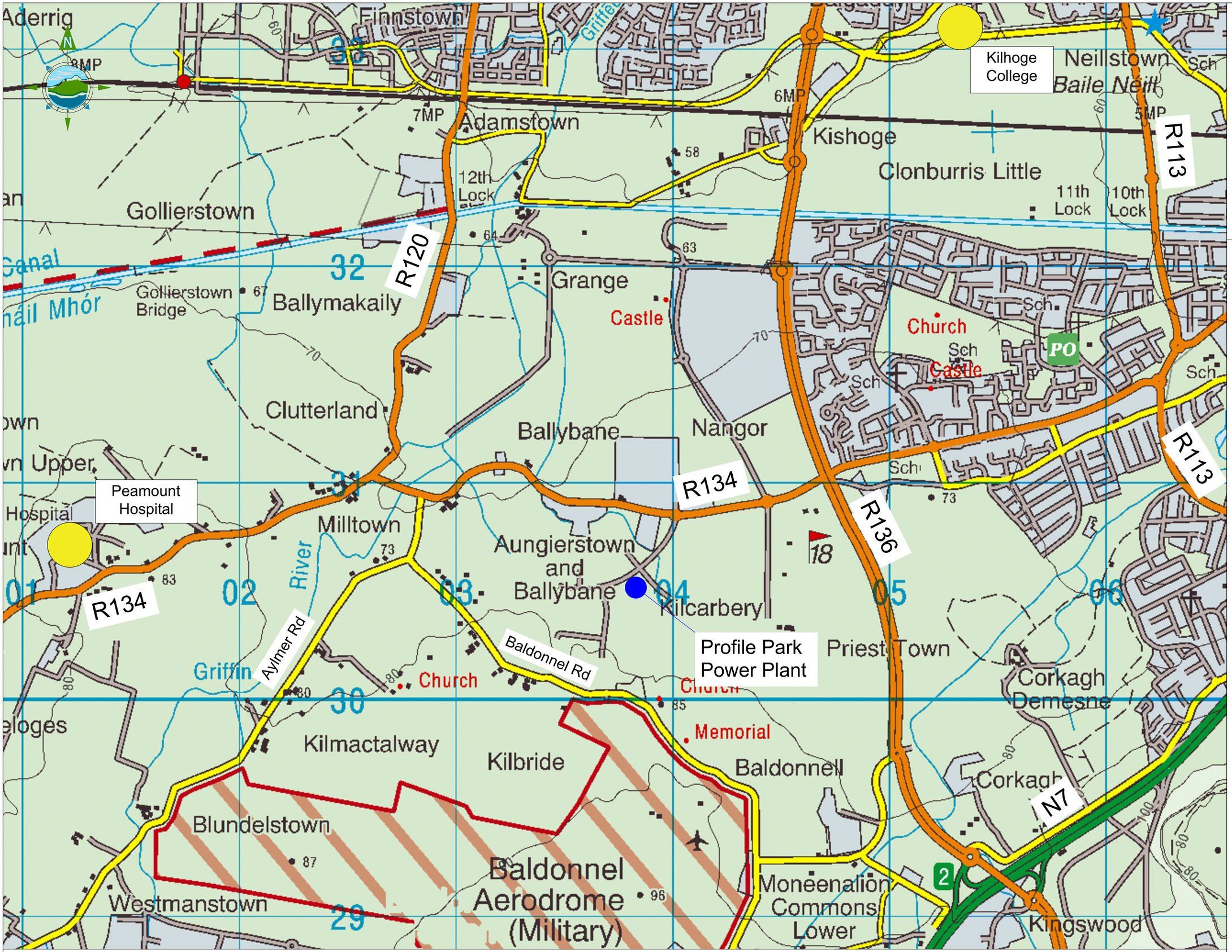
The developer shall pay to the Planning Authority a financial contribution of €179,644.44 (one hundred and seventy nine thousand six hundred and forty four euros and forty four cents), in respect of public infrastructure and facilities benefiting development within the area of the Planning Authority, that is provided, or intended to be provided by or on behalf of the authority, in accordance with the terms of the Development Contribution Scheme 2021 - 2025, made under Section 48 of the Planning and Development Acts 2000-2011 (as amended). The contributions under the Scheme shall be payable prior to commencement of development or as otherwise agreed in writing by the Council. Contributions due in respect of permission for retention will become payable immediately on issue of the final grant of permission. Contributions shall be payable at the index adjusted rate pertaining to the year in which implementation of the planning permission is commenced.

REASON: The provision of such facilities will facilitate the proposed development. It is considered reasonable that the payment of a contribution be required, in respect of public infrastructure and facilities benefiting development in the area of the Planning Authority and that is provided, or that is intended will be provided, by or on behalf of the Local Authority.

2.17.1 Condition 17 Compliance

GIL have engaged with South Dublin County Council in relation to this matter. It is our understanding that after the commencement notice has been arranged for the site, South Dublin County Council will issue an invoice for payment. As noted in the attached cover letter, a commencement notice is due to be arranged for the site, for week commencing 10th of October 2022.

Appendix 1 – Construction Traffic Management Plan



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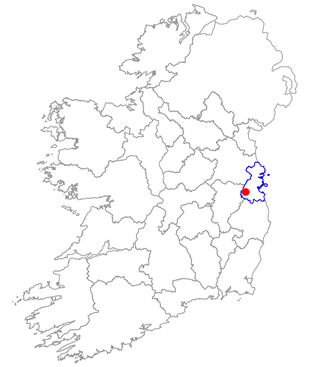

LEGEND:

POINTS OF INTEREST

SITE LOCATION

NOTES:

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER/EMPLOYERS REPRESENTATIVE, AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES/UTILITIES, ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES
5. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd.
D01	16/09/22	ISSUED FOR PLANNING	KD	JO'F

Client: centrica

Project: PROFILE PARK POWER PLANT

Title: Traffic Management Plan
Site Location
Sheet 1 of 2

Scale @ A1:	1:1,250	
Prepared by: K.D	Checked: J.O'F	Date: Sep 2022
Project Director:	BRIAN CARROLL	
Drawing Status:	PLANNING	

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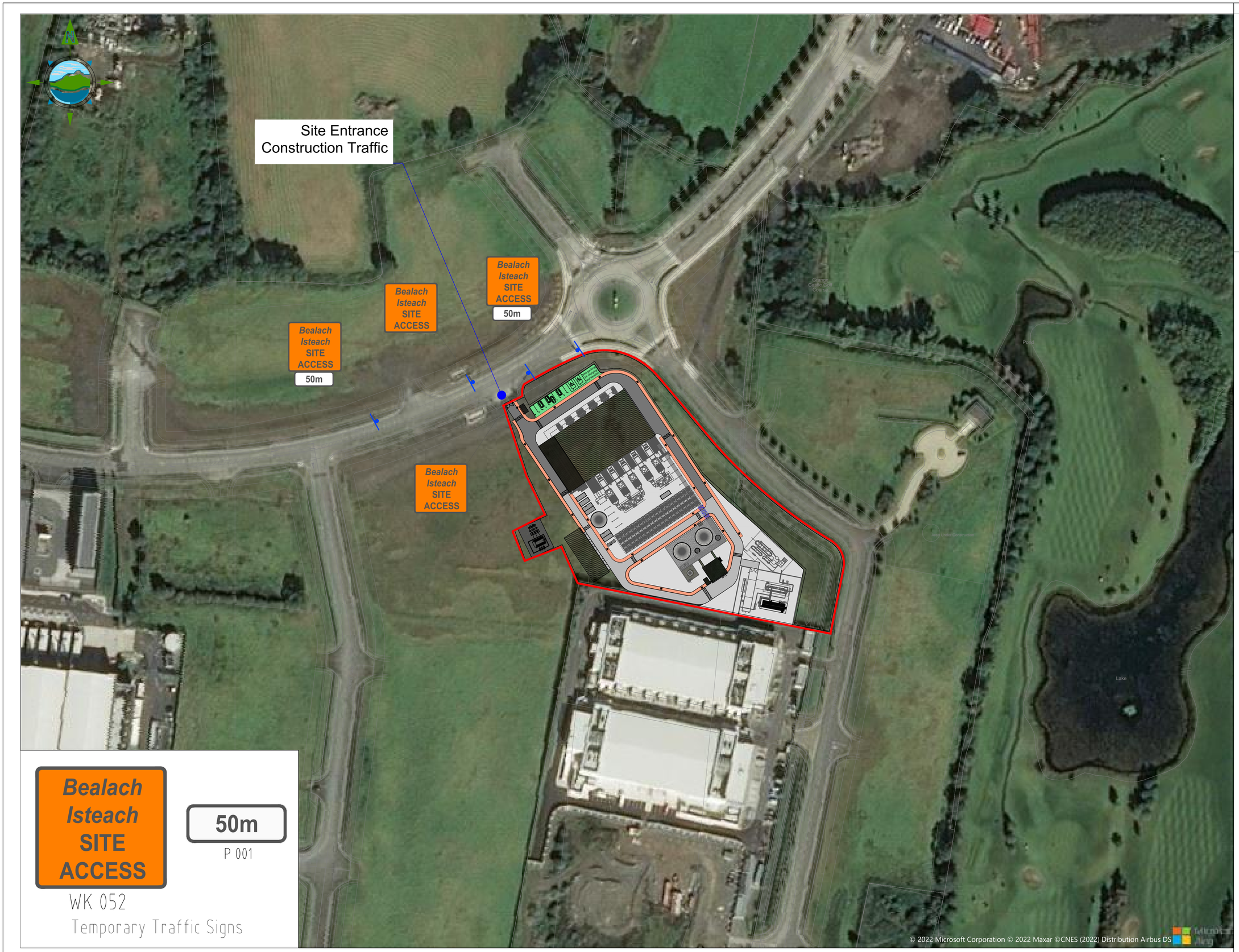
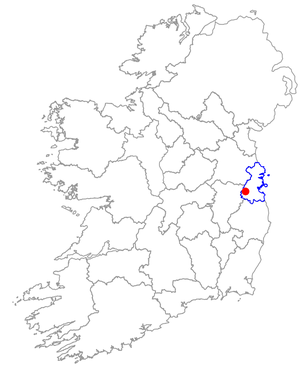
Drawing No.: 11069-6000 | Revision: D01





LEGEND:

SITE BOUNDARY

TEMPORARY TRAFFIC SIGN

NOTES:

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER/EMPLOYERS REPRESENTATIVE, AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES/UTILITIES, ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES
5. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd.
D01	16/09/22	ISSUED FOR PLANNING	KD	JO'F

Client:

centrica

Project:

PROFILE PARK
POWER PLANT

Title:

Traffic Management Plan
Temporary Signage
Sheet 2 of 2

Scale @ A1:	1:1,000	
Prepared by: KD	Checked: JO'F	Date: Sep 2022
Project Director:	BRIAN CARROLL	
Drawing Status:	PLANNING	

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Drawing No.: 11069-6001 Revision: D01

Appendix 2 - Construction & Demolition Waste Management Plan (CD&DWMP)

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CONSULTING ENGINEERS
BUILT ON KNOWLEDGE

PROFILE PARK POWER PLANT

PROFILE PARK, DUBLIN 22

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

Profile Park Power Plant

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

Document Control Sheet	
Document Reference	11069-R-001
Report Status	Final
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Current Revision	0
Client:	Greener Ideas Limited
Client Address:	C/O Centrica Business Solutions, 1 Seapoint Building, 44-45 Clontarf Road, Dublin 3, D03 F4A7
Project Number	11069

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Revision	Description	Author:	Date	Reviewed By:	Date	Authorised by:	Date
D01	Draft Issue	SB	24/08/22	RH	29/08/22	RH	31/08/22
0	Final	SB	13/09/22	RH	13/09/22	RH	14/09/22

TOBIN Consulting Engineers

ENVIRONMENT I.S. EN ISO 14001:2015 NSAI Certified
HEALTH & SAFETY I.S. ISO 45001:2018 NSAI Certified
QUALITY I.S. EN ISO 9001:2015 NSAI Certified

ACEI ASSOCIATION OF CONSULTING ENGINEERS OF IRELAND

ENGINEERS IRELAND cpd ACCREDITED COMPANY

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1.0 INTRODUCTION

Greener Ideas Limited (GIL) have received planning permission to develop a ca. 102 MW dual fuel gas fired power plant at a site located in Profile Park, Dublin 22. Profile Park is a 100 acre (40.5 hectare (Ha)) fully enclosed, private business park. The immediate area is predominantly commercial / industrial in nature. No existing environmental (waste or industrial emissions) licence has been or is currently held for this site. Presently, the site is greenfield with no previous or existing development present within the proposed facility boundary. The site was previously in agricultural use within the last c. 15 years.

This report presents a Construction & Demolition (C&D) Waste Management Plan (C&DWMP) for the proposed development which will address the following:

- Analysis of the waste arisings/material surpluses;
- Waste management objectives for the project;
- Methods proposed for prevention, reuse and recycling of wastes;
- Material handling procedures; and
- Proposals for training and auditing.

This C&DWMP has been prepared in accordance with the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*[1], published by the EPA in November 2021. These guidelines replace the 2006 guidelines previously published by the former Department of the Environmental, Heritage and Local Government (DOEHLG) and the National Construction and Demolition Waste Council (NCDWC).

The main objective of these guidelines is to provide a practical and informed approach informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project (including consideration of deconstruction). The guidelines provide those involved in a project, including clients, developers, designers, practitioners, contractors, sub-contractors and competent authorities, with a common approach when preparing Resource and Waste Management Plans (RWMPs) for C&D projects.

The updated document sets out practical guidelines informed by best practice approaches in the management and prevention of C&D waste from initial design stages onwards, including:

- *"Prior to Construction – including the stages of design, planning and procurement in advance of works on site (in the 2006 guidelines this was referred to as an outline or preliminary plan)"*; and
- *"During Construction – relating to the effective management of resources and wastes during construction or demolition operations (in the 2006 guidelines this was referred to as the detailed plan)"*.

The proposed development is located in the administrative area of South Dublin County Council (SDCC).

[1] EPA *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects* (November 2021) - https://www.epa.ie/publications/circular-economy/resources/CDWasteGuidelines.pdf (26 August 2022)

1.1 Waste Management Context

The primary legislative instrument that governs waste management in Ireland is the *Waste Management Act (WMA) 1996*, as amended. The WMA is a key instrument which, among other legislation, implements the EU *Waste Framework Directive* (2008/98/EC) in Ireland. The WMA provides for a general duty on everyone not to hold, transport, recover or dispose of waste in a manner that causes or is likely to cause environmental pollution. The WMA also sets out the provisions for the collection of waste and for its recovery/disposal.

Any person or contractor engaged in the collection of waste on a commercial basis is required to hold a Waste Collection Permit in accordance with the requirements of the *Waste Management (Collection Permit) Regulations 2007*, as amended. A Waste Collection Permit is issued to appropriate contractors by the National Waste Collection Permit Office (NWCPO).

Waste materials collected by a suitably permitted waste contractor must only be transported to appropriately permitted or licensed waste facilities. Authorisation for receiving waste materials are provided in accordance with the *Waste Management (Facility Permit & Registration) Regulations 2007*, as amended, for waste permits and certificates of registration (COR) granted by the relevant Local Authority. Waste management authorisations granted by the Environmental Protection Agency (EPA) are issued in accordance with the *Waste Management (Licensing) Regulations 2004*, as amended, and the *Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013*, as amended.

1.2 Relevant Policy

1.2.1 EU Policy

The EU *Waste Framework Directive (2008/98/EC)* lays down the basic principles and concepts related to waste management. It requires that waste be managed

- *Without endangering human health and harming the environment;*
- *Without risk to water, air, soil, plants or animals;*
- *Without causing a nuisance through noise or odours; and*
- *Without adversely affecting the countryside or places of special interest*[2].

The Directive also sets out key definitions including for waste, recycling and recovery, while also defining when waste ceases to be waste and becomes a secondary raw material (end-of-waste criteria) and how to distinguish between waste and by-product. The Directive also introduces the *"polluter pays principle"* and the *"extended producer responsibility"*.

The basis of EU waste management is the 5-step "*waste hierarchy*", established in the Directive. It confirms the order of preference for managing and disposing of waste and requires EU Member States to carry out the following:

- *Apply the waste hierarchy in their waste management legislation and policy;*
- *Take measures to promote the reuse of products and preparing-for reuse activities;*
- *Establish waste management plans;*
- *Encourage high-quality recycling of waste materials as part of the aim to make the EU a 'recycling society'; and*
- *Ensure that the preparation for reuse, recycling and other material recovery of non-hazardous C&D waste (excluding naturally occurring material defined in List of Waste*

[2] EU, *Waste Framework Directive* - https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en (accessed 26 August 2022)

category 17 05 04) is a minimum of 70% by weight by 2020. The Directive states that this target should be achieved by preparing for reuse, recycling and other material recovery, such as backfilling operations making use of waste to substitute other material.

In Ireland, the Directive is legislated under the *European Union (Waste Directive) Regulations 2020* (S.I. No. 323 of 2020)[3].

The EU are currently working on a targeted revision of the Waste Framework Directive (expected in 2023). Despite current legislation, there has been an increase in municipal waste generation over the last decade, partly due to inefficient waste-collection systems, low recycling rates, lower quality recyclates, and lack of proper implementation of the *"polluter pays principle"*. Revision of the Directive aims to improve the overall environmental outcome of waste management in line with the waste hierarchy, and will focus on the policy areas of prevention, separate collection, waste oils and textiles.

In March 2020, as part of the European Green Deal, the EU adopted the new Circular Economy Action Plan (CEAP). The new action plan includes initiatives along the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented, and the resources used are kept in the EU economy for as long as possible. It introduces legislative and non-legislative measures.[4] Measures under the plan are aimed at ensuring less waste while making circularity work for people, regions and cities and puts focus on sectors that use most resources and where there is a high potential for circularity such as; packaging, plastics, food, textiles, construction and buildings, batteries and vehicles, electronics and ICT, and water and nutrients.

1.2.2 National Policy

Ireland's waste management policy is based on the EU waste hierarchy and establishes a priority order for waste handling and treatment as set out in Figure 1-1.

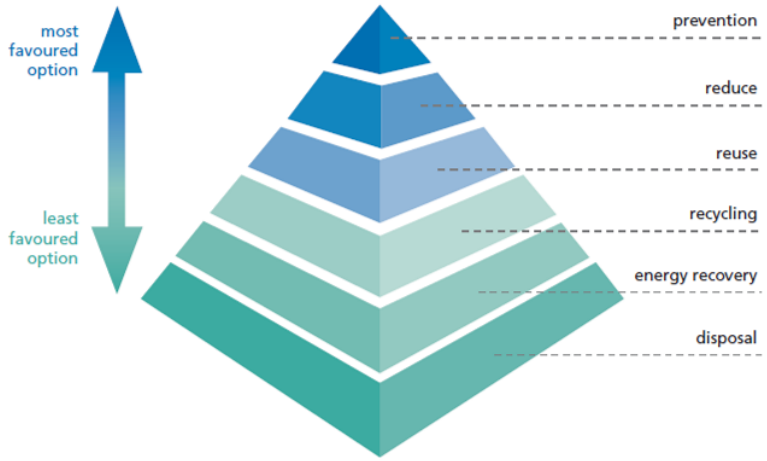

Figure 1-1 – Waste management hierarchy (Source: EPA)

[3] Amends the *Waste Management Act 1996* and the *EU Waste Directive Regulations 2011 (S.I. No. 126 of 2011)* https://www.irishstatutebook.ie/eli/2020/si/323/made/en/print (accessed 26 August 2022)
[4] EU, Circular Economy Action Plan (2020) - https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en (accessed 26 August 2022)

The current government policy document on waste, which covers the period from 2020 – 2025, is entitled *A Waste Action Plan for a Circular Economy* (WAPCE) and was published in June 2020[5]. This document is Ireland's new roadmap for waste planning and management and aims to embed climate action in all strands of public policy. The Plan shifts focus away from waste disposal and looks instead to how the country can preserve resources by creating a circular economy.

The Plan outlines the contribution of the sector to the achievement of a number of other national plans and policies including the Climate Action Plan. It also matches the level of ambition being shown across the European Union through the European Green Deal which encompasses a range of actions supporting circularity and sustainability.

The key targets under the WAPCE in relation to C&D waste are:

- *Streamlining by-product notification and end-of-waste decision making process;*
- *Revision of the 2006 best practice guidelines for C&D waste; and*
- *Working group to develop national end-of-waste applications for priority streams.*

Most notably in respect of the proposed development works, the new WAPCE states that:

- *C&D waste management plan guidelines will be updated, and we will ensure that there is a consistent application of planning requirements;*
- *We will develop reuse and recovery targets for plastic from the construction and demolition sector; and*
- *We will examine methods to encourage source segregation of waste materials on site which could include moving away from the use of mixed skips or incentivised pricing or other financial instruments to support segregation.*

In 2021 the Department of the Environment, Climate and Communications (DECC) launched the "*Whole of Government Circular Economy Strategy*"[6], Ireland's first national circular economy strategy. The Strategy was a specific commitment in the WAPCE and is a key addition to Government's drive to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and to get on a path to reach net-zero emissions by no later than 2050, as per commitments in the Programme for Government and the Climate Act 2021.

In July 2022, as part of the Strategy, the *Circular Economy Act* (2022)[7] was signed into law, and for the first time defines the Circular Economy in Irish Law. In terms of C&D waste, the Act ensures that a fit-for-purpose regulatory system will be in place to allow hundreds of thousands of tonnes of material be safely and sustainably re-used as secondary raw materials. The Act will help streamline the process for decision making by the EPA on end-of waste and by-product applications. This is particularly important in the construction sector, where there is considerable potential to reduce the need for aggregate extraction (e.g. crushed rock, sand and gravel used in concrete) by reusing material that may otherwise be treated as demolition waste. The end-of-waste process allows for safeguards so that this reuse can be done in a way that is safe in terms of the environment and human health.

[5] DECC, *A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025* (June 2020)
[6] DECC, *Whole of Government Circular Economy Strategy 2022 – 2023 'Living More, Using Less' (2021)* - https://www.gov.ie/en/publication/b542d-whole-of-government-circular-economy-strategy-2022-2023-living-more-using-less/ (accessed 26 August 2022)
[7] DECC, *Landmark Circular Economy Act signed into law* (2022) - https://www.gov.ie/en/press-release/4546a-landmark-circular-economy-act-signed-into-law/ (accessed 26 August 2022)

1.2.3 Regional Waste Management Plans

For the purposes of waste planning, Ireland has been divided into three waste regions, namely the Eastern-Midlands Waste Region, the Southern Waste Region and the Connacht-Ulster Waste Region. The project is situated within the Eastern-Midlands Waste Region (EMWR), which comprises 12 no. local authority areas which are:

Eastern-Midlands Waste Region	
Dublin City Council	Laois County Council
Dún Laoghaire-Rathdown County Council	Longford County Council
Fingal County Council	Meath County Council
South Dublin County Council	Offaly County Council
Kildare County Council	Westmeath County Council
Louth County Council	Wicklow County Council

Each of the three waste management regions has developed a Regional Waste Management Plan to provide a framework for the prevention and management of wastes in a safe and sustainable manner. The current waste plan for the EMWR is the *Eastern-Midlands Region Waste Management Plan 2015 – 2021*.

The strategic vision of the regional waste plan is to rethink Ireland's approach to managing wastes, by viewing waste streams as valuable material resources that can lead to a healthier environment and sustainable commercial opportunities for the economy.

Specifically, in relation to C&D waste, the regional plan identifies Irelands mandatory target under the Waste Framework Directive to achieve 70% reuse, recycling and materials recovery of non-soil and stone construction and demolition waste to be achieved by 2020. The latest EPA waste statistics (2019) [8] identify that Ireland's current rate achieved is 84%. The regional plan also states that *"there is significant potential for recycling of the C&D waste stream given the nature of its characteristics"*.

The WAPCE states that the three existing regional waste management plans will be replaced by a new single *National Waste Management Plan for a Circular Economy* (NWMP), which will contain targets for reuse, repair, resource consumption, and reducing contamination levels.

The process of developing the new NWMP is underway and is subject to a Strategic Environmental Assessment and an Appropriate Assessment; the pre-draft consultation has been undertaken[9] and a draft of the NWMP is expected to be published for consultation in late 2022. The NWMP will be in respect of the Local Authority administrative areas, with the lead authority for the Eastern-Midlands Region being Dublin City Council.

1.2.4 County Development Plan

The current development plan applicable to the proposed development is the *South Dublin County Development Plan 2022-2028 (SDCC, 2022)*[10] which sets out the local authority's commitments to provide and deliver infrastructural services which will enhance the quality of the South County Dublin environment and facilitate sustainable economic development and

[8] EPA, *Progress to EU Waste Targets* (June 2022) - https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/progress-to-eu-targets/ (accessed 26 August 2022)
[9] My Waste, National Waste Management Plan for a Circular Economy – pre-draft consultation process - https://www.mywaste.ie/pre-draft-consultation/ (accessed 26 August 2022)
[10] SDCC, *South Dublin County Development Plan 2022-2028* - https://www.sdcc.ie/en/devplan2022/ (accessed 25 August 2022)

housing. The development plan sets out a number of policies, objectives, standards and criteria with regard to waste management, with those specifically in relation to C&D waste outlined below.

Policy within Chapter 5 - *Quality Design and Healthy Placemaking* - sets out the following objective in terms of C&D waste:

- QDP11 Objective 3: *"To promote the reuse and recycling of materials to promote the circular economy and reduce construction and demolition waste"*

Chapter 11 - *Infrastructure and Environmental Services* - sets out the following objective in relation to waste management and C&D:

- IE7 Objective 2: *"To support the implementation of the Eastern Midlands Region Waste Management Plan 2015-2021 or as amended by adhering to overarching performance targets, policies and policy actions";*
- IE7 Objective 8: *"To adhere to the recommendations of the National Hazardous Waste Management Plan 2014-2020 and any subsequent plan, and to co-operate with other agencies including the EPA in the planning, organisation and supervision of the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects".*

Chapter 12 - *Implementation and Monitoring of the CDP* - sets out the development standards and criteria that arise out of the policies and objectives of the CDP, and includes the following in relation to C&D waste:

(iv) Construction and Demolition Waste

Construction and Demolition Waste Management Plans should be submitted as part of development proposals for projects in excess of any of the following thresholds:

- *New residential development of 10 units or more;*
- *New developments other than above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,000 square metres;*
- *Demolition / renovation / refurbishment projects generating in excess of 100 cubic metres in volume, of Construction and Demolition (C&D) waste;*
- *Civil engineering projects in excess of 500 cubic metres of waste materials used for development works on the site.*

The Construction and Demolition Waste Management Plan, as a minimum, should include provision for the management of all construction and demolition waste arising on site, and make provision for the reuse of said material and / or the recovery or disposal of this waste to authorised facilities by authorised collectors. Where appropriate, excavated material from development sites is to be reused on the subject site.

1.2.5 South Dublin County Waste Bye-Laws

New Waste Bye-Laws[11] for the functional area SDCC entered into force on 03 December 2018. These are referred to as the *South Dublin County Council Household & Commercial Waste Bye-Laws 2018*[12]. The provisions of the Waste Bye-Laws do not apply to C&D waste.

[11] SDCC, *Environmental Bye-Laws* - https://www.sdcc.ie/en/services/environment/environment-bye-laws/ (accessed 25 August 2022)
[12] SDCC, *South Dublin County Council Household & Commercial Waste Bye-Laws 2018* - https://www.sdcc.ie/en/download-it/publications/waste-management-bye-laws-2018-v-1.pdf (accessed 25 August 2022)

1.3 National Waste Statistics

The EPA reports on national waste generation statistics on a regular basis[13]. The latest reference year available in terms of C&D waste statistics is 2019[14] released in November 2021. This data indicates the following key trends in the sector:

- C&D waste generated increased to 8.8 million tonnes in 2019, up from 2.6 million tonnes in 2018 and relates to the significant increase in construction activity nationally in 2019;
- The data indicates the increase was driven mainly by an additional 2.7 million tonnes of soil and stones, which totalled 7.5 million tonnes in 2019;
- In 2019, soil, stones and dredging spoil made up the largest fraction of C&D waste collected at 85%, up from 77% in 2018. The next largest waste types in 2019 were concrete, bricks, tiles and gypsum (7%) and mixed C&D (4.5%);
- Most of the C&D waste generated in 2019 (82%) was backfilled while 10% went for disposal, and only 7% of all C&D waste was recycled;
- Recycling was the main treatment operation for metals (100%) and waste bituminous mixtures (64%); and
- Only 39% of C&D related segregated wood, glass and plastic waste was recycled in 2019 while 54% went for energy recovery.

Under the Waste Framework Directive (2008/98/EC), EU Member States must achieve a rate of 70% material recovery of non-hazardous, non-soil and stone C&D waste by 2020. In 2019, Ireland achieved 84% material recovery of such waste, surpassing the 2020 target; an improvement on the recovery rate of 71% achieved in 2016 and 77% achieved in 2018.

In terms of C&D waste statistics, the EPA states that *"Prevention and improved recycling of C&D waste could be achieved by employing best practice circular construction activities, such as designing out waste, enhanced segregation of C&D materials into individual material streams and by maximising the use of resources, in line with the EPA's revised Best Practice Guidelines for the Preparation of Resource [& Waste] Management Plans for Construction & Demolition Projects".*

As previously mentioned, development of this C&DWMP has been informed by these guidelines, and prevention and management of C&D waste generated on-site will follow best practice.

The EPA provides a release calendar for their waste statistics, which currently states that the planned release for 2020 C&D data is September 2022[15].

2.0 WASTE MANAGEMENT OBJECTIVES

The following waste management objectives are identified for the proposed development:

- Maximise the on-site segregation of C&D wastes;
- Consideration of all reuse opportunities for material surpluses within the site;
- Avoid oversupply of incoming construction materials which have the potential to become waste; and

[13] EPA, *National Waste Statistics for Ireland* - https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/ (accessed 25 August 2022)
[14] Construction & Demolition Waste Statistics for Ireland - https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/ (accessed 25 August 2022)
[15] EPA planned releases for 2022 (last updated July 2022) - https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/release-calendar/ (accessed 26 August 2022)

- Engage appropriately licensed waste contractors that can provide maximum off-site reuse, recovery and recycling of waste materials in preference of disposal.

The national target for preparing for reuse, recovery and recycling of C&D waste (excluding soil and stone) is 70% and the waste industry in Ireland is currently achieving 84% (2019).

The target set for C&D waste management for the Profile Park Power Plant project is to exceed the national target of preparing for reuse, recovery and recycling of 70% of C&D waste (excluding soil and stone).

The main contractor will be made aware of this project target and will be required to engage suitably permitted/licenced waste contractors that will be able to provide a commitment to achieving, or exceeding, this target.

3.0 PROJECT DESCRIPTION

The site of the proposed power plant is located in Profile Park, Dublin 22 which is situated c.3.15 km west of Clondalkin town centre. Profile Park is a 100 acre (40.5 Ha) fully enclosed, private business park. Presently, the site is greenfield with no previous or existing development present within the proposed facility boundary. The site was previously in agricultural use within the last c. 15 years.

The site comprises an area of flat disturbed ground which appears to have been subject to topsoil disturbance in recent years during the construction of roadways to the north and east – as per review of aerial photography evidence. The topography of the proposed power plant site can be described as ostensibly flat, or slightly sloping, with elevations from c.73 mAOD to c.76 mAOD, resulting in the lands being at a marginally lower elevation to the surrounding Profile Park road and footpath infrastructure.

No existing environmental (waste or industrial emissions) licence has been or is currently held for this site.

The proposed development is a c. 102 MW dual fuel gas fired power plant, comprising associated plant, equipment and buildings including the following elements:

- 1 no. Engine Hall building with a height of 16.9m, (comprising 5 no. gas engines and ancillary infrastructure);
- 1 no. Electrical Annex Building (height of 18.7m);
- 1 no. Workshop Building with a height of 5.1m;
- 1 no. Tank Farm building with a height of 5.68m;
- 1 no. Security Hut with a height of 3.27m;
- Tanks including 2 x Diesel Oil Storage Tanks, a SCR Urea Tank, a Lubricant Oil Storage Tank, a Lubricant Oil Maintenance Tank, a Pilot Oil Tank, a Fire Water Storage Tank, an Effluent Collecting Tank; and an Underground Surface Water Attenuation Tank;
- 2 no. exhaust stacks (each 28m in height);
- 1 no. Gas AGI including a kiosk (height of 3.3m);
- Radiator Coolers (height of 8.46m);
- 2 no. electrical transformers (height of 4.98m);
- 2 no. new access onto the existing private road network within Profile Park;
- 12 no. number parking spaces, footpaths, landscaping; and
- Fencing and all other associated site development plant and equipment and other works including surface water and foul wastewater drainage.

The development will also include landscaping, site services and all associated infrastructure works necessary to facilitate the development.

The proposed construction works are set out in the Construction Environmental Management Plan (CEMP) prepared by TOBIN Consulting Engineers.

4.0 WASTE ARISINGS

C&D waste statistics from 2019 published by the EPA[16] identify the main waste types generated in the construction industry in Ireland as set out in Table 4-1.

Table 4-1 – EPA C&D waste statistics – composition of C&D waste for 2019

Waste Type	% of total (by weight)	List of Waste Codes*
Soil, stones and dredging spoil	84.8%	17 05 03 to 17 05 08
Concrete, brick, tile and gypsum	6.9%	17 01 01 to 17 01 07
Mixed C&D waste	4.5%	17 09 03, 17 09 04
Metal	2.2%	17 04 01 to 17 04 11
Bituminous Mixtures	1.3%	17 01 03 to 17 03 03
Segregated wood, glass and plastic	0.3%	17 02 01 to 17 02 03

* Waste types may be non-hazardous or hazardous

As above, soil and stones waste typically make up a significant proportion of C&D waste generated in Ireland.

The power plant development will require pre-construction activity and ground excavations to enable works as the existing site is greenfield with no previous or existing development present. The building structures will require excavations for foundations which will be determined as part of the detailed design phase. Excavations will also be required for underground utilities and surface water drainage infrastructure.

Arisings from piling and excavation works will be reused on site wherever possible for site profiling and landscaping works.

There have been no intrusive site investigation (SI) works carried out at the site to date and, as such, there is no site-specific soil / ground quality data available at this time. Site investigations will be carried out as part of the detailed design of infrastructure for the power plant in the coming months and these intrusive investigations will include the collection, monitoring, analysis and reporting of environmental quality records for the current site conditions. Any SI works carried out will include environmental soil analysis to identify the potential for encountering contaminated soils during ground works.

As per the CEMP, any contaminated material identified will be excavated in a controlled environment and handled appropriately as hazardous waste.

Due the nature of the site, i.e. greenfield with previous agricultural use, no asbestos containing materials (ACMs) are predicted to be present on-site. Therefore, no asbestos survey or specific handling procedures in terms of ACMs have been undertaken or will be required.

[16] EPA (2019) Composition of C&D waste- https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/ (accessed 25 August 2022)

During construction works, waste material will be generated mainly from excavations, material off-cuts and packaging. Oversupply of materials can also lead to waste generation. The typical waste materials generated again will be concrete rubble, metals, wood and plastics.

Other waste types generated in smaller quantities on construction sites may include materials such as waste oils, resins, paints and adhesives, as well as waste generated from office and welfare facilities on site, such as paper, packaging, food and canteen waste, and wastewater and effluent. Some of these materials may be hazardous and will require specific handling procedures. It is expected that waste quantities of these materials will be small.

4.1 Demolition Waste

No demolition works are proposed for this site. Presently, the site is greenfield with no previous or existing development present within the proposed facility boundary.

4.2 Excavation Waste

The site is currently greenfield, as such the key potential source of waste material during the construction of the development will be from the excavation of ground material to allow for the laying of foundations and construction of the building structures. Material from piling and excavation works will be reused on site wherever possible, such as for site profiling and landscaping works.

This will require removal of topsoil and subsoil to a competent founding layer and upfilling with structural fill and/or concrete (concrete only proposed for the tank farm, oil supply and storage, engine hall, electrical annex building, transformers, workshop, parking and plant associated structures) to the required finished floor level. Up to 8,500m^3 (c. 14,875 tonnes) of excavated soils wills be generated as part of the cut and fill balance.

A review of the EPA website for both existing and historic licensed and illegal waste activities was carried out to identify any potential contamination sources present in the area and to identify any potential contaminating activities near the proposed power plant. The desk study indicated that no waste facilities or illegal waste activities were recorded with a 2km radius of the site proposed facility. No visual or olfactory evidence of contamination was identified during site walkovers carried out in February and May 2021.

SI works carried out during the detailed design stage of the project will include visual inspection and testing to confirm the environmental quality of the excavated ground materials.

4.3 Construction Waste

The power plant will be characterised by pre-construction gradually phasing out to a number of main civil engineering works to provide the necessary infrastructure for completion.

The pre-construction phase will include preparatory works (i.e. post planning surveys and reporting) and consultation with statutory bodies and the public. Following this process, site clearance activities will commence. The construction phase comprises civil and plant construction works, including:

- Construction of access and hardstands (temporary contractor's compound, temporary site offices, welfare facilities, car parking and equipment laydown areas);
- Topsoil stripping of the construction working area (and localised at certain locations along the cable/ gas pipeline route), the removal of ditches, trees, and other vegetation from the site;

- Processing of materials and reinstatement;
- Construction of infrastructure foundations (power plant infrastructure foundations, parking, site entrance);
- Excavation for cable ducts, gas pipeline, tank farm, infrastructure foundations;
- Management of excavated materials; and
- Construction of surface water drainage system along the new access to site.

The power plant will be constructed using standard construction and building materials and methodologies. Materials will be required for construction of the elements of the design including building structures, concrete floors, and metal decking. Therefore the majority of construction waste material will be streams including mixed C&D waste, metal, wood, plasterboard, glass and waste electronic and electrical equipment (WEEE) as would typically be generated from the building of a similar industrial style facility. Materials required for the construction works will be sourced locally, where feasible. Material importation to site will be required such as ready mixed concrete, road surface, etc.

Construction waste quantities have been estimated based on the gross area of new infrastructure proposed. The breakdown of anticipated waste types are based on a study on construction waste generation carried out by GMIT and the EPA in 2015[17]. Table 4-2 below presents the estimated construction waste quantities for the main waste types.

Table 4-2 – Estimated construction waste quantities

Waste Type	Tonnes
Mixed C&D waste	108
Timber	92
Plasterboard/Gypsum	33
Metals	26
Concrete	20
Other waste (cabling/wiring, ducting, insulation, packaging and plastics)	49
TOTAL	**327**

The estimates above are based on construction of commercial developments but can be applied as an estimate for the proposed development. Waste type breakdown will vary depending on final selection of material types and the extent of on or off-site construction employed.

5.0 WASTE HANDLING

5.1 On-Site Waste Management

To ensure that waste management is given adequate consideration throughout the excavation and construction phases, the main contractor will appoint a Waste Manager who will have overall responsibility for implementing this C&DWMP, ensuring that the project remains in compliance with waste legislation and striving to achieve, and exceed, the waste management targets as set out in Section 2.

As a primary measure, waste generation will be avoided, where possible, by ensuring that an excess supply of building materials is not delivered to the site and that only the minimum materials required to meet the construction schedule are available on-site. This will reduce the

[17] EPA and GMIT, *A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (EPA Research Report 146)* (2015)

potential for damage and re-ordering materials which will save on project costs. The 'Just-in-time' delivery concept will be applied, where possible, to minimise waste creation. Off-site construction of key equipment, machinery and other infrastructure will be explored, where possible, to minimise waste generation at the project site. Off-site manufacturing techniques are typically optimised to reduce wastage.

There are stockpiles of spoil from a third-party development in the north and western areas of the site. This material comprises layers of gravels and concrete blocks with some topsoils. There is no evidence that there are contaminated materials within the stockpiles, however the site engineer/environmental representative will monitor the handling of the materials and obtain samples for environmental analysis where there is suspected contaminants or where the material has to be removed off-site as waste. It is intended to retain this material on site for use in site profiling and landscaping, subject to the suitability of the material which will be determined when site preparation works commence.

The Waste Manager will liaise with procurement teams to ensure that minimal and unnecessary packaging is not brought on-site or is removed from site by delivery vehicles. In particular, timber pallets will be returned with deliveries where possible.

Maximum segregation of waste materials on-site will be carried out to increase the off-site potential for reuse and recycling of materials. Skips of varying sizes will be provided strategically at the site to promote source segregation and avoid rubbish build-up and potential for off-site littering. A waste compound will be set up such that skips are located close together which helps promote source segregation and aids collection of skips by the waste contractor. As required, skips/tipper skips will be temporarily positioned adjacent to works areas to help waste segregation and reduce handling of wastes.

All skips will be maintained in good condition and clearly labelled so that there is no confusion as to what materials are to be placed in which skip. The main contractor will appoint an employee(s) to keep the area around the skips clean and to ensure skips are not overflowing with waste. Waste materials such as gypsum, WEEE, batteries or hazardous waste will be stored separately and may require covered skips or containers to prevent contaminated run-off in the event of getting wet. Dedicated bunded storage areas will be provided for storage of liquid wastes such as resins, oils, paints etc.

Appropriate handling, storage and reuse of excavated materials are important during the construction phase of the proposed power plant. Excavation and piling works will be monitored, and environmental sampling carried out to classify the material for off-site recovery or disposal, if required. Clean uncontaminated material will be kept separate from contaminated (or potentially contaminated) materials so as to avoid cross contamination and reduce the quantity of contaminated material requiring off-site treatment.

Stockpiles will be located away from the Baldonnell Stream. Opportunities to reuse suitable excavated material within the site will be maximised where appropriate. Topsoil and subsoils will be stored separately and used for landscaping and in the reinstatement of the site areas. Topsoil/subsoil 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).

There is potential for a negative effect on water as a result of the erosion of soil and the inappropriate storage of excavated materials. However, any risk from the stockpiling of excavated materials can be managed through good site practice. The presence of watercourses

within the site requires a robust sediment and erosion plan to effectively reduce the risk of sediment release to surface waters.

For works along the grid and gas connections, and site entrance works, the excavated material will be cast to the side to be reused as backfilling material where appropriate. This material will not be stored in the vicinity of any watercourses. It will be cast on the upgradient side of the trench, so if any runoff did occur, it would run into the downgradient trench.

Excess material will be transported off-site as waste to a local appropriately licensed/permitted waste facility (see Section 5.2 Off-Site Waste Management).

5.2 Off-Site Waste Management

During construction, excess material will need to be transported offsite as waste for appropriate management. The main contractor will appoint a suitably permitted waste contractor(s) to collect waste from the site and transfer to appropriately permitted or licensed waste facilities. It is not possible at this stage to identify who the waste contractor(s) will be or to provide their waste collection permit number(s). However, these details will be retained on site following appointment as described in Section 6.

The appointed waste contractor(s) will typically determine the facilities where C&D waste will be taken to. Upon appointment of a waste contractor, details of the waste collection permit(s) and chosen waste facilities (including waste licence details) will be collated and retained on site. Written confirmation of the acceptance of the material at the chosen facilities can be obtained and provided to SDCC if required.

There are numerous waste transfer stations, treatment facilities, and recovery facilities in the Greater Dublin Region (including Dublin, Meath, Kildare, and Wicklow) that can accept C&D waste for reuse, recycling and recovery. Examples of these facilities include Roadstone Belgard Quarry, Roadstone Huntstown and Calary Quarries and Sorundon Ltd, Dublin 12.

Excavated soil and stone material will be tested to provide a classification for off-site recovery or disposal in accordance with the EPA requirements set out in the *Waste Classification* publication[18]. Alternatively, the EPA approved *HazWasteOnline* application can be used to classify the excavated material as hazardous or non-hazardous. Waste facilities permitted for acceptance of waste materials for landfilling will also require the classification of waste in accordance with the Waste Acceptance Criteria (WAC) set out in *EC Council Decision 2003/33/EC*[19], and in terms of soil recovery, in accordance with the EPA (2020) "*Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities*"[20]. It is anticipated that excavated soil and stone will be transferred off-site in rigid trucks and will be covered to prevent dust deposition off-site.

Uncontaminated soil and stones that is not reused on-site can be recovered as engineering fill in landfill facilities or used for ground improvement in soil recovery facilities. As a last resort, excavated materials can be disposed of to landfill.

[18] EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2019)
[19] EC Council Decision 2003/33/EC – establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
[20] EPA, *Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities* (2020) - https://www.epa.ie/publications/compliance--enforcement/waste/Guidance-on-Waste-Acceptance-Criteria-at-Authorised-Soil-Recovery-Facilities.pdf (accessed 26 August 2022)

Where appropriate, some materials, such as uncontaminated soil and stones, may be classified as a by-product (and not as a waste) in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*, as amended subject to meeting specific requirements as set out in the Regulations and guidance issued by the EPA[21]. A by-product classification on the excavated materials would permit the use of the material in non-waste licenced or permitted sites. Where contaminants are found (or where bitumen-based materials are present) the material will be classified as waste and will be removed from site to an appropriately licenced/permitted facility.

The main construction waste materials such as concrete rubble (including ceramics and bricks), metals, plastics, plasterboard, glass and wood are widely recyclable and will be segregated on site into separate skips insofar as is possible with the space available on-site. These materials will be transferred off-site using dedicated skip lorries to appropriate facilities.

Any WEEE generated will be stored separately (under cover if required) and transferred to suitable facilities for processing and onward recycling of components. Similarly, where possible, cardboard packaging will be segregated to maximise recycling potential off-site.

A mixed C&D waste skip will be required for non-recyclable wastes or where site constraints do not permit segregation into all of the above waste types. The appointed Waste Manager will monitor site segregation to ensure recyclable materials are placed in dedicated skips, where provided, and not placed in the mixed C&D waste skip. This material will be transferred off-site for processing and further removal of recoverable materials.

Off-site facilities for processing of C&D waste typically generate a 'fines' material which can be recovered as an engineering material in landfill facilities. The Waste Manager will liaise with the waste contractors to ensure maximum diversion of waste from disposal to landfill as per the targets set out in Section 2.

Hazardous waste will only be removed from site by waste contractors permitted to handle hazardous waste. Waste oils, resins and paints may be suitable for off-site recovery, and this will be explored with waste contractors.

6.0 RECORD KEEPING

Once a waste contractor(s) has been appointed, the Waste Manager will request copies of their waste collection permits which will be held on file at the site office. The waste collection permits must include an up-to-date list of approved vehicle registrations associated with the permit which can be spot checked by the Waste Manager.

The waste contractor will also be requested to identify where waste materials will be taken to, and copies of waste licences/permits for each facility will be requested to hold on file in the site office. The Waste Manager will confirm that the waste collection permits, and facility licences/permits are appropriate for the waste types proposed.

A waste log will be set up by the Waste Manager to record all outgoing waste movements from the site. The waste collection vehicle driver will be required to supply an individual signed waste docket (waster transfer form for hazardous waste) for each waste movement off-site which must specify the waste collection permit number, waste type, EWC code, waste treatment, source of the waste and waste destination. The docket provided by the driver may also include the weight of waste where the collection vehicle is equipped with a load cell, or the weight of

[21] EPA, *Guidance on classification and notification of soil and stone as a by-product* (2017)

waste is known. Alternatively, the weight of the waste may be determined from a weighbridge at the receiving facility and the weight of waste provided to the Waste Manager as soon as possible after receipt at the off-site facility. Regardless, the waste contractor must be able to provide an accurate measurement of the waste tonnage to the Waste Manager. The waste contractor will also be required to provide feedback on waste collected identifying the percentage of waste recovered and disposed of.

The waste log will be used to identify the main waste types being generated and can be linked to delivery records to identify the percentage of waste from incoming building materials. The Waste Manager will be able to analyse these records to improve efficiency and seek to reduce wastage. The Waste Manager can also use the information to determine the success of the project against the targets set out in Section 2.

7.0 TRAINING, RESPONSIBILITIES & AUDITING

The main contractor will include the waste management objectives outlined in Section 2 as part of the site induction for all new employees on the site. The importance of source segregation and maintaining a clean site will be highlighted and the locations of skips on the site will be provided.

The appointed Waste Manager will be trained in setting up the waste log and checking waste dockets as described in the previous section. The Waste Manager will also be given responsibility for providing toolbox talks on waste management, organising specific training where required and educating workers throughout the project. The Waste Manager will also liaise with SDCC to provide details on the waste facilities to be used and provide waste data as required. It is also beneficial for the Waste Manger to provide feedback on waste statistics to the project team on a regular basis to acknowledge good performance or identify areas for improvement.

The Waste Manager will be familiar with the content of this document and will ensure compliance with the measures set out herein for the duration of the project. Where appropriate, the Waste Manager may delegate responsibility to others for management of waste in particular areas of the site or may seek appointment of Waste Mangers for specific sub-contracts.

The Waste Manager will also establish an audit checklist to inspect skips and waste containers across the site and identify contamination of skips or other waste related issues which may arise. A review of waste records held for each movement of waste off-site will also be carried out. The waste log will be cross-checked with hard copy dockets and any missing details filled in. Depending on the nature of the wastes generated, the Waste Manager may also carry out an audit of the receiving waste facilities to confirm that the waste sent from the site is being treated as described on the waste dockets.

The costs associated with waste management will also be reviewed during the project and highlighted to the Project/Site Manager as to where savings can be made, if any. Typically, maximum on-site segregation of waste and reuse of material where appropriate reduces the costs associated with mixed C&D waste collection which is required to be processed off-site.

8.0 INTERACTIONS WITH OTHER BODIES

The Waste Manager will ensure coordination with relevant bodies throughout the project. This will include compliance with any construction traffic management requirements identified by the project team or imposed by SDCC.

The Waste Manager will provide details to SDCC on the destinations of waste materials from the site and will provide waste records to SDCC as required. The Site Manager contact details will also be provided to SDCC.

Appendix 3 – Construction Environmental Management Plan

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Business Solutions

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Greener Ideas Limited Profile Park

DOCUMENT NUMBER: OI29074-CBS-SW-XX-SP-HS-XX02

Version	Revision Date	Revision Description	Author	Reviewer(s)	Reviewer(s)	Approver	Approver
0			CP				

AUTHORIZATION PAGE

ORIGINATED BY:	**Print Name:** Colin Phelan	**Signature:**
POSITION:	EHS Manager	
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APPROVED BY (PROJECT) DIRECTOR:	**Print Name:**	**Signature:**
POSITION:		

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1.0 INTRODUCTION

Greener Ideas Limited (hereafter referred to as the Developer) has been approved for planning permission to develop a ca. 100 MW dual fuel gas fired power plant at a site located in Profile Park, Dublin 22.

The site of the proposed power plant is located in Profile Park, Dublin 22 which is approximately 3.15km west of Clondalkin town centre. Profile Park is a 100 acre (40.5 Ha) fully enclosed, private business park. The immediate area is predominantly commercial / industrial in nature. Outside of this, Grange Castle Golf Course is located approximately 120m east of the site and Baldonnel Aerodrome 450m south of the site. The nearest residential properties are located some 400m to the south of the site and some 450 m to the northeast.

Immediately adjacent to Profile Park is the Castlebaggot 110 / 220 kV substation which provides electrical transmission connectivity to the national electricity transmission grid system.

The electrical generator associated with the gas engines will connect to the main transformers where the voltage will be increased to 110 kV. Electrical power will then be exported via an underground cable from the plant's main transformers to an off-site electrical substation. The final route of connection is yet to be confirmed. Electrical power will be exported from the power plant's main transformers to the existing Castlebaggot 220 / 110 kV Substation which is operated by EirGrid or to a new proposed 110 kV substation in Profile Park.

It should be noted that planning permission is not sought for these connections as part of the power plant application to South Dublin County Council. Either Greener Ideas Limited or EirGrid will be responsible in the future for securing the necessary planning permission for these electrical connections. Similarly, in the event that Greener Ideas Limited and a data centre operator agree for a private power supply to be provided then this would also be subject to its own separate consenting process.

The planning application for the proposed development has been approved by South Dublin County Council (SDCC) under Section 34 of the Planning and Development Act 2000 (as amended). An Environmental Impact Assessment Report (EIAR) was prepared to accompany the planning application and incorporated all elements of the proposed project works including the main power plant site, the electrical grid connection. Collectively this is referred to as the Profile Park Power Plant.

This Construction Environmental Management Plan (CEMP) has been prepared to outline the proposed management and administration of site activities for the Construction Phase of the proposed development, to ensure that all construction activities are undertaken in an environmentally responsible manner. This CEMP summarises the environmental commitments of the construction project, and the measures to ensure compliance with legislation and the requirements of statutory bodies, all as detailed in the EIAR.

This CEMP will be a live document and will be reviewed and updated, as necessary. Upon appointment, the Main Contractor for construction of the proposed development shall update this document to produce a Final CEMP which will account for any additional requirements set out in Planning Conditions.

The following relevant guidance has been referenced in the preparation of this CEMP:

- Environmental Protection Agency (EPA), Guidelines on the Information to be contained in Environmental Impact Assessment Reports – Draft (August 2017)

1.1 Proposed Development

The proposed development will comprise the construction and installation of the following:

- Site Entrance
- Engine Hall, comprising up to 5 no. gas engines and 1 no. exhaust stack cluster with a flue tip height of 31.8m
- Electrical Annex Building
- Workshop Building
- Security Hut
- Radiator Coolers
- 110 kV Electrical Transformer(s)
- Gas AGI
- Tank Farm comprising:
  - 2 x Fuel Oil Storage Tank; ○ SCR reagent Tank; ○ Lube Oil Storage Tank; ○ Lube Oil Maintenance Tank; ○ Pilot Oil Tank; ○ Fire Water Storage Tank; ○ Cooling Water Run-Down Tank; ○ Surface Water Attenuation Tank ○ Bund wall, approximately 1.8m high
- Perimeter Fencing, approximately 3m high
- Car Park
- Landscape planting around perimeter of site.

The planning permission was approved for 10years, and the power plant is expected to be operational for at least 25 years from the date of commissioning. On cessation of activities, the plant will either be redeveloped as a power related facility, or the site will be redeveloped in an alternative form.

1.2 Scope of this CEMP

This CEMP addresses all relevant environmental aspects of the management of site preparation and construction work within the proposed development works area as set out in Section 1.1. The scope of this CEMP includes:

- All construction elements of the proposed development
- The proposed implementation and management of environmental controls and mitigation measures during each phase of construction works; and
- A documented process to ensure measures identified through the planning phase of the proposed development will be applied in practice.

This CEMP contains:

- A statement of the environmental aims and policy objectives of the proposed development
- Roles and responsibilities of key individuals
- Environmental management and reporting structure
- Site management and construction activity details

- Environmental mitigation measures
- Environmental awareness training programmes
- Environmental monitoring programmes and requirements
- Inspection and auditing programmes; and
- Emergency response plans and procedures for any environmental incidents.

This CEMP should be read in conjunction with the EIAR and supporting documentation. In the unlikely event of any contradiction between this CEMP and the EIAR, the EIAR shall take precedence.

1.3 Implementation of the CEMP

Key to the implementation of this CEMP is the delegation of responsibility for the CEMP to the Construction Environmental Manager/Safety, Health, Environmental and Quality (SHEQ) Officer, or other suitably qualified appointed person on behalf of the Contractor, who will regularly liaise with and update the Client on all environmental issues relating to the project during the construction phase. As part of the appointment of a Contractor and agreement of Contracts, the Developer will determine the lines of communication for environmental compliance with the local authorities and relevant stakeholders.

In terms of overall environmental responsibility, everyone on-site is responsible for ensuring that their actions constitute good environmental practice and will be provided with site specific information to ensure compliance as part of the site induction. All site personnel are charged with following good practice and encouraged to provide feedback and suggestions for improvements. All site personnel are also required to ensure compliance with the requirements of this CEMP and subsequent revisions thereof.

1.4 Aims and Objectives

The key project aims are:

- To ensure the project is undertaken in accordance with best practice guidance for the management of the environment during construction works
- To ensure that mitigation measures to protect all aspects of the environment as set out in the EIAR are put in place
- To ensure that construction activities are carried out in accordance with all planning conditions for the proposed development; and
- To carry out the proposed works with minimal impact on the environment.

The primary objectives to ensure the above aims are achieved during the construction phase are:

- Appointment and delegation of responsibility to an individual for monitoring environmental compliance and adherence to this CEMP
- Updating the Final CEMP on a continuous basis in accordance with regular environmental auditing and site inspections. This will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation
- Providing adequate environmental training and awareness to all project personnel
- Establishing documented schedules and records for monitoring and inspections
- Establishing reporting procedures for any incidents on site with potential to impact on the environment
- Providing opportunities for community feedback and submission of complaints; and
- Adopting a sustainable and socially responsible approach to construction.

1.5 Revisions of the CEMP

All the elements of this CEMP will be included in the final CEMP, which will be produced prior to construction by the contractor. In addition, the final CEMP will implement conditions attached to any planning permission granted. The final CEMP will be subject to ongoing review (throughout the construction phase of the proposed development), through regular environmental auditing and site inspections. This will confirm the efficacy and implementation of all relevant mitigationmeasures and commitments identified in the application documentation.

The appointed Contractor is required to include further details and/or confirmation in the final CEMP which will include:

- Details of emergency plan including personnel and contact numbers
- Details of fuel storage areas (including location and bunding)
- Construction lighting details
- Site and traffic signage and Method statements.

1.6 Environmental Training and Awareness

In order to ensure that environmental awareness and compliance is communicated effectively at the start and throughout the construction works, this CEMP and its contents will be communicated to all site personnel, including management staff, operatives and subcontractors. The key elements of this CEMP will form part of the site induction which will be mandatory for all employees, contractors and visitors attending the site.

Environmental toolbox talks will be provided to all site personnel and sub-consultants on a regular basis. These will be targeted at particularly sensitive environmental issues such as:

- Protection of sensitive ecological habitats and key ecological receptors
- Works close to water bodies
- Water pollution and silt control
- Water pollution in relation to cement and concrete handling
- Spill prevention and control
- Dust management
- Sensitive archaeological sites and Waste management.

2.0 OVERVIEW OF THE EXISTING SITE

2.1 Site Location

The site of the proposed power plant is located in Profile Park, Dublin 22 which is approximately 3.15km west of Clondalkin town centre. Profile Park is a 100 acre (40.5 Ha) fully enclosed, private business park, which has been developed to the highest of standards. It is easily accessible from the major arterial roads in the city including the M50, M7 and M4, and is served by excellent public transport links.

Within Profile Park the proposed power plant will be located on greenfield lands immediately adjacent to the existing Digital Realty data centre. Existing tenants within Profile Park and the surrounding business and enterprise parks include Google, Microsoft, Digital Realty Trust, Telecity and others.

The immediate area is predominantly commercial / industrial in nature. Outside of this, Grange Castle Golf Course is located approximately 120m east of the site and Baldonnel Aerodrome 450m south of the site. The nearest residential properties are located some 400m to the south of the site and some

450 m to the northeast. Grange Castle Golf Course is located approximately 120m east of the site and Baldonnel Aerodrome 450m south of the site.

Immediately adjacent to Profile Park is the Castlebaggot 110 / 220 kV substation which provides electrical transmission connectivity to the national electricity transmission grid system. Electrical power will be exported from the power plant's main transformers to the existing Castlebaggot 220 / 110 kV Substation which is operated by EirGrid or to a new proposed 110 kV substation in Profile Park.

2.2 Existing Land, Soils and Geological Environment

The site of the proposed power plant measures c. 2 ha and is predominantly covered by rough grassland, surrounded by industrial, commercial and transport units. Access is via the existing road network within Profile Park, located off the R134. Agricultural areas exist within 1km to the west and 0.5km south of the proposed site, with artificial surfaces less than 100m to the east defined as artificial non-agricultural vegetated areas, used primarily for the Grange Castle Club. Artificial surfaces associated with Casement Aerodrome, Baldonnel is located approximately 400 south of the proposed site.

The proposed electrical connection considered in this EIAR is an underground 110 kV cable from the plant's main transformers to either a new proposed 110 kV substation on adjacent lands to the immediate west of the power plant or the existing Castlebaggot 220 / 110 kV Substation. Natural gas will be delivered to the power plant via a new below ground pipeline from the existing gas network from an existing AGI compound close to the Nangor Road. In the case of both the electrical and the gas connection, these will both be situated in existing private and public roads.

The topography of the proposed power plant site can be described as mostly flat with elevations from c. 73 mAOD to 76 mAOD. The GSI data does not indicate there are any geomorphology features within the site boundary.

The bedrock geology on the GSI 1:100 000 map indicate that this site is underlain by Lucan Formation limestone. The regional bedrock geology covering the proposed site and grid/ gas connection is shown in Figure 8-4 and a description of the formation is presented in Table 8 1. of Chapter 8 (Land, Soils and Geology) of the EIAR.

The GSI database contain records of verified borehole logs, groundwater wells and springs within and close to the site of the proposed power plant. Bedrock exposures in the local area indicate strong to moderately strong, dark grey, fine grained, argillaceous limestones with minor calcareous shales.

A historical (currently inactive) quarry lies approximately 0.6km to the south of the southern site boundary. No active mineral or aggregate sources have been identified by GSI data within 2km of the site boundary.

The GSI online Aggregate Potential Mapping Database shows that the site is located within an area mapped as being typically Moderate in terms of crushed rock aggregate potential, with some areas of low to high potential. There are no significant mapped areas of granular aggregate potential (i.e., potential for gravel reserves).

According to the Geological Survey of Ireland Spatial Resources, there are no Irish Geological Heritage sites inside the site boundary. No geological heritage sites have been identified within 2km of the site boundary. Belgard Quarry, a large active quarry is located 2.15 km southeast of the proposed development. Belgard is the largest limestone quarry in the country and is excavating the Lucan Formation limestones. It is a designated County Geological Site (Site Code: SD002) of vital economic importance and of geological heritage significance.

The regional soils in this area, including the grid and gas connection, are shown in Figure 8-2. Based on mapping by the EPA this indicates that this site consists of 2 no. types of soil, namely:

BminPD – Basic deep poorly drained mineral
BminDW – Basic deep well drained mineral

The development area within the red line boundary is underlain mostly by basic deep poorly drained material

The dominant subsoil occurring in the region is classified as till. The site is underlain by till derived from limestone (TLS). Figure 8-3 Chapter 8 (Land, Soils and Geology) of the EIAR presents the regional subsoils in this area, including the area within the red line boundary and grid/gas connection.

The till, which is Quaternary in age, formed as an extensive envelope of the landscape in the area since deglaciation approximately 7,000 – 10,000 years ago. Based on the site walkover date the site is underlain by firm, brown and grey slightly gravelly silty clay with occasional cobbles and pieces of broken rock. Gravel is subangular to subrounded, fine to medium. Cobbles are subangular to subrounded.

A review of the EPA website for both existing and historic licensed and illegal waste activities was carried out to identify any potential contamination sources present in the area and to identify any potential contaminating activities near the proposed development. The desk study indicated that no waste facilities, illegal waste activities within a 2km radius of the proposed site. The has is a greenfield site with no previous development. No visual or olfactory evidence of contamination was noted during the site walkover.

A review of the landslide information on the GSI Irish Landslides Database indicate that there are no recorded landslide events within 2km, or within a wider context of 6km of the site. The site walkover conducted in May 2021 confirmed the site is generally very flat comprising topsoil underlain by firm glacial till.

2.3 Existing Hydrological and Hydrogeological Environment

The proposed power plant site is located within the River Liffey and Dublin Bay catchment, located within the National River Basin District and on a regional scale, the proposed development site is located within the Liffey sub catchments.

The River Liffey and Dublin Bay catchment includes the area drained by the River Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point, Co. Dublin, draining a total area of 1,616km^2. The largest urban centre in the catchment is Dublin City. The other main urban centres are Dun Laoghaire, Lucan, Clonee, Dunboyne, Leixlip, Maynooth, Kilcock, Celbridge, Newcastle, Rathcoole, Clane, Kill, Sallins, Johnstown, Naas, Newbridge, Athgarvan, Kilcullen and Blessington. The total population of the catchment is approximately 1,255,000.

The River Liffey rises on the western slopes of Tonduff in the Wicklow Mountains, from where it flows west, before being joined by the Brittas River from the north and then flowing into the northern end of Pollaphuca Reservoir (created by the ESB in the 1930s). The Liffey flows out of the reservoir through the Pollaphuca generating station and into the lower reservoir and generating station at Golden Falls. The Liffey then flows west though Kilcullen before flowing through Newbridge, then past Sallins and Clane, after which it is joined by the Morell from the south.

The Liffey continues through Celbridge to Leixlip, before which it flows into Leixlip reservoir and generating station. The Liffey then enters a steep-sided valley, through which it flows past Islandbridge, where the river becomes tidal, and through the centre of Dublin City.

The main regional surface water features include the Griffeen River (located approximately 1km northwest of the development) and the Liffey River (located approximately 4.5km north of the development). The regional natural surface water drainage pattern, in the environs of the site is presented in Figure 9-1 'Regional Catchment Delineation Overview' of Chapter 9 (Hydrology and Hydrogeology) of the EIAR.

The Baldonnell Stream (IE_EA_09L012100) is located within the site boundary. The EPA maps show the stream to run through the central portion of the proposed development in a north south orientation. The Baldonnell Stream joins the Griffeen River (IE_EA_09L012100) approximately 1.3km downstream from the proposed power plant The Griffeen River then joins the Liffey River (IE_EA_09L012350) at Lucan, located 4.8km north of and downstream from the proposed power plant.

The neighbouring data centre site has diverted the upstream section of Baldonnell Stream where it has been culverted under their site before it enters a 'V-Shaped' channel within the proposed development. The diverted stream enters the proposed development at the south-eastern corner, where it continues to flow northwards along the 'V-shaped' channel which has steep grassy banks up to 3m in height. The Baldonnell Stream follows the development site's eastern boundary before it is culverted beneath the existing road through a concrete circular culvert measuring approximately 1m in diameter. The Baldonnell Stream is 0.3 to 0.6m in width with water depths averaging at 0.2m in the winter period, the flow was mostly gentle, and the substrate varied from clayey cobbles to silt.

Minor surface water ponding occurs on the site. The surface water ponding is considered to be seasonal and mainly associated with periods of heavy, prolonged and intense rainfall. The ponding form as a result of acceptance of drainage from the adjacent site and of natural attenuation of rain. The ponding has minor connectivity with the Baldonnell Stream (EPA name, IE_EA_09L012100) through the small drainage pipe located at the south-eastern corner of the proposed site.

2.4 Existing Ecological Environment

This section presents a high-level summary of the existing ecological environment at the proposed development site. A more detailed description of desktop studies, field studies and species encountered is provided in Chapter 12 (Biodiversity) of the EIAR.

2.4.1 Designated Areas

Nine European sites (six SACs and three SPAs) occur within 15km of the proposed development site and are listed in Chapter 12 (Biodiversity) of the EIAR. The European sites; North Dublin Bay SAC, South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA are hydrologically to the proposed development site via the Baldonnell Stream, Grifeen River and River Liffey (hydrological route ca. 25km). North Bull Island SPA occurs 18km from the proposed power plant but is also hydrologically connected to the proposed development site via the Baldonnell Stream, Grifeen River and River Liffey (hydrological route ca. 25km).

There are no Natural Heritage Areas (NHAs) located within 15km of the proposed power plant. Sixteen proposed NHAs (pNHAs) occur within 15km of the proposed development site and are listed in Table 12-4 of Chapter 12 (Biodiversity) of the EIAR. Three pNHAs; North Dublin Bay pNHA, South Dublin Bay pNHA and Dolphin Docks pNHA are all hydrologically connected to the proposed development site via the Baldonnell Stream, Grifeen River and River Liffey (hydrological route ca. 25km).

Other sites of natura conservation within 15km of the proposed power plant site are a wildfowl Sanctuary; Brittas Bay (WFS-18), which is located ca. 8km to the south.

2.4.2 Habitats

The Baldonnell Stream which occurs along the northern and north-eastern boundary of the site is a depositing/lowland watercourse (FW2). The watercourse flows in a north-westerly direction before discharging into the Grifeen River located approximately 2km downstream of the proposed development site.

The stream has been heavily modified and is culverted to the south of the site for a small section underneath the adjacent development, Digital Realty Profile Park, and is also culverted underneath the road located immediately north of the proposed development site and again underneath Profile Park Road located approximately 165m north of the proposed development site. The stream substrates consist of fine sediment (70%) with some small pebbles (30%) present in areas. The stream is heavily vegetated with mats of watercress (Nasturtium officinale) and brooklime (Veronica beccabunga). The flow of the stream is slow.

The proposed power plant site currently comprises wet grassland (GS4). Species present within the grassland includes abundant soft rush (Juncus effusus), ribwort plantain (Plantago lanceolata), white clover (Trifolium repens), silverweed (Potentilla anserina), meadowsweet (Filipendula ulmaria), with occasional self-heal (prunella vulgaris), cuckoo flower (Cardamine pratensis), horsetail (Equisetum spp.) and immature willow trees (Salix spp.). Carpets of Sphagnum magellanicum are present in areas within the grassland. Despite the number of species recorded, the grassland is considered to have a relatively low species diversity. The wet grassland has an uneven surface which suggests the habitat has previously been disturbed. In lower areas of the habitat, small pools of standing water are present.

Neutral grassland (GS1) occurs to the south-western boundary of the proposed development site. Species recorded included common bent (Argrostis capillaris), Yorkshire fog (Holcus lanatus), ribwort plantain (Plantago lanceolata), white clover, Lady's bedstraw (Galium verum) with occasional selfheal (Prunella vulgaris), bramble (Rubus fructicosus), and gorse (Ulex europaeus). There is evidence that the grassland is grazed lightly by horses.

A hedgerow comprising hawthorn (Crataegus monogyna) occurs along the southern outer boundary of the proposed development site.

A treeline of ornamental copper beech trees (Fagus sylvatica) occurs approximately 20m northeast of the proposed development site. All trees within the treeline were assessed as having 'Negligible' bat roost potential as per Collins (2016) due to the lack of any suitable features present.

A comprehensive description of the existing habitats encountered at the site is provided in Section 12.3.2.1 of Chapter 12 (Biodiversity) of the EIAR.

2.4.3 Flora

No plant species listed under the Flora Protection Order or habitats protected under the Habitat Directive were recorded within the footprint of the proposed development site during the surveys.

In addition, no invasive plant species listed in the Third Schedule of S.I No. 477 of 2011, European Communities (Bird and Natural Habitats) Regulations 2011 were identified within the proposed development site during the surveys.

2.4.4 Bats

No bat roost features were recorded within the proposed development site. There are no trees, hedgerows or structures present within the proposed development site. A number of beech trees were recorded along the outer boundary of the site. All trees were assessed as having 'Negligible' bat roost potential due to the lack of any suitable features.

A manual, dusk, activity survey was undertaken at the proposed development site on the 13th of April 2021. A total of three species of bat were detected during transect surveys – Common pipistrelle, Lesser noctule and Soprano pipistrelle.

Records of bat activity within the proposed development site were considered relatively low. Only seven bat activity events were recorded during the survey. The low levels of activity are likely due to the existing illumination within the site and limited linear features.

Further details of the survey results are provided in the EIAR.

2.4.5 Other Fauna

No evidence of badger, including their setts, were recorded within the proposed development site boundary, or within 150m of the development site. There are no hedgerows, treelines or embankments present within the proposed development site which are the favoured habitat for the establishment of setts by badgers (Smal, 1995 & Byrne et al., 2012).

A small patch of woodland was recorded to the south of the existing AGI Gas Station, approximately 10m south of the proposed gas line route. No evidence of badger activity was recorded within the woodland. Despite the lack of evidence recorded, there is potential that badger may forage within the area due the availability of suitable forage habitat.

An otter survey was undertaken along the Baldonnell Stream, 150m upstream and downstream of the proposed development site. No evidence of otter or their resting or breeding sites were recorded during the survey. Otter are unlikely to commute and forage along the section of the Baldonnell Stream located adjacent to the site due to the highly modified nature of the watercourse and the large sections of culverts present both upstream and downstream of the proposed development site.

There is potential however that otter may occur further downstream. The desktop assessment indicated that historic records of otter have previously been recorded further downstream within the Baldonnell Stream, Grifeen River and in proximity to the Grand Canal. In addition, Scott Cawley in 2020 recorded an otter swimming in the Baldonnell Stream at a location approximately 600m north-west of the proposed development site.

There is potential that the proposed development site may support smaller protected mammal species such as hedgehog, pygmy shrew, Irish stoat and Irish hare. No evidence of the above listed species, or any other protected mammal species were recorded during the field surveys. However, the grassland habitats within the proposed development site provides suitable foraging habitat for these species.

Evidence of fox, which included tracks and scat, were recorded within the proposed development site on a number of occasions. Fox are not currently protected under National law, however there is an obligation to protect biodiversity within Ireland under the Convention on Biological Diversity.

Although no frogs or their spawn were recorded during the surveys, both the Baldonnell Stream and the large pools of standing water present within the wet grassland habitat are likely to provide suitable habitat for the protected amphibian species.

No suitable habitat to support common lizard or smooth newt was recorded within the proposed development site. The small ponds of standing water were deemed too shallow to support smooth newts, as the species generally utilises ponds with a depth of 0.5-1m.

2.4.6 Aquatic Species

The Baldonnell Stream was assessed as having no suitable habitat to support protected fish species, white-clawed crayfish or lamprey species. The stream at this location was assessed as having low fisheries value due to the heavily modified nature of the watercourse, the presence of culverts and the high levels of sedimentation present.

Further downstream however, within the Grifeen River, the fish species; three-spined stickleback, brown trout, roach and eel are known to occur.

A total of four fish species were recorded in the 'Grifeen Avenue' site which included three spined stickleback (Gasterosteus aculeatus), brown trout (Salmo trutta), roach (Rutilus rutilus) and eel (Anguilla Anguilla). Only one fish species, three-spined stickleback, was recorded at the 'Grange Castle' site.

2.4.7 Ornithology

The proposed development site and the surrounding habitat supports a variety of wintering and breeding bird species at a local level.

A single winter bird survey was undertaken on 25th of January 2021 and a breeding bird survey was undertaken on the 13th April 2021. A total of 10 bird species were recorded during the surveys and detailed in Table 12-8 of Chapter 12 (Biodiversity) of the EIAR.

The majority of species recorded during the survey are common species typically found within agricultural grasslands and are listed as having Green Conservation Status (Low Conservation Concern). Snipe and lapwing are currently listed as having Red Conservation Status (High Conservation Concern).

The snipe were recorded foraging in the small standing pools during both the winter and summer survey. It's likely that the snipe are also roosting within the site as the species was heard calling during the dusk bat surveys.

The pair of lapwing were confirmed to be breeding within the site due to the recording of a nest. The nest was located just outside the north-western boundary of the proposed development site.

A wood pigeon's (Columba palumbus) nest was recorded within the hedgerow during the survey.

3.0 DESCRIPTION OF CONSTRUCTION WORKS

3.1 Overview

It is expected that construction will commence in 2022 with design, construction, and commissioning activities lasting for approximately 20 months. The plant is expected to be fully operational in 2024 subject to timely receipt of the necessary statutory consents.

Construction activities will gradually phase out from pre-construction to predominantly civil activities followed by installation, commissioning and testing of the proposed power plant and equipment.

3.2 Pre-Construction

The pre-construction phase of development includes preparatory works (i.e., post planning surveys and reporting) and consultation with statutory bodies and the public.

Prior to the commencement of construction activities, the area for development will be fenced off.

Following this process, site clearance activities will commence. Typical activities will include preparation of the construction working area and topsoil stripping. The footprint of the proposed power plant will require clearing and levelling to 74.8 AOD. Preliminary volume calculations provide an approximate estimation of stone fill required for all of the hardstanding foundations of 8,500m³. All vegetation clearance that is required during construction works will commence outside the breeding birds season, which runs from the 1st of March to the 31st of August. In the event that clearance of vegetation is required within the bird nesting season, vegetation will be first surveyed by an experienced ecologist to identify the presence of active nests. The survey will specifically target ground nesting birds including lapwing and snipe. Only vegetation confirmed to be nest free may be cleared. In the event that a nest is confirmed as present, the nest will either be removed under license obtained from NPWS or the nest will be cordoned off until the chicks have fledged or until nesting has failed.

A method statement for soils and soil stripping will be included in the final CEMP and will set out:

- The intended soil stripping depth.
- Options for separating and keeping different soils apart.
- Methods for handling soil.
- The location and height of soil storage mounds and how long they will be present; and Proposals for reinstating or disposing of soils.

Mobilisation will include the putting in place of staff, temporary facilities, plant and equipment, materials, and systems for construction.

A temporary contractor's compound will be erected on site for the duration of the construction works and will include temporary site offices (portacabins), staff welfare facilities, car parking, and equipment laydown areas.

Training in health and safety will be provided for all staff during the mobilisation period, and all staff will be required to hold SAFEPASS or equivalent certification.

The main tasks to be completed in line with the above phases are:

3.3 Civil and Plant Construction Works:

Concrete pouring and filling will be fully controlled to ensure that cement bound materials do not present any pollution risk. All concrete pouring and filing will be supervised and monitored.

Trucks, mixers, and concrete pumps that have contained concrete will be washed out in a designated impermeable area to prevent pollution. Where possible, washout water will be stored and re-used.

A Construction Traffic Management Plan (CTMP) will be prepared in consultation with South Dublin County Council in advance of the construction phase of development in order to ensure safe movements and interactions between vehicles and pedestrians, both on and adjacent to the site. The CTMP will cover all expected work activities, delivery and storage areas, and shall be expanded and / or amended to cover new or altered activities as they arise. The main components of the CTMP will be:

- Description and scope.
- Staging of the works.
- Traffic control during construction.
- Trucks movements to the site.
- Road signs for full and partial road closure.
- Parking for workers and subcontractors.
- Pedestrian safety.
- Site traffic management supervisor; and
- Abnormal load (i.e., for transformers/engines) and associated permit applications applied for and secured from/by South Dublin County Council in advance of abnormal load delivery to site.

The CTMP will also provide for the requirement that entrances and roads are kept clean and clear of obstructions to prevent the spillage or deposit of clay, rubble, or other debris on the entrance and other roads throughout the contract period.

3.4 Construction Hours

The proposed general construction hours are 07:00 to 18:00hrs, Monday to Friday and 08:00 to 14:00 on Saturday with no heavy construction vehicles/plant in operation as per planning approval requirements. Occasional weekday evening works may also be required; however evening activities will be significantly reduced in order to manage any associated noise impacts in an appropriate manner and more stringent construction noise criteria will be applicable during any evening works that may be required. As a result, noise emissions from evening activities are expected to be significantly lower than for other general daytime activities.

3.5 Employment

It is anticipated that approximately 50 persons will be directly employed during peak construction activities.

3.6 Summary of Key Project Elements

3.6.1 Engine Hall and Electrical Annex Buildings

The primary engine hall building will include up to 5 no. dual fuel gas engines and supporting generating equipment.

The engine is rigidly mounted on a steel frame, acting as the lubricating oil service tank, which is resiliently seated on a simple concrete foundation by spring isolators. The alternator is connected to the engine by a flexible coupling, rigidly mounted and grouted onto a separate and elevated concrete foundation.

The engines will each have an exhaust flue which will connect into a single stack cluster located directly adjacent to the engine hall. The stack will be a steel structure with high quality cladding and will have a height (flue tip height) of 31.8m.

The electrical annex building will be located adjacent to the main powerhouse. the electrical annex will contain the compressor room, cable rooms, switch rooms, station transformers, Control Room and messing facilities.

Figure 3-2

3.6.2 Workshop Building and Security Hut

The Workshop building will include a water treatment room, fire equipment room, and fuel pump and pilot oil treatment room. A security hut will also be provided.

3.6.3 Radiator Coolers

The engines are cooled with a closed-loop, radiator cooling water system. The system consists of a high temperature circuit and a low temperature circuit. Air is drawn through the radiator coolers by fans driven with variable speed electrical motors.

3.6.4 110kV Electrical Transformer(s)

The electrical generator associated with the gas engines will connect to the main transformers where the voltage will be increased to 110 kV. Electrical power will be exported from the power plant's main transformers to the existing Castlebaggot 220 / 110 kV Substation which is operated by EirGrid or to a new proposed 110 kV substation in Profile Park. No confirmed details of this potential new substation were available for consideration as part of this EIAR.

3.6.5 Above Ground Gas Installation

On site there will be a dedicated Above Ground Installation (AGI) gas compound where the incoming gas supply pressure will be reduced prior to its use in the gas engines. Natural gas will be delivered to the power plant via a new below ground pipeline from the existing gas network. It is envisaged following on from consultations with Gas Networks Ireland that this connection will be via a new spur from the existing national gas transmission network which has an existing AGI compound close to the Nangor Road approximately 1km to the north of the proposed power plant.

3.6.6 Tank Farm

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. The height of the bund wall will be 1.8m.

The bulk tank will be fitted with a high-level alarm to prevent overfilling. There will be a dedicated tanker unloading area surrounded by a drainage channel which will drain to a petrol interceptor. This separator will provide for full retention of any material in the event of a rupture and spillage of a tanker compartment. A shut-off device incorporated into the separator will close the outlet in the event of its capacity being exceeded.

A tank will be installed for the purpose of emission control for NOX (NO and NO2). The tank will have a volume of a volume of approximately 26m³.

In addition, a tank of approximately 26m3 is required on site to contain sufficient oil to refill an engine after an oil change.

A lubricating oil run-down tank will be used to hold the engine oil while maintenance work on the engine is being carried out. A tank with a volume of 26m3 will be installed.

A pilot oil tank will be installed 26m³.

3.6.7 Utilities and Services

- Water Usage

Water usage requirements for the proposed power plant will be required for potable water used for domestic purposes (drinking water, toilets etc.) and for fire-fighting purposes. Water supply for the proposed power plant will be taken from the public water mains which is located immediately adjacent to the site. Water for fire-fighting purposes will be stored in a tank with a volume of 1000m³.

(a) All works shall comply with the Irish Water Standard Details and Code of Practice for Water Infrastructure.
(b) All works shall comply with the Irish Water Standard Details and Code of Practice for Waste Water Infrastructure.

Wastewater infrastructure required will involve connection to existing foul wastewater infrastructure adjacent to the site.

- Surface Water Drainage

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 Baldonnel steam adjacent to the site.

As part of the surface water drainage design strategy, the following items have been included in order to effectively manage surface water at the site:

- Surface Water Pumps in Duty/Standby Arrangement – A standard duty/standby arrangement including high level alarms, float switches, and associated telemetry will be provided.
  Petrol Interceptor – Full retention petrol interceptors have been included in the surface water collection system on a precautionary basis. The full retention petrol interceptors will be fitted with visual and audible alarms to ensure containment facilities are adequately maintained. In addition, this alarm will be linked to telemetry facilities such that relevant staff will be alerted if oil is detected at trigger levels; and
- Down Pipes/Gullies – It is proposed that surface water will be collected from roofed buildings via standard rainwater down pipes while runoff from un-roofed structures will drain to the access roads where it will enter the drainage network via road gullies. It is also proposed that gullies and drain entry points will incorporate silt traps to remove any grit or silt which may be washed into the drainage system.
- Flow Control Device – It is proposed to limit the surface water runoff from the site to be similar to the Greenfield runoff as per the requirements of the Great Dublin Strategic Drainage Study. It is proposed to install a Hydrobrake downstream of an attenuation tank to limit the flow from the site to 4.1l/s.
- Attenuation Tank – it is proposed to attenuate all storm water accumulated on site within an underground attenuation tank, which will be discharged to the Baldonnel stream via a Hydrobrake.
- Swale – it is proposed to install a swale to collect runoff from the adjacent Northeast Road. The water once permeated into the swale will be directed towards the surface water drainage infrastructure via a perforated pipe and above ground falls. The swale will also slow the surface water at source, increase the quality of water which is intercepted by the system through infiltration, biodegradation and pollutant settlement.
- Permeable Paving – It is proposed to install permeable paving within the car parking areas of the site. The water once permeated into the pavement will be directed towards the surface water drainage infrastructure via a perforated pipe and above ground falls. The permeable

paving will also slow the surface water at source, increase the quality of water which is intercepted by the system through infiltration, biodegradation and pollutant settlement.

- Infiltration Basin – It is proposed to install an infiltration basin within the site to allow for surface water collected from the southern end of the site to infiltrate into the ground water. The infiltration basin will also be provided with a perforated overflow pipe to direct the excess surface water to the attenuation tank during heavier rainfall events.

➢ Foul Wastewater Drainage

Domestic type wastewater effluent will be generated on site. It is estimated that at any one time, there will be no more than 12 personnel on site, i.e., the maximum number of people on site at any given time for testing, maintenance, site meetings etc. An approximate volume of 0.1157 l/sec of domestic type wastewater was identified as the maximum domestic wastewater flow which may be generated on site. Wastewater will be pumped to the existing foul sewer in Profile Park which is directly adjacent to the site. Irish Water has confirmed via its 'Pre-connections Enquiry' process that the above water wastewater volume can be facilitated through the existing network (IW reference: CDS21002228).

➢ Process Wastewaters

There will be no process wastewater generated from the power plant.

(a) There shall be complete separation of the foul and surface water drainage systems, both in respect of installation and use.
(b) All new precast surface water manholes shall have a minimum thickness surround of 150mm Concrete Class B.
(c) All works for this development shall comply with the requirements of the Greater Dublin Regional Code of Practice for Drainage Works.

➢ Lighting

Emergency lighting will be provided throughout the building in accordance with BS 5266-1 Emergency lighting. Code of practice for the emergency lighting of premises.

The escape lighting will be sited to provide an appropriate luminance near each door exit door and where it is necessary to emphasise potential danger or safety equipment. The following bullet points indicate:

- At each exit door intended to be used in an emergency.
- Near stairs so that each flight of stairs receives direct light.
- Near any other change in level.
- Mandatory emergency exits and safety signs.
- At each change of direction.
- At each intersection of corridors.
- Outside and near to each final exit.
- Near each first aid post.
- Near each piece of firefighting equipment and call point; and within all stair cores.

It should also be noted that a Lighting Plan will be undertaken during the detailed design of the power plant to ensure there are no vertical spill or glare issues on neighbouring residential or commercial properties. This lighting plan will be designed in accordance with the International Standard IS EN 13201-2:2015 (Road Lighting).

3.6.8 Security Fencing

A 1.8m palisade fence will be constructed along the perimeter of the proposed power plant site.

3.6.9 Internal Underground Cabling & Grid Connection

The electrical generator associated with the gas engines will connect to the main transformers where the voltage will be increased to 110 kV. Electrical power will then be exported via an underground cable from the plant's main transformers to an off-site electrical substation. The final route of connection is yet to be confirmed. Electrical power will be exported from the power plant's main transformers to the existing Castlebaggot 220 / 110 kV Substation which is operated by EirGrid or to a new proposed 110 kV substation in Profile Park.

It should be noted that planning permission is not sought for these connections as part of the power plant application to South Dublin County Council. Either Greener Ideas Limited or EirGrid will be responsible in the future for securing the necessary planning permission for these electrical connections. Similarly, in the event that Greener Ideas Limited and a data centre operator agree for a private power supply to be provided then this would also be subject to its own separate consenting process.

All public services to the proposed development, including electrical, information and communications technology (ICT) telephone and street lighting cables and equipment shall be located underground throughout the entire site.

3.6.10 Decommissioning

The power plant is expected to be operational for at least 25 years. On cessation of activities, the plant will either be redeveloped as a power related facility, or the site will be redeveloped in an alternative form.

In the event that the facility is decommissioned, the following programme will be implemented:

- 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 and the site, and all associated buildings will be secured.
- Waste will be recycled wherever possible.
- All waste movement, recycling, and disposal operations will be controlled by licensed waste contractors.

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.

3.7 Roles and Responsibilities

An indicative organisational chart is provided below which identifies the typical roles and associated responsibilities for the construction of the proposed development. This will be subject to specific contractual agreements upon appointment of a Main Contractor and any additional/further appointments required in compliance with a grant of permission.

The Project Manager will have overall responsibility for environmental management and compliance during the construction works. He/she will be supported in this role by an SHEQ Officer, or Environmental Officer as appropriate, who will liaise directly with the relevant regulatory bodies and stakeholders throughout the construction phase. Additional specialist input will be included from an ecological clerk of works, archaeologist or other disciplines as required.

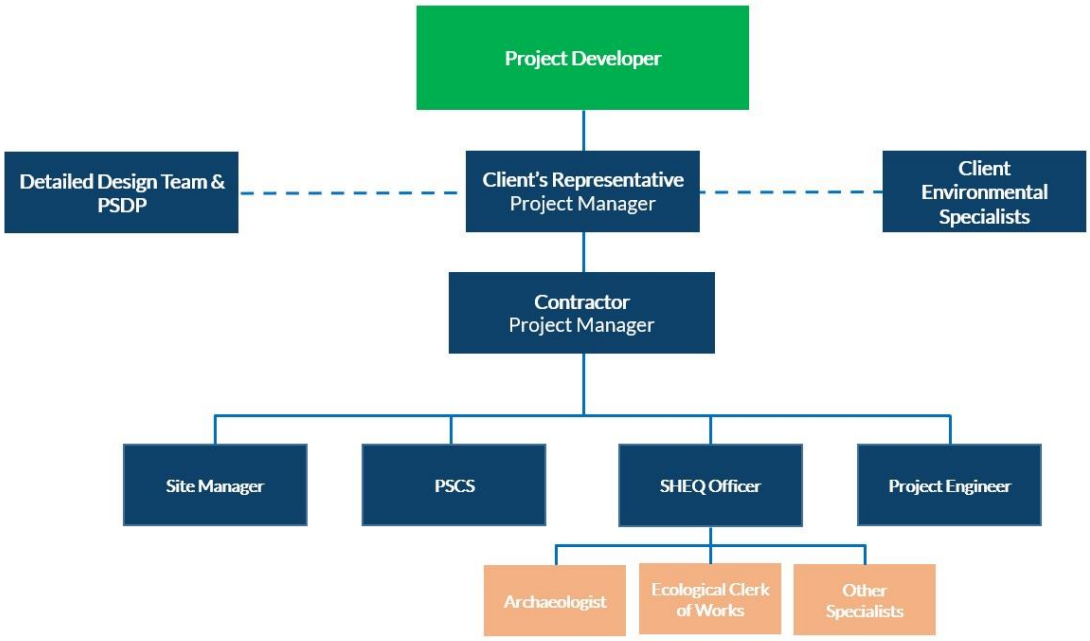


Figure 3-4

3.8 Consents, Licences, Notifications and Permissions

The key consents, licences, notifications and permissions which may be required for the project are summarised as:

- Planning permission and associated planning compliance;
- Commission for Regulation of Utilities (CRU) Authorisation and Licence to Generate.
- A Commencement Notice for Development will be lodged with the Building Control Authority (BCA) via the online Building Control Management System (BCMS) not less than 14 days and not more than 28 days before development works commence on site.
- Road opening licences for underground cable works.
- 30-day prior notification to the Irish Aviation Authority (IAA) and Department of Defence ahead of crane erection works.
- Industrial Emissions Licence from the Environmental Protection Agency (EPA) for the operation of the proposed power plant and a GHG Permit from the EPA will be required

The above list is non-exhaustive but identifies the key consents, licenses, notifications and permissions required for the project. This list will be further populated as required through planning compliance and stakeholder engagement to ensure that any further consents are identified as early as possible and do not impact on the construction programme.

Additional method statement and monitoring programme submissions may be required by the Local Authority as part of the grant of planning.

4.0 CONTRACTOR FACILITIES, SAFETY AND SITE SECURITY

4.1 Construction Compound and Facilities

At the commencement of the construction phase, a temporary compound area will be located within the development site to provide office space, welfare facilities, car parking and material laydown areas. This compound will be relocated within the site over the duration of the construction works, as required. Discussions with neighbouring facilities are ongoing for alternative car parking spaces during the construction works.

The compound will consist of temporary porta-cabins constructed on unbound, levelled hardcore aggregate. Soil covering will be stripped within the compound areas and stockpiled locally for reuse. Broken stone and appropriate capping aggregate will be used to create a base for the welfare facilities as well as a suitable surface for material lay-down areas and car parking.

The construction compound will be secured by means of a chain-link fence on timber posts which will be approximately 3m in height. There will be one access gate which will be secured and controlled by the Contractor. A combination of bottled water, tankered water supply and rainwater harvesting will be used to supply water for the welfare facilities in the compound during the construction works. Rainwater harvesting will be utilised to supplement the water supply for non-potable uses. Wastewater generated at the welfare facilities in the construction compound will be managed by means of a temporary sealed storage tank, with all wastewater being tankered off-site by a permitted waste collector to a wastewater treatment plant. The proposed temporary wastewater storage tanks will be fitted with an automated alarm system that will provide sufficient notice that the tank requires emptying.

Fuels, oils, lubricants and other hazardous liquids required for maintenance of equipment during the construction phase will be stored on a dedicated impermeable storage platform in the compound. This area will be away from drains and open water and will be easily accessible for machinery to refuel and to accommodate fuel deliveries to site. Fuel containers will be stored within additional secondary containment e.g., bund for static tanks or drip trays for smaller mobile containers. A fuel bowser, used for refuelling equipment on-site where off-site refuelling is not possible, will be stored in the compound area on a dedicated storage platform. Whenever possible, this bowser will be refilled off-site and brought to site for on-site refuelling. 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.

A temporary self-contained wheel wash will be installed on the site access road to minimise the transfer of dirt and dust from the site onto the public road and to minimise the potential for transfer of alien invasive species onto the site. A system which utilises recirculated wash water will be used to minimise raw water consumption for washing activities. The wheel wash will be emptied on a regular basis in accordance with supplier recommendations and the nature of soiling on vehicles, with the collected material being removed off-site as waste material.

A road sweeper will be available if any section of the surrounding roads become soiled by vehicles associated with the proposed development.

4.2 Safety and Security

All activities carried out by the appointed Contractor on the proposed development will be in accordance with the requirements of the Safety, Health and Welfare at Work Act 2005 as amended and Regulations made under this Act.

The scale and scope of the proposed development will require the appointment of a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) in accordance with the provisions of the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2103), as amended. These persons will be appointed by the Developer and notified to the Health and Safety Authority (HSA) prior to commencement of detailed design works (in the case of the PSDP) and prior to commencement of construction (in the case of the PSCS). The PSDP will prepare a Preliminary Health and Safety (H&S) Plan which will identify any particular risks, residual risks and particular sequences of work that are envisaged during the design of the works.

Prior to commencement of construction, this Preliminary H&S Plan will be provided to the Contractor and the PSCS will further develop the document to prepare a Construction Stage H&S Plan addressing all aspects of the construction process and providing relevant contact details and emergency response procedures for the project. This H&S Plan will be developed at the procurement stage and developed further at construction stage to the satisfaction of the Developer. The H&S Plan will identify the potential safety hazards associated with the site and the works and assess the associated risks. Mitigation and control measures will be implemented to minimise the identified risks.

Evidence of completion of construction safety training, typically in the form of a Safe pass Card, will be required for all construction personnel prior to commencing on site. A record of Safe pass Cards and personnel approved for entrance to site will be completed as part of a site induction process. The Contractor's H&S Plan will detail the site induction and access requirements. Where relevant, equipment operators or specialist works will require personnel to hold a valid Construction Skills Scheme Card. All equipment and machinery used on site will be appropriately certified for its intended purposes. The Developer will ensure that only competent contractors are appointed to carry out the construction works on the site.

Public safety will be addressed by restricting site access during construction works and the erection of security fencing as appropriate at construction works areas. Each of the proposed sites within the park has a pre-constructed access with a bellmouth width of approx. 20m to cater for all vehicle types. The entrance to the proposed plant site will be controlled by the Contractor. All traffic to Profile Park originates from the R134 New Nangor Road to the North and construction vehicle access to the site will be via this route. The site entrance gates will be securely locked outside of construction hours to prevent unauthorised entry and will be monitored during construction hours to regulate access to the site for authorised personnel.

4.3 Signage

Warning signs will be erected at the construction works areas clearly stating that construction works are underway. A notice board will be erected at the site entrance and at the construction compound gates with information on the contact details for site management, PPE requirements for the site and any other information deemed necessary in accordance with the H&S Plan.

Advanced warning signs will be required within Profile Park on the approach to the main site access from both directions indicating its use as for Construction traffic. Signage will be erected on both sides of the adjacent roadway both north and south of the site entrance location to warn approaching vehicles of the construction site entrance location and the potential presence of slow-moving vehicles. Prior to exit from the site signage will be erected directing construction traffic to the approved construction route.

Specifically, with regards to cyclists, it is not proposed to divert cyclists from their current routes as a result of the construction phase of the development as the cyclists will be able to maintain the current arrangements within Profile Park. The existing main access to the site has fully developed segregated facilities for cyclists and shall be maintained throughout the duration of construction. Signage will need

to be erected informing all construction traffic of the likelihood of cyclists crossing the access point throughout.

Road signage on the public road will be in accordance with the current Traffic Signs Manual[1] Chapter 8 and associated best practice guidelines. Signage in respect of traffic management is discussed in the TMP in Appendix B and will be in accordance with the Local Authority recommendations and relevant planning conditions. Within the site, maximum speed signage will be erected along the access roads for construction vehicles and health and safety signage will be erected at excavation, or other areas of increased risk, are occurring. Signage will also be erected as a reminder to concrete delivery drivers that concrete truck wash-out is not permitted on-site and identifying the area(s) where concrete chute wash-out is permitted.

No advertising sign(s) or structure(s) (including any signs installed to be visible through windows), banners, canopies, flags, or other projecting elements shall be erected except those, which are exempted development, without the prior approval of the Planning Authority or An Bord Pleanála on appeal.

Figure 4-1 Indicative Safety Signage (Source: safetysigns.ie)

4.4 Emergency Response Plan

The Contractor will be responsible for developing a detailed Emergency Response Plan (ERP) for the proposed works, to cover health and safety emergencies as well as environmental emergencies, as part of the H&S Plan. This ERP shall be activated in the event of an emergency such as an accident, fire, spillage, collapse etc. and will provide details on who is required to be notified, first aid facilities and closest hospitals. The ERP will also include details of all personnel inducted and authorised to work on the site as well as next of kin contact details and relevant medical information.

In the event of an emergency, the SHEQ Officer and Project Manager will be notified immediately and will determine the scale of the emergency and the requirement for the assistance of emergency services. Works will cease in the area of the incident and contact will be maintained with the emergency services to direct them to the scene of the incident as required.

As part of the ERP, an evacuation drill will be carried out on a regular basis to make all personnel aware of the procedure to be followed in the event of an emergency where a full site evacuation is required. Emergency muster point(s) will be identified at suitable locations in the construction compounds and the ERP will outline the persons responsible for checking names at the safety muster points. Records will be maintained of such drills.

The ERP must include contact names and telephone numbers for the relevant local authorities (all sections/departments) including ambulance, fire brigade, An Garda Siochána and the HSA. Reporting

of environmental emergencies to the local authority will be required as well as other relevant stakeholders such as IFI, NPWS or the EPA.
Further information relating to the management of spills or leaks is provided in Section 4.6 and the procedure for responding to a health and safety or environmental incident is outlined in Section 4.7

4.5 Fuels and Oils Management

Construction vehicles will be refuelled off-site, wherever possible. This will primarily be the case for road vehicles such as vans and trucks. However, for construction machinery that will be based on-site continuously, a limited amount of fuel will have to be stored on site. On-site refuelling of machinery will mainly be carried out using a mobile double skinned fuel bowser typical of that shown in Figure 4-2. Refuelling will be carried out at least 50m from any watercourse. The fuel bowser, typically a double axel custom-built refuelling trailer, will be refilled off-site, where possible, or at either of the two construction compounds. 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. The fuel bowser will be parked on a level impermeable area in either of the construction compounds when not in use.

Figure 4-2 Typical mobile fuel bowser (Source: Clarke Machinery Group)

Oils, lubricants and other hazardous liquids required for maintenance of equipment during the construction phase will be stored on the dedicated impermeable storage platform in the construction compounds as described in Section 4.1. Any additional fuel containers, other than the fuel bowser, used for smaller equipment (such as generators, lights etc.) will be stored within additional secondary containment e.g., bund for static tanks or drip trays for smaller mobile containers. Taps/nozzles for fuels and storage containers for oils will be fitted with locks to ensure their use is controlled. Only designated trained and competent operatives will be authorised to refuel plant on site.

New clean ancillary machinery equipment such as hoses, pipes and fittings required on-site will be contained within a bunded area, however any used or damaged parts will not be stored onsite and will be removed immediately. Any repair works required on machinery involving fuel and oil control will be carried out off-site where practical, or in the construction compounds over an impermeable

surface. Unless unavoidable, repair works carried out in the field where machinery is operational will use spill trays and absorbent materials to prevent release of contaminants to the ground. Maintenance and repair works will be carried out at least 50m from any watercourse.

At least daily checks prior to start-up of plant and machinery will minimise the risk of breakdown and associated contamination risks for on-site repairs. Records of daily pre-start checks will be maintained and kept in the site office. A clean site policy and diligent housekeeping will also reduce the potential of hydrocarbon release on-site.

4.6 Spill Control and Response

Emergency spill kits with oil boom and absorbent materials will be kept on-site in the event of an accidental spill. Spill kits will be kept in both construction compounds, the 4x4 vehicle transporting the fuel bowser and smaller spill control kits will be kept in all construction machinery. All construction personnel will be notified of where the spill kits are located as part of the site induction and will be trained on the site procedures for dealing with spills.

In the event of a leak or a spill in the field, the spill kits will be used to contain and absorb the pollutant and prevent any further potential contamination. The absorbed pollutants and contaminated materials will be placed into leak proof containers and transferred to a suitable waste container for hazardous materials in the construction compounds. Where a leak has occurred from machinery, the equipment will not be permitted to be used further until the issue has been resolved.

The SHEQ Officer (or equivalent appointed person) will be notified of any spills on-site and will determine the requirement to notify the authorities as set out in Section 4.7.

4.7 Incidents

All safety or environmental incidents associated with the project will be reported and investigated in line with the ERP. Typically, the following procedures will be followed in the event of an incident:

- Works will stop immediately where safe to do so.
- The SHEQ Officer will be contacted.
- The size of the incident will be assessed and determined if it can be controlled by site staff or if emergency services are required to attend.
- The appropriate enforcing authority will be contacted.
- The SHEQ Officer will investigate after the incident.
- The findings will be sent to the appropriate authority; and
- An action plan will be prepared to set out any modifications to working practices required to prevent a recurrence.

4.8 Complaints

This section sets out a procedure to manage and resolve any complaints received from members of the public during the construction phase of the proposed development. The following measures will be adopted and refined, as necessary, taking account of any relevant planning conditions. The following measures will be implemented to deal with complaints and the Final CEMP will contain more specific details with regard to phone numbers to contact:

- Clearly display a notice board at the site entrance so that the public know whom to contact if they have a complaint or comment.
- Personnel on site, including sub-contractors are required to perform their duties in accordance with this CEMP, and in such a way as to minimise the risk of complaints from third parties.

- All complaints received regarding the construction works will be recorded and categorised (e.g., noise, property damage, traffic, dust etc.) within a central Site Complaints Log. This complaints log will include the following key details:
    - Name, address and contact details of the complainant (with the complainant's permission).
    - Brief outline of the complaint; ○ Date of Complaint
    - Name of person receiving complaint details; and ○ Agreed timeline for response to complaint.
- All complaints will be communicated to the Project Manager and the Developer immediately
- All complaints will be followed up and resolved in so far as is practicable; and
- The complainant, Developer and other stakeholders will be kept informed of the progress in resolving the complaint.

5.0 ENVIRONMENTAL MANAGEMENT

As part of the development of this CEMP, a series of Environmental Management Plans (EMPs) have been prepared to ensure appropriate environmental management of specific aspects of the proposed works. The EMPs have been prepared in accordance with the design and mitigation measures set out in the EIAR. The requirements outlined within the following plans are a summary of key implementation constraints, site specific obligations and best practice requirements with which the Contractor shall comply. The construction methodology for the proposed development is set out in Chapter 3 (Description of the Development) of the EIAR.

Construction of the proposed development will be carried out in line with best practice guidance in all areas of potential environmental impact and these specific guidance documents are identified within the following sections. Across the full project duration, the Contractor will utilise the general guidelines set out in the CIRIA C741 publication Environmental Good Practice on Site (4th Edition) [2].

Following the granting of planning for the proposed development, CBS will continue to develop this CEMP and has incorporated the additional measures specified in planning conditions and associated post-planning statutory body consultation for the management of the environment during the construction works. The final CEMP will include an updated and refined construction phase programme of works and will set out specific timings and requirements for surveys and monitoring prior to and throughout the construction works. The final CEMP will be a dynamic document and will be continuously reviewed and updated throughout the construction works to ensure it takes account of all environmental auditing and site inspections.

5.1 Noise and Vibration

The Contractor will be required to have regard to BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites, which sets out detailed guidance on the control of noise and vibration from construction activities.
An assessment of construction phase noise emissions has been carried out in Chapter 11 (Noise and Vibration) of the EIAR and outlines the predicted noise levels from construction activities at the closest noise sensitive locations (sensitive receptors). The SHEQ Officer, or equivalent, will supervise the works to ensure compliance with the noise and vibration limits set out in the Standards document referred above and the EIAR.

Noise due to the normal operation of the proposed development, expressed as Laeq over 15 minutes at the façade of a noise sensitive location, shall not exceed the daytime background level by more than 10 dB(A) and shall not exceed the background level for evening and night time. Clearly audible and impulsive tones at noise sensitive locations during evening and night
shall be avoided irrespective of the noise level.

The following general measures for control of noise and vibration from construction works will be implemented:

- Construction working hours are limited to those set out in Section 3.4 to avoid noise generation during unsociable hours.
- Duration of works which create high levels of noise or vibration, such as piling, will be limited and staggered to prevent constant annoyance.
- Communication channels will be established between the Developer/Contractor and residents to inform of upcoming works which may generate higher than normal construction noise or vibration and provide a means for local residents to register complaints with regard to noise and vibration.
- The local authority will also be informed of the communication channels.
- Periodic monitoring of construction noise and vibration during critical periods will be carried out at sensitive receptor locations; and
- Internal access roads will be maintained in good condition to minimise noise and vibration generation from heavy goods vehicles.
- Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use.
- Plant and vehicles will be sequentially started up rather than all together.
- Use of effective exhaust silence systems or acoustic engine covers as appropriate.
- Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise- sensitive areas. Where possible, loading and unloading will also be carried out away from such areas.
- Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturers specifications; Screening e.g., noise barriers and bunds, will be used as appropriate.
- Procedures for handling noise and vibration complaints.
- The SHEQ Officer, or equivalent, will address complaints relating to noise and vibration.
- Equipment with a low inherent potential for generation of noise and/or vibration will be chosen in lieu of noisier alternatives and place noisy/high vibration equipment as far away from sensitive receptors as permitted by site constraints

No heavy construction equipment/machinery (to include pneumatic drills, construction vehicles, generators, etc) shall be operated on or adjacent to the construction site before 07:00 hours on weekdays and 09:00 on Saturdays nor after 19:00 hours on weekdays and 1300 hours on Saturdays, nor at any time on Sundays, Bank Holidays or Public Holidays. Any work outside of these hours shall only be permitted following a written request to the Planning Authority and subsequent receipt of the written consent of the Planning Authority, having regard to the reasonable justification and

circumstances and a commitment to minimise as far as practicable any unwanted noise outside the hours stated above.

Where possible, contractors will use noise dampers or other attenuation methods for particularly noisy operations. 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. Any noisy plant, such as generators or pumps, which is required to operate outside of the typical working hours (for maintaining water levels or safety lighting etc.), will be surrounded by an acoustic enclosure or portable screen. Regular maintenance of plant and equipment will be carried out to ensure that the equipment is operated efficiently and generating minimal noise emissions. Plant or equipment which is not in use will be shut down while not required or throttled back to a minimum.

The development shall be so operated that there will be no emissions of malodours, gas, dust, fumes or other deleterious materials, no noise vibration on site so as would give reasonable cause for annoyance to any person in any adjoining unit or public place in the vicinity

5.2 Air Quality

The Contractor will have due regard to relevant guidance such as The Control of Dust and Emissions during Construction and Demolition published by the Greater London Authority (GLA) in 2104 and Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes published by the NRA (now TII) in 2011.
During the construction phase, dust or air pollutants generated from the proposed development will typically arise from:

- Movement of construction vehicles.
- Transportation of powerplant equipment and construction materials to and within the site.
- Excavation, movement and placement of soil stockpiles; and
- Wind generated dust from stockpiles, exposed unconsolidated soils and roads.

An assessment of the potential effects of construction traffic movements associated with the proposed development is presented in Chapter 10 (Air Quality and Climate) of the EIAR. Maximum utilisation of on-site excavation will reduce the need to import excavated materials to the site and where excavated material, concrete and building materials are required to be brought to site, local quarries (such as Belgard Quarry, located 2.15 km southeast of the proposed development) and suppliers will be preferred to minimise the carbon footprint of construction material deliveries.

During the construction / demolition phase of the development, Best Practicable Means shall be employed to minimise air blown dust being emitted from the site. This shall include covering skips and slack-heaps, netting of scaffolding, daily washing down of pavements or other public areas, and any other precautions necessary to prevent dust nuisances.

In order to minimise emission of pollutants from plant and equipment, the following measures will be implemented during the construction works:

- Minimize dust generating activities;/ minimize extent of working areas
- Locate activities and rock / earth stockpiles away from sensitive receptors.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Keep stockpiles for the shortest possible time. Designed and laid out to minimise exposure to wind.
- Ensuring all vehicles carrying loose or potentially dusty material to or from the site are fully sheeted.

- Plan site layout – machinery and dust causing activities (e.g. access roads, stockpiles) should be located away from the site boundary and sensitive receptors where practicable;
- No site runoff of water or mud.
- Minimise movement of construction traffic around site.
- Contractor to implement a Construction Traffic Management Plan (CTMP) as part of the CEMP which will be finalised in consultation with Roscommon County Council.
- Stack height of 27m (classified as appropriate) will be utilised in the design in order to promote good dispersion of pollutants and ensure that ground level concentrations are kept to a minimum.
- Locate generators away from sensitive receptors.
- Minimise movement of construction traffic around site.
- Ensuring that the engines of all vehicles and plant on site are not left running unnecessarily.
- Regular maintenance of plant and equipment will be carried out to ensure that the equipment is
- operated efficiently and generating minimal air emissions; and
- Plant or equipment will not be left running unnecessarily and low emission fuels will be used.
- Drop heights of excavated materials into haulage vehicles will be minimised to a practicable level.
- Daily inspections by site personnel to identify potential sources of dust generation along with implementation measures to remove causes where found.

The greatest potential impact on air quality during the construction stage will be from dust emissions associated with the construction works. The proactive control of fugitive dust, rather than an inefficient attempt to control dust once released will ensure the prevention of significant emissions.

The following measures will be implemented to minimise the potential for dust generation:

- Minimisation of extent of working areas.
- Stockpiling of excavated materials will be limited to the volumes required to practically meet the construction schedule.
- Drop heights of excavated materials into haulage vehicles will be minimised to a practicable level; and
- Daily inspections by site personnel to identify potential sources of dust generation along with implementation measures to remove causes where found.

A Dust Management Plan (DMP) has been prepared which sets out the measures that will be implemented by the Contractor to minimise and control dust emissions (see Section 5.2.1) This DMP will be updated by the Contractor in the final CEMP to account for any additional measures identified in Planning Conditions.

5.2.1 Dust Management Plan

The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced will be deposited close to the potential source and any impacts from dust deposition will typically be within 200m of the construction area. It is noted that the vast majority of construction works are located at distances greater than 200m from residential properties.

In order to ensure mitigation of the effects of dust nuisance, a series of measures will be implemented. Site access roads shall be regularly cleaned and maintained as appropriate; dry sweeping of large areas shall be avoided. Hard surface access roads shall be swept to remove mud and aggregate materials from their surface while any un-surfaced access roads shall be restricted to essential site traffic only.

Furthermore, 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 using site access shall have their speeds restricted where there is a potential for dust generation. Vehicles delivering material with dust potential to an off-site location shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust. Access gates to site are located at least 450m from receptors which will prevent significant dust effects on residents.

Vehicles exiting the site will make use of a wheel wash facility prior to entering onto public roads to ensure mud and other wastes are not tracked onto public roads. Public roads outside the site shall be regularly inspected for cleanliness on a daily basis and cleaned using a street sweeper, as necessary (see Figure 5-1). Before entrance onto public roads, trucks shall be adequately inspected to ensure no potential for dust emissions. On-site haul routes shall be inspected for integrity and necessary repairs to the surface instigated as soon as reasonably practicable. Records shall be kept of all inspections of the haul routes and any subsequent action(s) in a site logbook.

Figure 5-1 Typical Road sweeper (Source: CMP Road Planning)

The following measures will be implemented to prevent significant dust emissions from material stockpiles. Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind as per Section 3.4.6 and Section 5.5. Sand and other aggregates will be stored in bunded areas and not allowed to dry out unless this is required for a particular process, in which case appropriate additional control measures will be put in place. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. At all times, the procedures put in place shall be strictly monitored and assessed by the SHEQ Officer. In the event of dust nuisance occurring outside the site boundary, appropriate procedures shall be implemented to rectify the problem.

This DMP shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practices and procedures. As per Section 4.8, the name and contact details of a person to contact regarding air quality and dust issues shall be displayed on a notice board at the site entrance. All dust and air quality complaints shall be recorded, and causes identified, along with the measures taken to reduce emissions. Daily on and off-site inspections shall occur for nuisance dust and compliance with this DMP. This shall include regular dust soiling checks of surfaces within 100m of the construction works. Cleaning shall be provided if necessary.

5.2.2 Climate

There is the potential for a number of embodied greenhouse gases (GHGs) and GHG emissions during the construction phase of the development. Construction vehicles, generators etc., may give rise to CO_2 and N_2O emissions as well as the large quantities of material such as stone, concrete and steel that will be required for the proposed development. The Institute of Air Quality Management (IAQM) document Guidance on the Assessment of Dust from Demolition and Construction (2014) states that site traffic and plant is unlikely to make a significant impact on climate.

To minimise climate impacts associated with delivery of construction materials to the site, the Contractor will source quarry materials as close to the site location as possible and use local builder's providers where possible. Excavation on site will be utilised as much as possible to minimise import of quarried stone material. In some cases, it will not be possible to locally source building materials due to the technical nature of parts and equipment required.

5.3 Surface Water Management

The Contractor will employ the best practice measures outlined in CIRIA C532 publication Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors.

The surface water drainage design concept is set out in Section 3.5.3 (Utilities and Services) of the EIAR and is designed to capture surface water run-off from the proposed power plant site, infrastructure and other adjacent hardstanding areas. It is proposed to install a swale to collect runoff from the adjacent Northeast Road. The water once permeated into the swale will be directed towards the surface water drainage infrastructure via a perforated pipe and above ground falls. The swale will also slow the surface water at source, increase the quality of water which is intercepted by the system through infiltration, biodegradation and pollutant settlement.

It is proposed to attenuate all storm water accumulated on site within an underground attenuation tank, which will be discharged to the Baldonnel stream via a Hydro brake.

The surface water drainage system will be designed to include Surface Water Pumps in Duty/Standby Arrangement, Petrol Interceptors, Down Pipes/Gullies, a Flow Control Device, Permeable Paving and an Infiltration Basin.

The permanent surface water management infrastructure will be constructed early in the project along with the construction of impermeable surfaces so that surface water run-off during construction works will be controlled and managed to prevent discharge of sediment laden water to the existing surface water network and local streams.

In addition, temporary settlement ponds (or alternatively a tank) will be established during construction works in areas of high construction activity and groundworks. The locations of temporary settlement ponds will be adjacent to significant earthworks, as close as possible to the source of sediment while maintaining a minimum 50m buffer distance from existing watercourses. These additional temporary ponds will be decommissioned and reinstated on completion of the construction works.

The design of surface water for the proposed power plant will provide the necessary attenuation to limit the rate of outflow at or below greenfield run-off rates and are classified as sustainable drainage system (SuDS) measures.

The settlement ponds/tanks will also provide containment capacity in the event of a spill or leak on the installed infrastructure and the outflow can be closed off to contain any potential pollutants within the settlement ponds.

In the event of contaminated run-off being contained in a settlement pond/tank, the incident will be reported as set out in Section 4.7, samples taken of the contaminated liquid for classification, as required, and the liquid pumped out of the pond using a suitable vacuum truck and disposed of at a licensed waste facility off-site.

The surface water management system will be visually inspected on a daily basis during construction works by the SHEQ Officer to ensure that it is working optimally. The frequency of inspection will be increased at settlement ponds adjacent to areas where earthworks are being carried out and during excavation. Where issues arise, construction works will be stopped immediately, and the source of the issue will be investigated. Records of all maintenance and monitoring activities associated with the surface water network will be retained by the Contractor on-site, including results of any discharge testing requirements.

The Contractor will implement control measures such as temporary drains and drainage diversions, from commencement of construction to limit the volume of water that requires treatment. Temporary control measures implemented during construction works may include silt fences, silt bags, temporary settlement tanks and run-off attenuation, as required. Examples of silt fences and temporary settlement tanks are shown in Figures 5-2 and 5-3.

Figure 5-2 Silt fencing measures (Source: SSI Environmental (left) and Thrace Group (right)

Figure 5-3 Temporary site settlement tanks (Source: Siltbuster)

There is potential for earthworks to lead to release of suspended solids to surface water bodies. The main factors influencing the rate of soil erosion and subsequent sediment release includes:

- Climate.
- Length and steepness of slopes.
- Characteristics of the soil/soil erosion potential.
- Soil vegetation/cover.
- Duration and extent of works; and erosion and sediment control measures.

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.

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.

Pre-Emptive Site Drainage Management

The works programme for the initial construction stage of the proposed development will take account of weather forecasts and predicted rainfall in particular. Large excavations and movements of subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

The following forecasting systems are available and will be used on a daily basis at the site to direct proposed construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates;
- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next two days. Less useful than general forecasts as only available on a provincial scale.
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events.
- Rainfall Radar Images: Images covering the entire country are freely available from the Met Eireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3hour record is given and is updated every 15 minutes. Radar images are not predictive; and
- Consultancy Service: Met Eireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest. Using the safe threshold rainfall values will allow work to be safely controlled (from a water quality perspective) in the event of forecasting of an impending high rainfall intensity event.

Works will be suspended during the groundworks phase if forecasting suggests any of the following is likely to occur:

- >10 mm/hr (i.e., high intensity local rainfall events).
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or >half monthly average rainfall in any 7 days.

Prior to works being suspended the following control measures will be completed:

- Secure all open excavations.

- Provide temporary or emergency drainage to prevent back-up of surface runoff.
- Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded; and
- Provide cover to material storage areas i.e., adequate tarpaulin over stockpile areas if material cannot be reinstated prior to suspension.

No instream works are proposed.

Run-off will be maintained at greenfield (pre-development) run-off rates. The layout of the development has been designed to collect surface water run-off from hardstanding areas within the development and discharge to associated surface water swale and attenuation tank adjacent to the proposed infrastructure. It is proposed to attenuate all storm water accumulated on site within an underground attenuation tank, which will be discharged to the Baldonnel stream via a Hydrobrake at greenfield run-off rates.

During the ground clearance of the proposed development, the Contractor will implement water control measures to limit the impact on water quality using standard measures.

All temporary and permanent drainage from the site shall be designed to have as a minimum three stages of treatment, as defined in the SuDS Manual. Management of run-off will include the following:

Filtration of water through filter media (sand / stone check dam, silt fence);
Detention / settlement in settlement ponds or behind check dam in swales; and
Conveyance of shallow depths of water in vegetated swale.

5.3.1 Concrete Handling

Only ready-mixed concrete will be used during the construction phase, with all concrete being delivered from local batching plants in sealed concrete delivery trucks. The use of ready-mixed concrete deliveries will eliminate any potential environmental risks of on-site batching. When concrete is delivered to site, only the chute of the delivery truck will be cleaned, using the smallest volume of water necessary, before leaving the site. Concrete trucks will be washed out fully at the batching plant, where suitable facilities are already in place.

The small volume of water that will be generated from washing of the concrete trucks chute will be directed into a temporary lined impermeable containment area, or a concrete wash unit. This type of unit catches the solid concrete and filters and holds wash liquid for pH adjustment and further solids separation. The residual liquids and solids can be disposed of off-site as waste material. Where temporary lined impermeable containment areas are used, such containment areas will be excavated and lined with an impermeable membrane (see Figure 5-5).

Figure 5-4 Example of temporary concrete washout area

Measures to prevent surface water contamination from concrete pouring on-site will include:

- Using weather forecasting to assist in planning large concrete pours and avoiding large pours where prolonged periods of heavy rain is forecast.
- Restricting concrete pumps and machine buckets from slewing over watercourses while placing concrete.
- Ensuring that excavations are sufficiently dewatered before concreting begins and that dewatering continues while concrete sets.
- Ensuring that covers/mesh are available for freshly placed concrete to avoid the surface washing away in heavy rain.
- Disposal of surplus concrete after completion of a pour off-site; and
- Discussing arrangements for concrete deliveries with the suppliers before works commence to ensure they are aware of on-site wash-out restrictions.

5.4 Groundwater

It is not anticipated that significant quantities of groundwater will be encountered in excavations. However, groundwater ingress will need to be managed should it occur. Groundwater levels will vary seasonally and with recent weather conditions. The Contractor will give due regard to groundwater levels at the time of construction and optimise excavation works to minimise groundwater ingress.

Where groundwater is encountered in excavations and dewatering is required, the pumped water will be released back into the existing surface water drainage network via the settlement ponds, silt bags or dedicated settlement tank to minimise the level of sediments entering the existing watercourses.

All concrete browsers will be washed down at a dedicated concrete washout onsite located within the construction compound or off site. Concrete washings will not be disposed of onsite to any surface or ground water feature. All washings will be removed offsite and treated at a licensed facility.

5.5 Land, Soils and Geology

The disturbance of soil, subsoil and bedrock is an unavoidable effect in the development of the proposed infrastructure at the site, however excavations for the infrastructure will be kept to a minimum to limit disturbance of the current ground conditions and to minimise costs associated with earthmoving.

Utilising material and soil from on-site excavation will increase the impact on local geology, however there will be less demand for off-site aggregate materials resulting in less traffic movements to and from the site as well as shorter travel distances.

The management of excavated materials is an important component of controlling dust as well as sediment and erosion control. Excavated topsoil, subsoils where encountered, will only be moved short distances from the point of extraction and will be used locally for landscaping and benching/battering, where possible. Excavated material will not be stored in excessive mounds on the site. Excess soils/subsoils will be stockpiled temporarily pending backfill. Placed soils will be sealed and levelled using the back of an excavator bucket to prevent erosion.

Excavation may be susceptible to collapsing depending on material encountered and depth of the excavation. Where battering back of excavations to a safe angle is not feasible, a physical barrier will be applied between the excavations and the potentially unstable material in the form of a granular berm or sheet piles. Excavations for the proposed power plant infrastructure will be backfilled to ground level following foundation installation. Temporary works designs will be carried out by a competent engineer during detailed design to account for the existing ground conditions.

Vehicular movements will be restricted to the footprint of the proposed development site. This means that machinery will not move onto areas that are not permitted for development. This will prevent disturbance of existing soils and vegetation.

As discussed in Section 4.1, temporary wastewater holding tanks will be used to store wastewater generated from the welfare facilities in the two construction compounds. This will eliminate the need for any wastewater treatment and percolation at the site. No concrete truck wash-out will be permitted at the site either so as to protect the existing ground conditions. Only concrete truck chute washing will be permitted on site in accordance with the measures outlined in Section 5.3 above. The management and handling of fuels, oils and lubricants will be in accordance with the measures set out in Section 4.5 so as to reduce the potential for spillage or contamination of soils.

Surface water management measures as set out in Section 5.3 will be put in place from start of construction works and installed to ensure that surface water run-off is controlled and does not cause erosion of exposed surfaces or generate sediment laden discharge.

5.6 Biodiversity

5.6.1 Habitats

a) Centrica Business Solutions shall ensure that best practice should be implemented at all times in relation to any activities that may impact on surface water or riparian habitats. Any discharges to surface streams present on or near the site must not impact negatively on the system. Comprehensive surface water management measures must be implemented at the construction and operational stage to prevent any pollution of local surface waters.
b) The CEMP should detail and ensure Best Construction Practices including measures to prevent and control the introduction of pollutants and deleterious matter to surface water either directly or indirectly through the storm water drainage network and measures to minimise the generation of sediment and silt.
c) CBS shall ensure construction works are planned in a manner which prevents extensive tracts of soils from being exposed at any time and arrangements must be made for the control and management of any contaminated water resulting from construction.
d) CBS shall ensure that that the receiving foul and storm water infrastructure has adequate capacity to accept predicted volumes from this development during construction and post construction phases with no negative repercussions for the quality of any receiving waters.

e) CBS shall ensure compliance with Inland Fisheries guidelines.
f) All discharges must be in compliance with the European Communities (Surface Water) Regulations 2009 and the European Communities (Groundwater) Regulations 2010.

5.6.1.1 Removal of Vegetation

In accordance with Section 40 of the Wildlife Acts, the vegetation (wet grassland) which is proposed to be removed, which may be used as nesting sites by breeding birds, will be cleared outside of the birds nesting season (1st March to 31st August inclusive). This will ensure there is no loss of nests as a result of the proposed construction works.

In the event that clearance of vegetation is required within the bird nesting season, vegetation will be first surveyed by an experienced ecologist to identify the presence of active nests. The survey will specifically target ground nesting birds including lapwing and snipe. Only vegetation confirmed to be nest free may be cleared. In the event that a nest is confirmed as present, the nest will either be removed under license obtained from NPWS or the nest will be cordoned off until the chicks have fledged or until nesting has failed.

The construction work areas will be demarcated prior to the construction works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas. Disturbed areas of ground will be fully reinstated flowing completion of the works.

5.6.1.2 Maintaining Site Hydrology

The implementation of control measures will ensure that there is no potential for impact to ecological receptors in the receiving environment. However, a summary of the sediment and pollution control measures which will be implemented are provided hereunder:

- All works must comply with the guidance set out in the guidance document entitled, “Control of Water Pollution from Construction Sites. Guidance for Consultants and Contractors (C532)” (CIRIA, 2001).
- Silt fences will be installed along the entire inside boundary of the Baldonnell Stream. Silt fences will also be installed around large stockpiles of material. Silt fences will be constructed using a permeable filter fabric (Hy-Tex Terrastop Premium silt fence or similar). Silt fencing will be installed as per the manufacturer’s guidelines and shall be maintained until vegetation on the disturbed ground has been re-established. Once installed, the silt fence shall be inspected regularly during construction and more frequently during heavy rainfall.
- Excavation activities will not be carried out during or following heavy rainfall. All stockpiled material will be stored within the site construction compound a minimum of 50m from the Baldonnell Stream.
- All concrete will be mixed off site and poured in place at site. All concrete bowsers will be washed down at a dedicated concrete washout onsite located within the construction compound or off site. Concrete washings will not be disposed of onsite to any surface or ground water feature. All washings will be removed offsite and treated at a licensed facility. No chemicals that are deleterious to aquatic organisms are to be used in cleaning works. All raw, uncured waste concrete must be cured at a designated location within the construction compound or off site.
- 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 off site 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 off site.

Further information on surface water management is provided in Section 5.3.

5.6.1.3 Flora

Wheels of machinery used in construction will be washed and free of soil before they are brought into the proposed power plant site to prevent accidental introduction of invasive plant species propagules.

Biosecurity measures will be employed during the construction works. The biosecurity measures will have regard to IFI Biosecurity Protocols including: 'IFI Biosecurity Protocol for Field Survey Work (December 2010)'.

All machinery and equipment used will be inspected and will be completely dry prior to works commencing to prevent the risk of pathogen translocation. A 'Check, Clean, Dry' protocol will be undertaken with all equipment, machinery and vehicles entering and leaving the proposed development site. All equipment/machinery used within the drainage ditch will checked for living plants and animals. Equipment and machinery used will be washed thoroughly and then allowed to dry for at least 48 hours.

5.6.1.4 Bats

All temporary lighting associated with the construction works will be placed strategically by the Contractor following consultation with a suitably qualified ecologist. This will ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. No lighting will be directed towards the hedgerows and treelines located around the outer boundary of the proposed development site. Only low-pressure sodium, high pressure sodium or LED luminaires will be used on site to ensure that there are no significant negative impacts on bats. In addition, the column height of the temporary lights will be carefully considered to minimise light spill.

5.6.1.5 Birds

Construction-phase mitigation measures to protect retained habitats and to protect watercourses are described in Section 5.6.5 and Section 5.3.

The following additional specific measures will be implemented to mitigate impacts to bird populations:

- Where possible, scrub clearance will not be carried out during the bird breeding season (1st March - 31st of August).
- Based on the results, of the pre-construction/construction breeding bird surveys, construction work will be timed to avoid work in close proximity to any breeding Snipe locations within the proposed power plant site during the Snipe breeding season.

In the event that any lapwing or snipe nests are identified within the ZoI during the nest survey appropriate mitigation measures in consultation with Bird Watch Ireland will be implemented.

Hoarding will be erected between the nest and the proposed development site to limit both noise and visual disturbance.

5.6.2 Pre-Clearance Surveys and Monitoring

Prior to vegetation clearance, the site will be surveyed by the Ecological Clerk of Works (ECoW) or other qualified ecologist for mammal breeding or resting places, such as badger setts, and also bird nesting sites.

In accordance with Section 40 of the Wildlife Acts, the vegetation (wet grassland) which is proposed to be removed, which may be used as nesting sites by breeding birds, will be cleared outside of the birds nesting season (1st March to 31st August inclusive). This will ensure there is no loss of nests as a result of the proposed construction works. In the event that clearance of vegetation is required within the bird nesting season, vegetation will be first surveyed by an experienced ecologist to identify the presence of active nests. The survey will specifically target ground nesting birds including lapwing and snipe. Only vegetation confirmed to be nest free may be cleared. In the event that a nest is confirmed as present, the nest will either be removed under license obtained from NPWS or the nest will be cordoned off until the chicks have fledged or until nesting has failed.

The construction work areas will be demarcated prior to the construction works commencing. No clearance of vegetation will be undertaken outside of the demarcated areas. Disturbed areas of ground will be fully reinstated flowing completion of the works.

5.6.3 Fauna Protection at Excavations

At any construction site, mammals and other fauna, such as frogs, are at risk of falling into open excavations. Silt ponds pose no risk as their sides are sufficiently sloped to permit escape. During construction, open excavations must incorporate facilities for animals to escape, by means of:

- gently sloping earth or stone inclines to be left at the end of each day's operation – at each end of open trenches.
- for long excavations, timber escape planks to be left at c. 50m intervals along the trench at the end of each day's operations; these will usually be placed at right-angles to the trench.
- for long excavations, occasional earth/stone or wooden plank bridges to allow badgers to cross the trench during construction; and
- works will be limited to daylight hours where feasible to allow fauna to forage at dawn, dusk, and at night.

5.6.4 Aquatic Ecology Mitigation

Proposed drainage measures to reduce and protect the receiving waters from the potential impacts during the construction of the proposed development are set out in Section 5.3. These include measures to prevent run-off erosion from vulnerable areas and consequent sediment release into nearby watercourses to which the proposed development site discharges. Additional mitigation measures specific to aquatic ecological receptors are proposed, where appropriate, below.

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 Chapter 9 (Hydrology and Hydrogeology). The implementation of control measures will ensure that there is no potential for impact to ecological receptors in the receiving environment. However, a summary of the sediment and pollution control measures which will be implemented are provided hereunder.

All works must comply with the guidance set out in the guidance document entitled: "Control of Water Pollution from Construction Sites. Guidance for Consultants and Contractors (C532)" (CIRIA, 2001)[3].

Silt fences will be installed along the entire inside boundary of the Baldonnell Stream. Silt fences will also be installed around large stockpiles of material. Silt fences will be constructed using a permeable filter fabric (Hy-Tex Terrastop Premium silt fence or similar). Silt fencing will be installed as per the manufacturer's guidelines and shall be maintained until vegetation on the disturbed ground has been

re-established. Once installed, the silt fence shall be inspected regularly during construction and more frequently during heavy rainfall.

Excavation activities will not be carried out during or following heavy rainfall. All stockpiled material will be stored within the site construction compound a minimum of 50m from the Baldonnell Stream.

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 off site. Concrete washings will not be disposed of onsite to any surface or ground water feature. All washings will be removed offsite and treated at a licensed facility. No chemicals that are deleterious to aquatic organisms are to be used in cleaning works. All raw, uncured waste concrete must be cured at a designated location within the construction compound or off site.

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 off site 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 off site.

5.7 Waste Management Plan

All waste generated from the proposed development will be managed in accordance with the provisions of the Waste Management Act 1996 as amended and associated Regulations.

All excavated topsoil and subsoils will be reused within the site boundary, insofar as possible, primarily for reinstatement. Any excess material which cannot be reused will be transferred offsite to a licensed waste facility. However, it is not anticipated that any excess material will not be suitable for reuse within the site.

Typical waste streams (including material-related streams such as metals, paper and cardboard, plastics, wood, rubber, textiles, bio-waste and product-related streams such as packaging, electronic waste, batteries, accumulators and construction waste) will be managed, collected, segregated and stored in separate areas at the construction compounds and removed off site by a licensed waste management contractor at regular intervals for the duration of the construction works. Skips and bins of appropriate sizes will be stored in both construction compounds and used to maximise source segregation of waste materials. This will include food and packaging waste from welfare facilities. Appropriate control of food waste in the compound will minimise the potential for pests and rodents to visit the area.
Any contaminated materials used for spills and equipment maintenance works will be separately stored in a suitable container for collection by an authorised hazardous waste contractor.
The Contractor will encourage all project teams to minimise waste generation and to maximise the segregation of waste at source. Material wastage will be avoided by delivering only the required quantities of material to site and utilising off-site manufacturing of steel reinforcement cages and concrete materials as much as possible. The Contractor will establish ‘just-in-time’ deliveries to avoid excess material storage at the site which can lead to waste generation. Delivery drivers will be encouraged to remove any excess packaging from materials delivered to site and remove unused timber pallets where possible.

Reusable formwork for concrete pouring will be used in preference of non-reusable options. Other opportunities for material reuse across the site will be sought by the Contractor.

It is not anticipated that there will be contaminated soils or materials encountered during the excavation works. No contaminated soils were identified during historical site investigation works.

The SHEQ Officer, or other appropriate person, will be appointed as the Waste Manager for the duration of the project in accordance with the general guidance set out in the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (Department of the Environment, Heritage and Local Government (DoEHLG, 2006).

At the pre-construction stage, the construction and demolition (C&D) Waste Manager will be in a position to require fellow designers to take full advantage of all reasonable C&D waste prevention, reuse and recycling opportunities. During construction, the practicalities of waste prevention, salvaging re-useable materials, and the need to synchronise the recycling of waste materials through the timing of their use in the new construction works will be emphasised by the Waste Manager.

The Waste Manager will be responsible for auditing waste handling and storage throughout the project and for advising construction personnel on best practices. All waste collections and records of waste movement off-site will be collated by the Waste Manager and retained in the site office.

5.8 Traffic and Transport

Mitigation measures to reduce or eliminate construction phase impacts will be implemented as part of a Construction Traffic Management Plan (CTMP). An Outline CTMP has been prepared for planning application purposes and the final Site-Specific Construction Traffic Management Plan will be produced by the appointed Contractor and PSCS in conjunction with the PSDP for the project. The final TMP will address the following issues:

- Site Access & Egress.
- Traffic Management Signage.
- Routing of Construction Traffic / Road Closures.
- Timings of Material Deliveries to Site.
- Traffic Management Speed Limits.
- Road Cleaning.
- Road Condition.
- Road Closures.
- Enforcement of Traffic Management Plan
- Details of Working Hours and Days.
- Details of Emergency plan.
- Communication.
- Construction Methodologies; and Particular Construction Impacts.

5.8.1 Site Entrance

5.8.1.1 Junction Visibility

Adequate visibility at the site access will mitigate the potential increased likelihood for collisions between construction generated traffic and existing road network traffic.

Profile Park has been well developed to cater and entice future growth and expansion. Each of the proposed sites within the park has a pre-constructed access with a bellmouth width of approx. 20m to cater for all vehicle types. Internally Profile Park has an internal roundabout to separate traffic flows to the various sections with an approximate ICD of 45m. All traffic to Profile Park originates from the R134 New Nangor Road to the North.

An existing splitter island and central reserve is present on the arm accessing Profile Park providing lanes for East and West turning traffic. Splitter Islands are present on all arms of the internal roundabout also to separate traffic flows. Autotrack assessment have been carried out as part of the overall design for the scheme which demonstrates that large vehicles will be able to access the site comfortably.

Preferred construction phase access would be from the existing access to site off the internal roundabout within Profile Park. The delivery/haulage vehicles will be routed depending on the destination/origin of the materials being delivered.

The use of local roads will be minimised as much as possible, particularly to avoid / minimise the encountering of narrow road widths, poor visibility and unsuitable bearing capacities. As the site is located on the outskirts of Dublin City and is well serviced by major infrastructural routes, it is envisaged that the majority of delivery vehicles shall be able to access site through the M50 motorway, N4 and N7 National roads and the regional road network immediately surrounding the site (R134, R120 and R136) which will keep them away from built-up urban centres.

The roads forming part of the haul routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required. In addition, the contractor shall, in conjunction with the local authority:

Throughout the course of the construction of the proposed development, ongoing visual inspections and monitoring of the haul roads will be undertaken to ensure any damage caused by construction traffic is recorded and that the relevant local authority is notified.

5.8.2 Traffic Impact

To mitigate the impact of the construction traffic, the proposed power plant will utilise all available resources within the existing site to reduce the requirement for importation of materials to site.

5.8.3 Trench Reinstatement

To mitigate the impact of the cable laid within the public road, the reinstatement works will be backfilled and reinstated as soon as practicable. The reinstatement works will be undertaken in accordance with the “Purple Book” best guidance and practices as required by South Dublin County Council. The proposed reinstatement and construction details and phasing will be agreed with associated Local Authorities Municipal District Office in advance of the works. The Contractor will be responsible for arranging for the required road opening licenses.

The gas connection will be laid beneath the ground surface and/or public road. The area where excavations are planned will be the subject of a confirmatory survey, prior to the commencement of works. A verification condition survey will be carried out for all parts of the route within the public road. A trench will be opened using an excavator to accommodate the formation. The excavated material will be cast to the side to be reused as backfilling material where appropriate. This material will not be stored in the vicinity of any watercourse and will be smoothed with the back of an excavator bucket to minimise runoff. It will be cast on the upgradient side of the trench, so if any runoff did occur it will run into the downgradient trench. Excess material will be used on the site of the proposed development for local landscaping and reinstatement, further detail is provided in Chapter 3 (Description of Development).

The grid connection will be laid beneath the ground surface and/or private road. The area where excavations are planned will be the subject of a confirmatory survey, prior to the commencement of works. A verification condition survey will be carried out for all parts of the route within the public

road. A trench will be opened using an excavator to accommodate the formation. The excavated material will be cast to the side to be reused as backfilling material where appropriate. This material will not be stored in the vicinity of any watercourse and will be smoothed with the back of an excavator bucket to minimise runoff. It will be cast on the upgradient side of the trench, so if any runoff did occur it will run into the downgradient trench. Excess material will be used on the site of the proposed development for local landscaping, further detail is provided in Chapter 3 (Description of Development).

5.8.4 Project Delays

To avoid delays to the project programme, all required road opening licenses and agreements with the Local Authorities and An Garda Síochána to facilitate movement of abnormal loads shall be sought by the appointed Contractor in a timely manner.

5.9 Cultural Heritage

The National Monuments Act, as amended requires that, in the event of the discovery of archaeological finds or remains that the relevant authorities, the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht (DoCHG) and the National Museum of Ireland, should be notified immediately. Allowance will be made for full archaeological excavation, in consultation with the National Monuments Service of the DoCHG, in the event that archaeological remains are found during the construction phase.

A suitably qualified cultural heritage consultancy/consultant will be appointed to oversee the effective implementation of the archaeological mitigation measures recommended in this chapter for the construction phase of the proposed development. The consultancy/consultant will maintain continuing liaison with the National Monuments Service of the DoCHG and SDCC Executive Archaeologist throughout the construction phase of the development.

5.9.1 Architectural Heritage

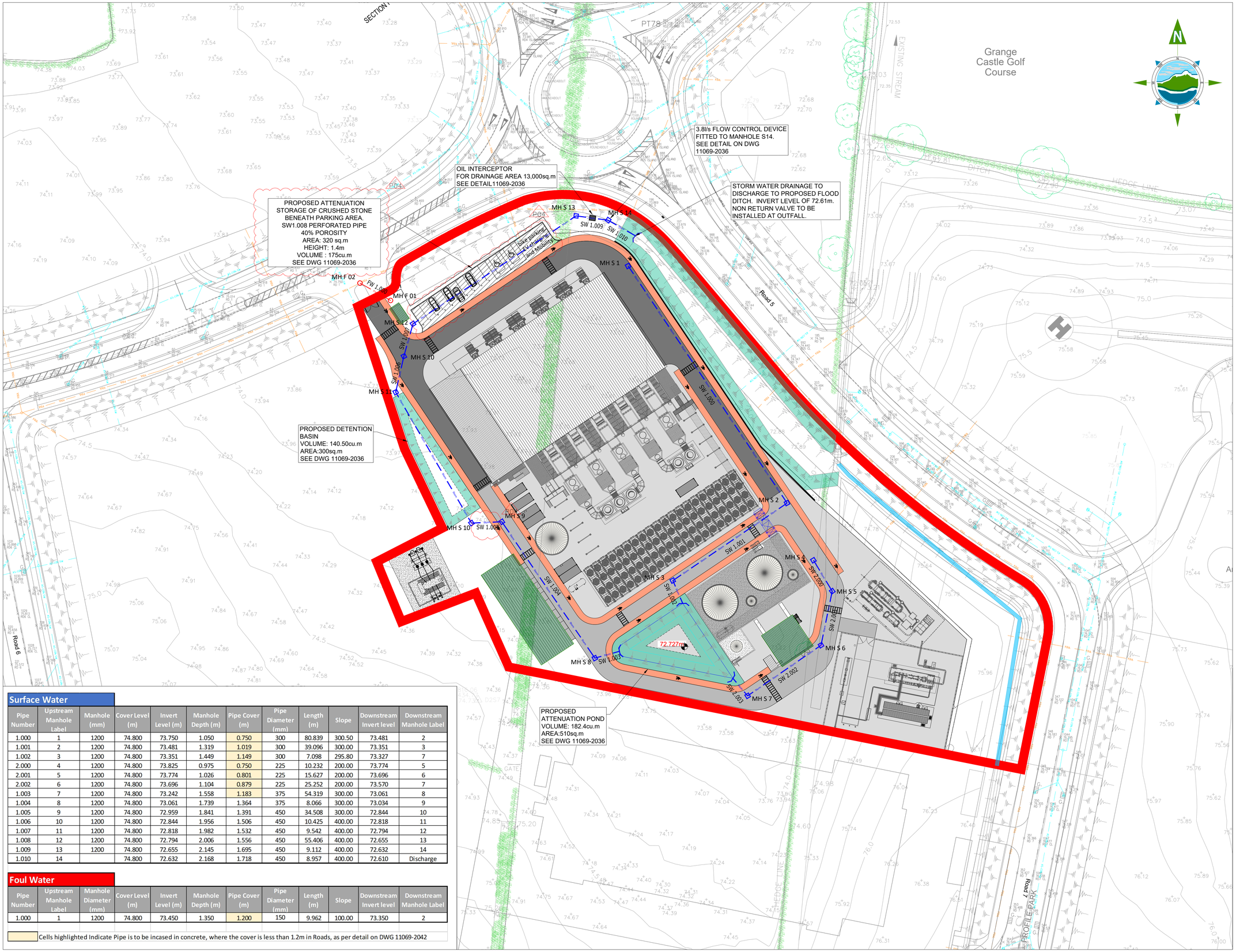
There are no architectural heritage sites 'Record of Protected Structures' (RPS) located within the vicinity of the proposed power plant area.

6.0 CONCLUSION

This Construction Environmental Management Plan (CEMP) presents a summary of the overall proposed development works, the management of the site during the construction works and the mitigation measures required to ensure the proposed works do not have a significant effect on the environment. This document is prepared in accordance with Best Practice documents as set out above and in the EIAR.

Prior to commencement of construction, the appointed Contractor will be required to update this document with site specific details including the location of spill kits on the site, the layout of the construction compounds, machinery pre-start checklists and provide details on the persons responsible for environmental management for the duration of the works. The updated CEMP will also be required to include any specific construction phase environmental management procedures identified in the grant of planning for the development or subsequent to the planning submission. The final CEMP document will be agreed with the Developer prior to commencement of works and submitted to the planning authority. It will be a live document and updated accordingly throughout the project.

Appendix 4 –Updated Drainage Plans



Surface Water

Pipe Number	Upstream Manhole Label	Manhole (mm)	Cover Level (m)	Invert Level (m)	Manhole Depth (m)	Pipe Cover (m)	Pipe Diameter (mm)	Length (m)	Slope	Downstream Invert level	Downstream Manhole Label
1.000	1	1200	74.800	73.750	1.050	0.750	300	80.839	300.50	73.481	2
1.001	2	1200	74.800	73.481	1.319	1.019	300	39.096	300.00	73.351	3
1.002	3	1200	74.800	73.351	1.449	1.149	300	7.098	295.80	73.327	7
2.000	4	1200	74.800	73.825	0.975	0.750	225	10.232	200.00	73.774	5
2.001	5	1200	74.800	73.774	1.026	0.801	225	15.627	200.00	73.696	6
2.002	6	1200	74.800	73.696	1.104	0.879	225	25.252	200.00	73.570	7
1.003	7	1200	74.800	73.242	1.558	1.183	375	54.319	300.00	73.061	8
1.004	8	1200	74.800	73.061	1.739	1.364	375	8.066	300.00	73.034	9
1.005	9	1200	74.800	72.959	1.841	1.391	450	34.508	300.00	72.844	10
1.006	10	1200	74.800	72.844	1.956	1.506	450	10.425	400.00	72.818	11
1.007	11	1200	74.800	72.818	1.982	1.532	450	9.542	400.00	72.794	12
1.008	12	1200	74.800	72.794	2.006	1.556	450	55.406	400.00	72.655	13
1.009	13	1200	74.800	72.655	2.145	1.695	450	9.112	400.00	72.632	14
1.010	14		74.800	72.632	2.168	1.718	450	8.957	400.00	72.610	Discharge

Foul Water

Pipe Number	Upstream Manhole Label	Manhole Diameter (mm)	Cover Level (m)	Invert Level (m)	Manhole Depth (m)	Pipe Cover (m)	Pipe Diameter (mm)	Length (m)	Slope	Downstream Invert level	Downstream Manhole Label
1.000	1	1200	74.800	73.450	1.350	1.200	150	9.962	100.00	73.350	2

Cells highlighted Indicate Pipe is to be incased in concrete, where the cover is less than 1.2m in Roads, as per detail on DWG 11069-2042

PROPOSED FOUL PIPE
PROPOSED FOUL MH
PROPOSED STORM PIPE
PROPOSED STORM MANHOLE
PERMEABLE GRASSCRETE PAVEMENT
PROPOSED SWALE
PROPOSED ATTENUATION TANK
PROPOSED PETROL INTERCEPTOR
PROPOSED ROAD GULLY
GREEN ROOF

NOTES:

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER/EMPLOYERS REPRESENTATIVE, AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES/UTILITIES, ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES
5. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd.
P04	29/09/2022	PETROL INTERCEPTOR REMOVED & ATTENUATION CHANGED	PF	LB
P03	28/05/2022	GREEN ROOFS, ATTENUATION POND AND DENTENTION BASIN ADDED	PF	LB
P02	05/12/2021	ISSUED FOR INFORMATION	PF	McC
P01	16/02/2021	ISSUED FOR PLANNING	PF	McC

Client: centrica

Project: PROFILE PARK POWER PLANT

Title: PROPOSED SITE DRAINAGE

Scale @ A1: 1:500

Prepared by:	Checked:	Date:
PK	MMcC	Feb' 2021

Project Director: BRIAN CARROLL

Drawing Status: PLANNING

TOBIN CONSULTING ENGINEERS
TOBIN Consulting Engineers,
Block 10-4, Blanchardstown Corporate Park,
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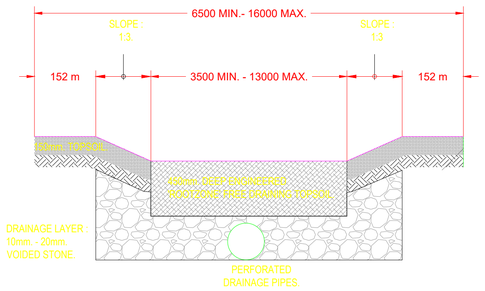
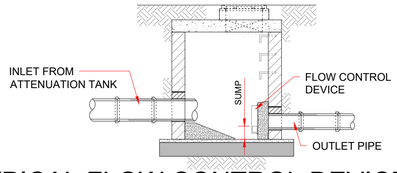
tel: +353-(0)1-8030406
fax:+353-(0)1-8030409
e-mail: dublin@tobin.ie
www.tobin.ie

Drawing No.: 11069-2010 Revision: P04



TYPICAL SECTION THROUGH DETENTION BASIN
NOT TO SCALE

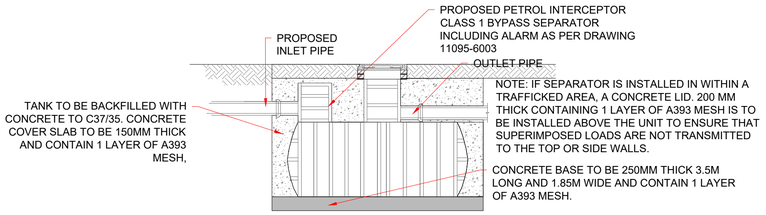
P05



TYPICAL FLOW CONTROL DEVICE DETAIL

SCALE 1:50

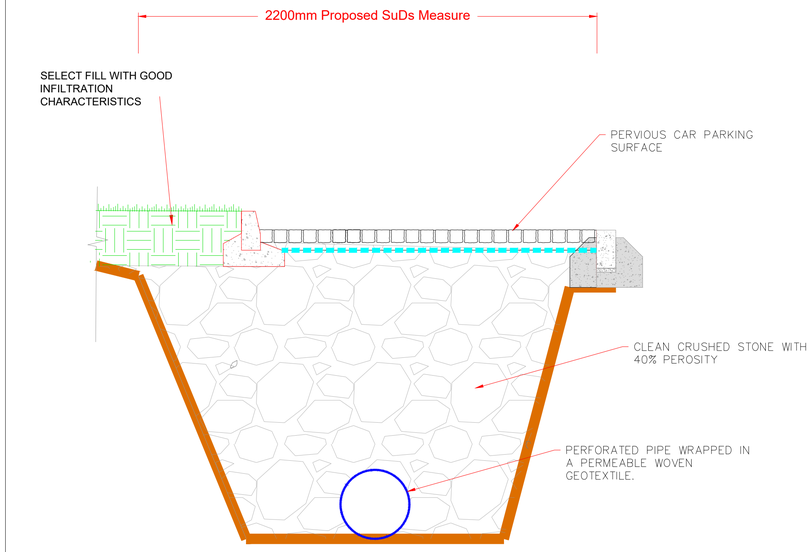
P05



TYPICAL PETROL INTERCEPTOR DETAIL

SCALE 1:50

P05

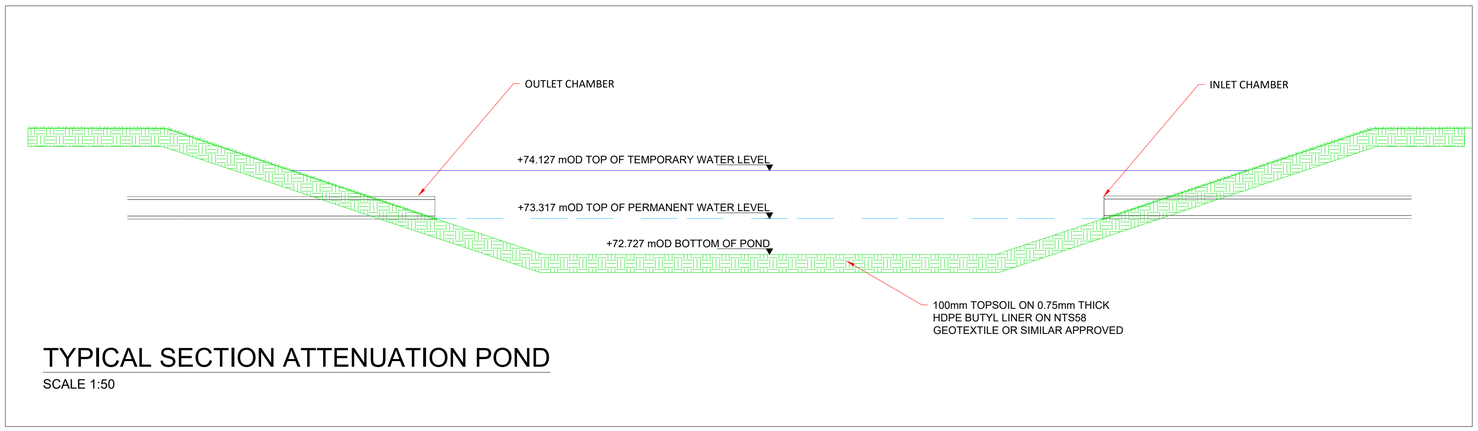


TYPICAL SECTION THROUGH CAR PARK

SCALE 1:50

NOTES:

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER/EMPLOYERS REPRESENTATIVE, AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES/UTILITIES, ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES
5. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD



TYPICAL SECTION ATTENUATION POND

SCALE 1:50

Rev	Date	Description	By	Chkd.
P05	29/09/2022	DETAILS UPDATED AS SHOWN	PF	LB
P04	18/05/2022	POND DETAIL AND DETENTION BASIN DETAIL ADDED	PF	LB

Client:

centrica

Project:

PROFILE PARK
POWER PLANT

Title:

PROPOSED SUDs
DETAILS

Scale @ A1: AS SHOWN

Prepared by:	Checked:	Date:
PF	MMcC	Feb' 2021

Project Director: BRIAN CARROLL

Drawing Status: PLANNING

TOBIN
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e-mail: dublin@tobin.ie
www.tobin.ie

Drawing No.: 11069-2036 P05

Revision:

Appendix 5 – Aviation Report

Aviation Report

re
permitted Power Plant
at
Profile Park, Dublin 22
in South County Dublin

for
Greener Ideas Ltd.

and for
Tobin Consulting Engineers

9th September 2022

O'DWYER & JONES DESIGN PARTNERSHIP
AVIATION PLANNING & ARCHITECTURE CONSULTANTS
28 LEESON PARK • DUBLIN 6 • TEL.:353-1-498 1893 [FAX:353-1-496 4410]

WWW.AVIATIONPLANNING.IE E.: ADMIN@AVIATIONPLANNING.IE / DESIGNPARTNERS@IOL.IE

CONTENTS

Note: In all maps /diagrams /aerial photos in this report which do not contain a North Point, north lies to the top.

1. Purpose of this Report

1.1 This report addresses the aviation-related items referred to in **Condition 13 of the recent Planning Permission** received in August 2022 by Greener Ideas Limited for a Gas-fired Power Plant at Profile Park, Dublin 22, with SDCC Planning Register Reference No. SD21A/0167.

1.2 **SDCC Condition 13 states —**

Department of Defence.

(a) Given the proximity to Casement Aerodrome, operation of cranes should be coordinated with Air Corps Air Traffic Services, no later than 28 days before use, contactable at airspaceandobstacles@defenceforces.ie or 01-4037681

(b) Due to the proximity to Casement Aerodrome, the developer should produce a Wildlife Aviation Impact Assessment and implement adequate bird control measures during the construction phase to mitigate the effects of birds on Air Corps flight operations.

(c) Due to the proximity to Casement Aerodrome, mitigations may be required in relation to the management of wildlife attracted to attenuation ponds or other water features. Should negative effects of bird activity on Irish Air Corps operations arise, the owner must put measures in place to mitigate these effects to an acceptable level.

(d) Due the proximity to Casement Aerodrome, Military Air Traffic Services requests an Aviation Impact Assessment on all potential emissions. Prior to the commencement of development, the applicant shall submit this assessment for the written agreement of the Planning Authority. The assessment should cover the possible effects of exhaust plumes or any other associated impact on flight operations at Casement Aerodrome. REASON: In the interests of aviation safety.

And an additional aviation Note on page 7 of the Permission states —

NOTE: The applicant shall notify the Irish Aviation Authority and the Department of Defence regarding any cranes likely to penetrate ICAO surfaces.

1.3 **Report Structure & Assessment of the above items**

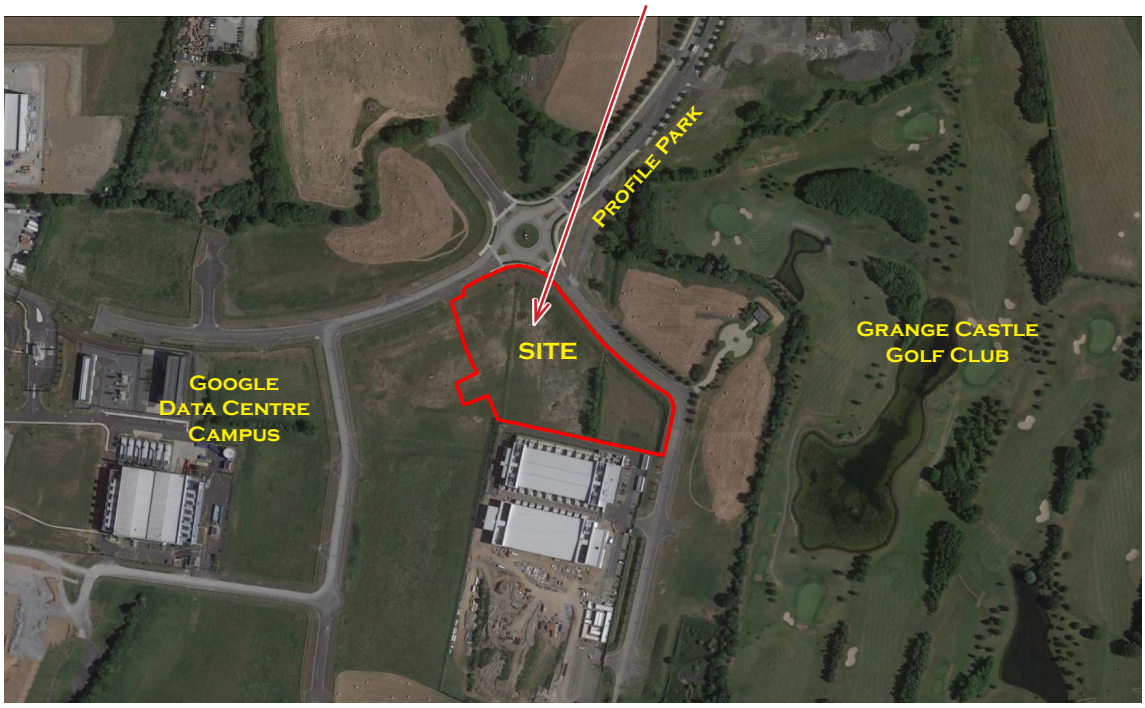
A description of the Site and of the Development, and the Aviation Features and Obstacle Limitations which affect them, are described in Sections 2 to 5 following.

An Assessment of the five items listed above is provided in Sections 6 to 8 of this report: with Crane aspects [item (a) and the Note] in Section 6; Wildlife aspects [items (b) and (c)] in Section 7; and Emissions aspects [item (d)] in Section 8.

2. Location of the Site & its Aviation Aspects

2.1 Site Location:

The permitted Power Plant development is on a site of *circa* 1.85 hectares in South County Dublin, located to the west of Grange Castle Golf Club and to the east of the Google Data Centre Campus, at Profile Park, Dublin 22.



2.2 Items of Aeronautical Significance affecting the site:

(ii) The site lies under the "Inner Horizontal Surface" of Casement Aerodrome [as defined by the International Civil Aviation Organization], which is at an elevation of 131.6m OD (i.e. at 56.8m above ground level on the site).

(iv) The site lies within a circle of 2km radius centred at Casement's aerodrome reference point: this is not an ICAO surface, but a Department of Defence feature.

(iii) The site lies at a lateral distance of 1.4km-1.55km approx. from the centreline of Casement's longer Runway 10/28, and at a lateral distance of 0.8km-1km approx. from the extended centreline of Casement's shorter Runway 04/22;

(iv) No part of the site, however, lies under any of Casement Aerodrome's more significant Obstacle Limitation Surfaces: Approach Surface, Take-Off Climb Surface, or Transitional Surface; and no part of the site lies under any of Weston Airport's or Dublin Airport's Obstacle Limitation Surfaces.

(i) The site, with ground level at 74.8m OD, is low-lying in relation to Casement Aerodrome, i.e. at 11.8m below the aerodrome's datum (of 86.6m OD), and at 22.4m below the aerodrome's published 'aerodrome elevation' (319ft /97.2m OD).

The above items are illustrated Sections 3 & 5 on pages 4 & 6 following >>.

3. Aviation Surfaces in Relation to the Site

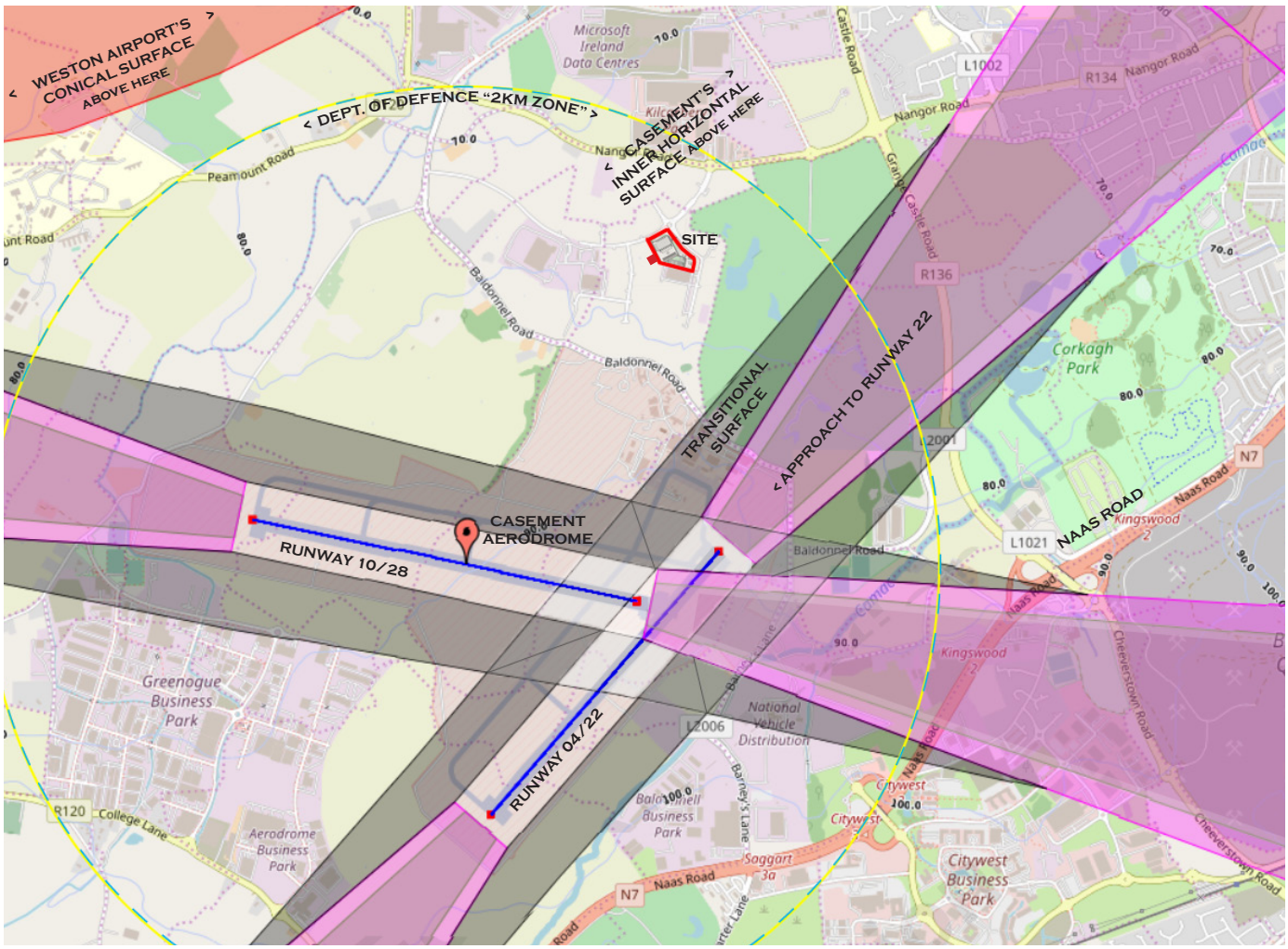
3.1 Although Casement Aerodrome, being a military aerodrome, is not bound by Civil Aviation standards, the Department of Defence has adopted the I.C.A.O. Obstacle Limitation Surfaces in relation to Casement Aerodrome, to protect its aircraft in flight. These Obstacle Limitation Surfaces are similar to the E.A.S.A. Specifications which now apply at Dublin and other Irish airports.

3.2 The Aviation Surfaces of relevance to this Profile Park site are

(i) the ICAO Inner Horizontal Surface for Casement Aerodrome which is a flat surface at 131.6m OD; and

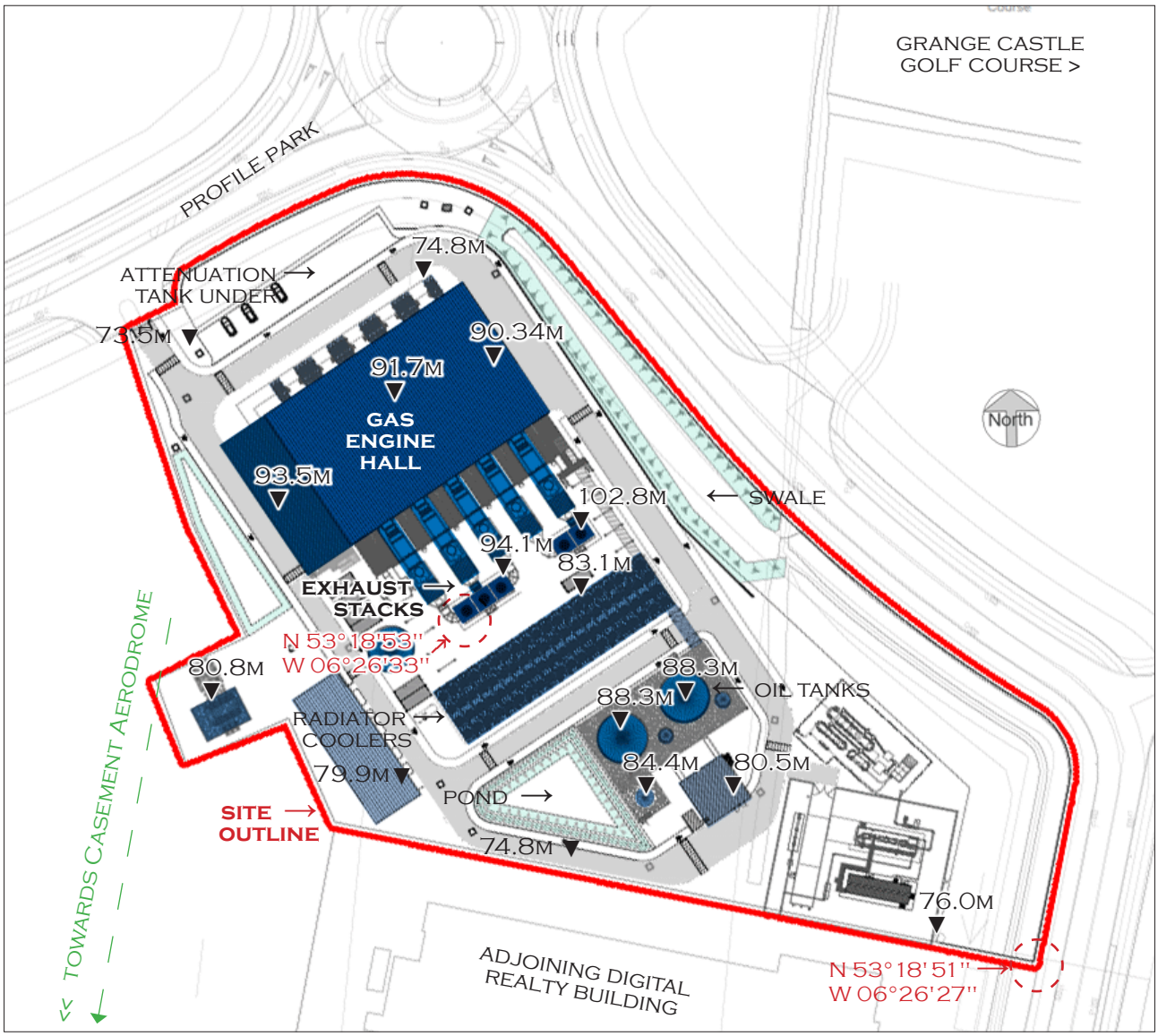
(ii) a Department of Defence "2km Zone" around Casement Aerodrome within which it states new objects should not be more than than 20m above ground, or 20m above the aerodrome's datum (whichever is higher).

3.3 The diagram below (based on Irish Aviation Authority 'Asset' data, onto which the "2km Zone" is added) shows the various aviation surfaces in the vicinity of the power plant site (which is outlined in red). The Inner Horizontal Surface (extending to 4km from both runways) covers all of the area in this diagam.



4. Layout, Elevations, & Coordinates of the Proposed Development

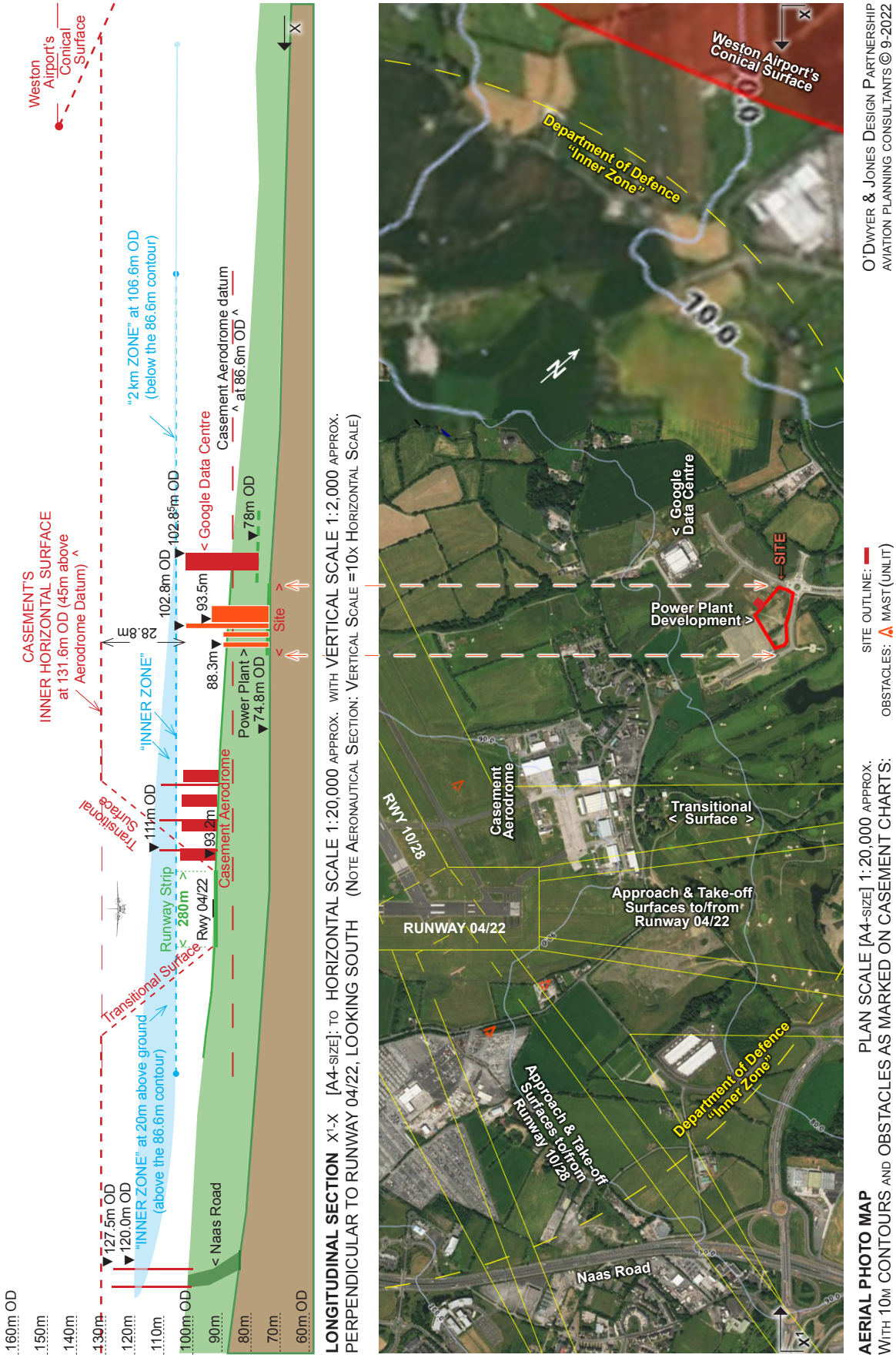
4.1 Below, to approx. scale 1:1,350, is a Site Layout Plan of the proposed Power Plant development at Profile Park, Dublin 22, with elevations OD of its highest elements, and some relevant coordinates.
[The elevations OD of the highest elements (the exhaust stacks) are exact, and the elevations OD given for the lower elements indicate maximum heights of any part of those lower elements.]
In this diagram, darker blue shading indicates higher objects.



Roof Plan of Proposed Development
with elevations (O.D.) of highest parts
Scale 1:1,350 approx.

5. Longitudinal Section Diagram & Map

[A4-size:] 1:20,000 horizontal scale
1:2,000 vertical scale (section)



LONGITUDINAL SECTION X'-X [A4-size]: to HORIZONTAL SCALE 1:20,000 approx. with VERTICAL SCALE 1:2,000 approx.
PERPENDICULAR TO RUNWAY 04/22, LOOKING SOUTH (Note Aeronautical Section: Vertical Scale =10x Horizontal Scale)

AERIAL PHOTO MAP
With 10m contours and OBSTACLES AS MARKED ON CASEMENT CHARTS:

PLAN SCALE [A4-size] 1:20,000 approx.

SITE OUTLINE:
OBSTACLES: MAST (UNLIT)

O'Dwyer & Jones Design Partnership
Aviation Planning Consultants © 9-2022

6. Assessment #1
In regard to Cranes during Construction

6.1 This Section deals with the following items:

(a) Given the proximity to Casement Aerodrome, operation of cranes should be coordinated with Air Corps Air Traffic Services, no later than 28 days before use, contactable at airspaceandobstacles@defenceforces.ie or 01-4037681

NOTE: The applicant shall notify the Irish Aviation Authority and the Department of Defence regarding any cranes likely to penetrate ICAO surfaces.

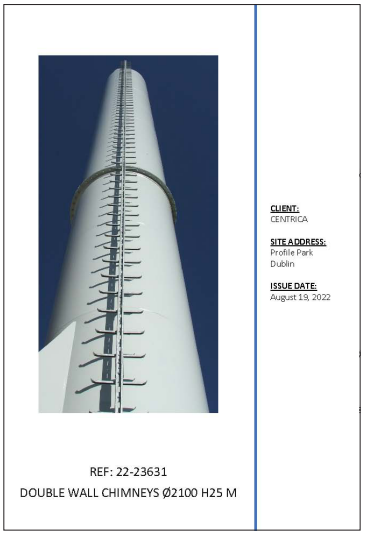
6.2 **Notifications:**

It is noted that S.I. 215 of 2005 – *'Irish Aviation Authority (Obstacles to Aircraft in Flight) Order'* requires prior notification of the use of any crane/s on this site to be submitted, at least 30 days in advance, to the Irish Aviation Authority and to the airport operator.
Specifically on this site, it is confirmed by the client that the operation of cranes on site will be coordinated with Air Corps Air Traffic Services, who will be contacted at least 30 days in advance – by email to airspaceandobstacles@defenceforces.ie and/or by telephone to 01-4037681 at Casement Aerodrome.

6.3 **ICAO Surfaces:**

The locations and dimensions of the ICAO Surfaces in the vicinity of this site are illustrated (in plan) on page 4, and (in plan and section) on page 6 above. It can be seen that the one ICAO Obstacle Limitation Surface which lies above the site is Casement Aerodrome's Inner Horizontal Surface, which is at 131.6m OD, i.e. at 56.8 metres above the FFL level (and ground level) on the site.

It can also be seen from the site plan on page 5 and the section drawing on page 6 that the highest point of the Power Plant will be at 102.8m OD, i.e. at 28.8 metres below the I.H.S., which is more than adequate for crane operations on site. It may be noted that the material and construction of the proposed exhaust stacks is such that they provide their own lightning protection so that additional rods (above 102.8m OD) will not be necessary.



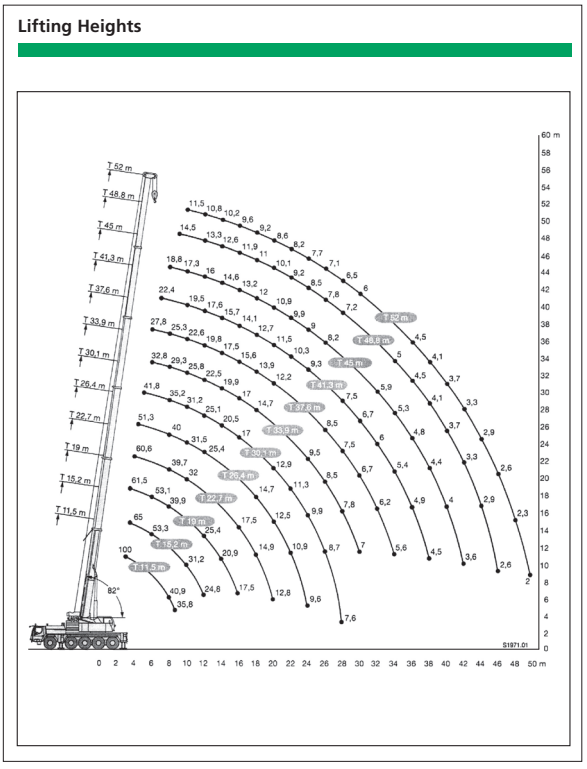
Proposed crane operations for the installation of the highest items on the site – the five exhaust stacks – are described on the following page. The mobile cranes described are the tallest that will be in use on the site.

6.4 **The following are the proposed (quoted) crane operations for the highest items:**

"We have allowed for 1 No 100t crane and 1 No 75t crane for 1 day on site for installing the chimney. Crane selection based on max 10t lifting on a 12-meter radius based on standard crane duty charts.
The cranes will be located within 12 meters of the offload and install area, the crane will be operating with standard lifting equipment and outrigger mats.
We have allowed for a man basket attached to the second crane for access to the top of the chimney."

"We have allowed for 1 No 40t crane for 1 days on site for installing the platform and ladder. Crane selection based on max 1t lifting on a 12-meter radius based on standard crane duty charts.
The crane will be located within 12 meters of the offload and install area, the crane will be operating with standard lifting equipment and outrigger mats.
All cranes will be supplied by a national company."

6.5 **100ton Mobile Crane:**



The illustration opposite [>] is of a typical [Liebherr] 100t mobile crane such as might be used on this site. It can be seen that the maximun vertical reach of this mobile crane is 56 metres above ground level, which figure is less than the distance between Casement's Inner Horizontal Surface and ground level at the site.

The proposed cranes on the site will therefore not penetrate any of Casement's "obstacle limitation surfaces" [as defined by ICAO].

In any event – because the crane could exceed 45 metres above ground level – 30 days' advance notice (in accordance with S.I. 215 of 2005) will be given to the IAA, and to the Department of Defence & Casement Aerodrome, of any crane use on site, and any requirements that the Department of Defence and Air Corps may have in relation to it will be observed.

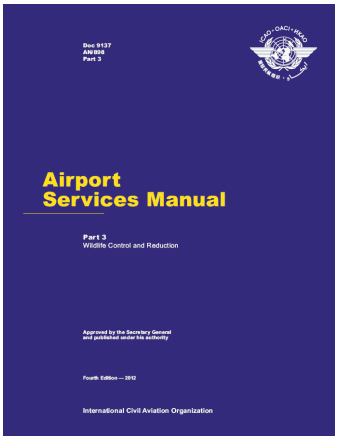
Advance notification of cranes will be in the Construction Management Plan.

7. Assessment #2
In regard to Wildlife Aviation Impact

7.1 This Section deals with the following items:

(b) Due to the proximity to Casement Aerodrome, the developer should produce a Wildlife Aviation Impact Assessment and implement adequate bird control measures during the construction phase to mitigate the effects of birds on Air Corps flight operations.

(c) Due to the proximity to Casement Aerodrome, mitigations may be required in relation to the management of wildlife attracted to attenuation ponds or other water features. Should negative effects of bird activity on Irish Air Corps operations arise, the owner must put measures in place to mitigate these effects to an acceptable level.



It should be noted that this Section deals with **aviation aspects and mitigation measures** in regard to bird strike hazard *[such as referred to in ICAO Airport Services Manuals Part 3 – Wildlife Control & Reduction >]* and that any surveys of wildlife species or migration routes deemed necessary or desirable would fall under the ambit of a separate ecologist. On this site (at c.1.5km from Casement Aerodrome) bird control is the principal wildlife concern (rather than incursions by mammals).

7.2 **The considerations which arise in regard to wildlife aviation impact are:**

(i) Control of any bird & wildlife attractants during construction,
(ii) Avoidance of landscape elements which might provide avian food,
(iii) Avoidance of unnecessary standing water features which might attract birds,
(iv) Management of any necessary standing water elements (such as flood-control swales) in locations where they will be less attractive to birds,
(v) Implementation of ongoing bird control and deterrence measures.

7.3 **Wildlife control during construction.**

In relation to item (b) above, building site management will require the contractor and subcontractors to control all debris on site and in particular any food waste. Management of trenches, topsoil removal, and earthmoving in general, will also be required, to ensure that debris or earth will not remain exposed as attractants to gulls or other birds, and that any flooded or exposed areas will be covered.

The Construction Management Plan is to provide for these items.
And in addition to wildlife control aspects, the CMP will also require that any dust or smoke-producing operations, or use of lasers on site (which might interfere with aviation), be strictly controlled.

7.4 Avian Food Attractants:

The area immediately surrounding the permitted Power Plan will be provided with landscaping – as is shown on submitted drawings nos. 20220517_LD.PRFLEPRK_1.1.pdf & 20220517_LD.PRFLEPRK_1.2.pdf & 20220517_LD.PRFLEPRK_1.3.pdf.
We are advised that the use of seed-bearing plants and trees will be avoided in this landscaping of the power plant site.

7.5 Pond and Water Elements on the Site:

In relation to SDCC's item (c), it can be seen in the Site Plan drawing *(on page 5 above)* that the development will contain a triangular pond and an extended swale. These are necessary for flood control and operational purposes. In addition (to minimise the size of swale needed) there will be an underground attenuation tank beneath the car park to the north of the site.

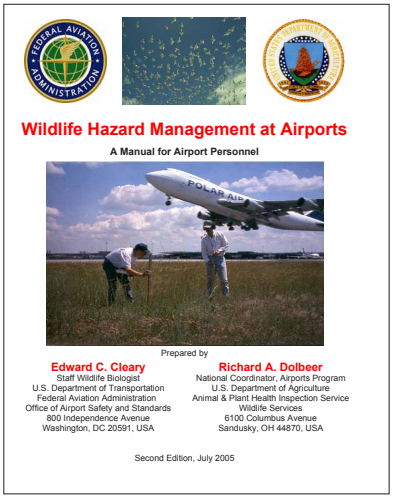
The IAA's recent publication "Bird and Wildlife Stike Management at Aerodromes (2021)" [above] states (on its p.60, under "Dispersal Methods") that

> " Human presence is the simplest method of dispersing wildlife. Also, animals will often react to the presence of the vehicle of the wildlife control unit if they associate it with being harassed."

In this context it should be noted that the pond and swale areas on the site are immediately surrounded by active roadways and buildings, and consequently unlikely to attract the gulls and water fowl which give rise to most bird strike hazard.

There is also an existing golf course in the immediate vicinity of the site (located between the power plant site and Casement's flight paths), which would be of much greater attraction to birds than the constrained Profile Park site.

Guidance in relation to bird-strike hazard and bird-deterrent features is also provided in the FAA's Manual on "Wildlife Hazard Management at Airports" [>] (– ranging from stuffed coyotes to live border collies…)



7.6 Overall Strike Risk:

Overall, no increased bird strike risk is anticipated to arise from the power plant site.

7.7 **Possible Wildlife Mitigation Measures.**

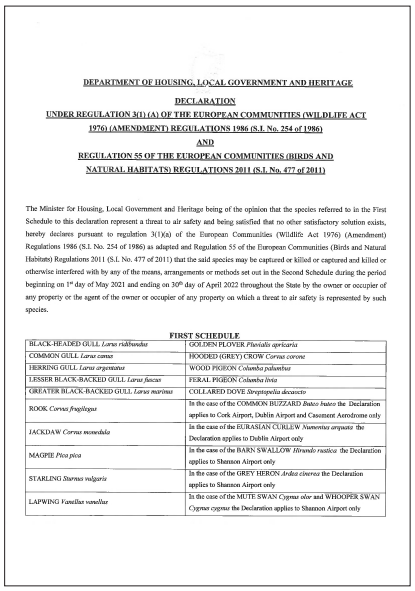
However, in the event of any new bird strike hazard being perceived by the Air Corps, it is agreed that the following mitigation measure can be adopted on the site (as outlined in IAA, ICAO, FAA manuals etc.):

(i) the pond area can be covered in netting (per ICAO etc. advice), should the need arise;

(ii) the IAA states (in the manual illustrated on previous page) that "Green laser beam guns seem to be effective to chase water birds away from the water surfaces at the airport."

(iii) artificial hawk kite deterrents may be employed intermittently (the IAA notes that gulls can get habituated to these).

In relation to SDCC's item (c) it is highly unlikely that any more significant bird control methods should arise on the power plant site (such as trapping or culling), but if so, provision (including in respect of protected species) is made under the Wild Birds Declaration (a Ministerial Order) made for the purpose of air safety. The 2021-22 Order is shown opposite [>], which lists the gulls and other large birds, and the flocking birds (such as starlings), and – specifically in relation to Casement Aerodrome – the Common Buzzard.



DEPARTMENT OF HOUSING, LOCAL GOVERNMENT AND HERITAGE

DECLARATION
UNDER REGULATION 3(1) (A) OF THE EUROPEAN COMMUNITIES (WILDLIFE ACT 1976) (AMENDMENT) REGULATIONS 1986 (S.I. No. 254 of 1986)
AND
REGULATION 55 OF THE EUROPEAN COMMUNITIES (BIRDS AND NATURAL HABITATS) REGULATIONS 2011 (S.I. No. 477 of 2011)

The Minister for Housing, Local Government and Heritage being of the opinion that the species referred to in the First Schedule to this declaration represent a threat to air safety and being satisfied that no other satisfactory solution exists, hereby declares pursuant to regulation 3(1)(a) of the European Communities (Wildlife Act 1976) (Amendment) Regulations 1986 (S.I. No. 254 of 1986) as adapted and Regulation 55 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) that the said species may be captured or killed or captured and killed or otherwise interfered with by any of the means, arrangements or methods set out in the Second Schedule during the period beginning on 1st day of May 2021 and ending on 30th day of April 2022 throughout the State by the owner or occupier of any property or the agent of the owner or occupier of any property on which a threat to air safety is represented by such species.

FIRST SCHEDULE

BLACK-HEADED GULL *Larus ridibundus*	GOLDEN PLOVER *Pluvialis apricaria*
COMMON GULL *Larus canus*	HOODED (GREY) CROW *Corvus corone*
HERRING GULL *Larus argentatus*	WOOD PIGEON *Columba palumbus*
LESSER BLACK-BACKED GULL *Larus fuscus*	FERAL PIGEON *Columba livia*
GREATER BLACK-BACKED GULL *Larus marinus*	COLLARED DOVE *Streptopelia decaocto*
ROOK *Corvus frugilegus*	In the case of the COMMON BUZZARD *Buteo buteo* the Declaration applies to Cork Airport, Dublin Airport and Casement Aerodrome only
JACKDAW *Corvus monedula*	In the case of the EURASIAN CURLEW *Numenius arquata* the Declaration applies to Dublin Airport only
MAGPIE *Pica pica*	In the case of the BARN SWALLOW *Hirundo rustica* the Declaration applies to Shannon Airport only
STARLING *Sturnus vulgaris*	In the case of the GREY HERON *Ardea cinerea* the Declaration applies to Shannon Airport only
LAPWING *Vanellus vanellus*	In the case of the MUTE SWAN *Cygnus olor* and WHOOPER SWAN *Cygnus cygnus* the Declaration applies to Shannon Airport only

7.8 **Wildlife Aviation Impact Summary:**

In summary, it is confirmed —

(a) no increased bird strike risk is anticipated to arise from the power plant site, and

(b) that any bird-hazard mitigation measures, which the Air Corps may consider necessary on the power plant site, will be carried out.

8. Assessment #3
In regard to Aviation Effects of Exhaust Plumes

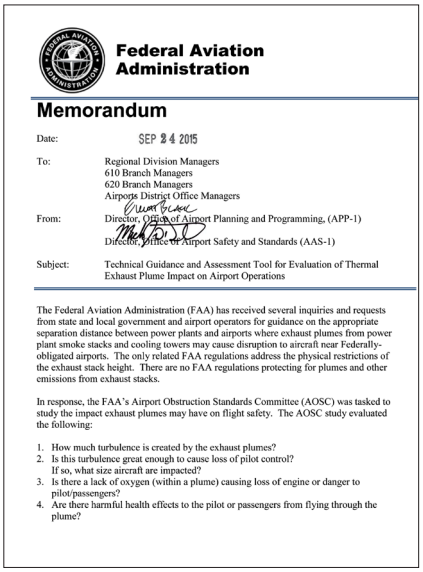
8.1 This Section deals with the following items:

(d) Due the proximity to Casement Aerodrome, Military Air Traffic Services requests an Aviation Impact Assessment on all potential emissions. Prior to the commencement of development, the applicant shall submit this assessment for the written agreement of the Planning Authority. The assessment should cover the possible effects of exhaust plumes or any other associated impact on flight operations at Casement Aerodrome.

8.1 International Aviation Policy

Aviation Policy in relation to Power Plant emissions is currently being developed. A Federal Aviation Administration document of 2015 initiated a study of the effect that power plant thermal plumes might have on aviation safety, under the following headings:

1. How much turbulence is created by the exhaust plumes?
2. Is this turbulence great enough to cause loss of pilot control? If so, what size aircraft are impacted?
3. Is there a lack of oxygen (within a plume) causing loss of engine or danger to pilot/ passengers?
4. Are there harmful health effects to the pilot or passengers from flying through the plume?



Federal Aviation Administration

Memorandum

Date: SEP 24 2015

To: Regional Division Managers
610 Branch Managers
620 Branch Managers
Airports District Office Managers

From: Director, Office of Airport Planning and Programming, (APP-1)
Director, Office of Airport Safety and Standards (AAS-1)

Subject: Technical Guidance and Assessment Tool for Evaluation of Thermal Exhaust Plume Impact on Airport Operations

The Federal Aviation Administration (FAA) has received several inquiries and requests from state and local government and airport operators for guidance on the appropriate separation distance between power plants and airports where exhaust plumes from power plant smoke stacks and cooling towers may cause disruption to aircraft near Federally-obligated airports. The only related FAA regulations address the physical restrictions of the exhaust stack height. There are no FAA regulations protecting for plumes and other emissions from exhaust stacks.

In response, the FAA's Airport Obstruction Standards Committee (AOSC) was tasked to study the impact exhaust plumes may have on flight safety. The AOSC study evaluated the following:

1. How much turbulence is created by the exhaust plumes?
2. Is this turbulence great enough to cause loss of pilot control? If so, what size aircraft are impacted?
3. Is there a lack of oxygen (within a plume) causing loss of engine or danger to pilot/passengers?
4. Are there harmful health effects to the pilot or passengers from flying through the plume?

Arising from this, the FAA recommends adoption of a model developed by MITRE Corporation to predict plume size and severity of flight impact from thermal exhaust plume(s).

8.2 Emissions Analysis

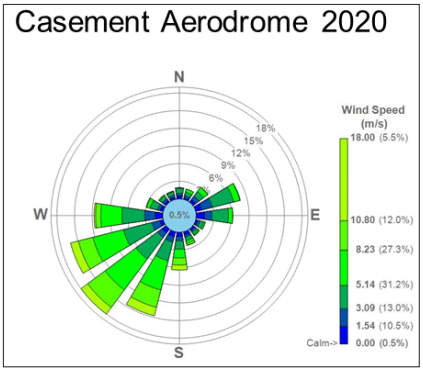
The MITRE "Exhaust-Plume-Analyzer" (recommended by the FAA) has been applied in an analysis of the emissions of the Profile Park Power Plant, by Dr Edward Porter of AWN. [That Analysis was included in the project's EIAR, and pages from it are appended at pp. 16-23 following].

In particular this MITRE Analysis has investigated

(i) oxygen content;
(ii) emissions temperature; and
(iii) vertical velocity of emissions;

and whether or not these items might have an effect on helicopter operations (which are more susceptible to these items than fixed-wing aircraft).

8.3 Wind Direction



This analysis also took into effect all recent Casement Aerodrome wind data [>], and it should be noted that the location of the site and the direction of the prevailing wind mean that emissions will be directed away from Casement Aerodrome (which lies to south-south-west of the power plant site).

8.4 Emissions Analysis Findings

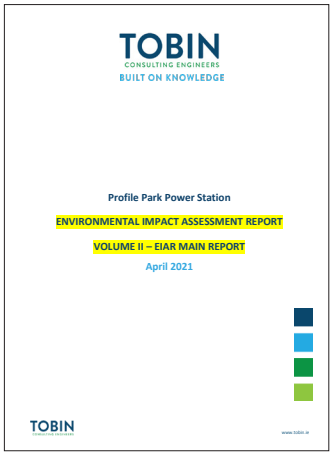
The findings of the AWN Study, using the MITRE Exhaust-Plume Analysis recommended by the FAA, were included in the Environmental Impact Assessment Report [EIAR] for this project. These address possible helicopter risk elements.

These findings are summarised as follows:

" (i) Oxygen Content – within 9 metres of the stack top the oxygen concentration will increase above the 12% risk level for oxygen.

(ii) Temperature – the temperature of the plume will drop to less than 50°C within 11 metres of the stack.

(iii) Vertical Velocity – the critical vertical velocity of 4.3 m/s will not be exceeded within 15 metre from the stack top.



Thus, the maximum extent of the risk zone of the plume for each parameter is shown below based on three full years of meteorological data covering all meteorological conditions including pressure /temperature inversions:

Risk Zone for Oxygen – 9 metres
Risk Zone for Temperature – 11 metres
Risk Zone for Vertical Velocity – 15 metres "

8.5 Recent Stack Height Reduction (by 3.8m)

It may be noted that the heights of the Profile Park power plant stacks were originally envisaged to be 31.8m in height above ground level, and that (as subsequently submitted and permitted by SDCC) they have since been reduced by 3.8m to 28m above ground level. In relation to this reduction in height (with consequent improved results) AWN has stated as follows:

> "We kept the original thermal plume study, with the original stacks heights (approx. 31 m), as the effect of lowering the stack height would be to reduce the risk zone heights, i.e. the original study was the worst case scenario."

8.6 **Visual Effect**

During its operation, the proposed power plant will operate on natural gas. In exceptional circumstances it may operate on its secondary fuel which is low sulphur diesel oil. This would be expected to be for testing purposes only, i.e. less than 18 hours per annum. In both operational profiles, the plant's exhaust stacks will produce minimal visual effects (with no visual effect extending to the Aerodrome's Inner Horizontal Surface which is at 28.8m above).

To illustrate this, a photograph (provided by plant suppliers) of a comparable 5-stack power plant in operation is included opposite >>.

8.5 **Conclusion with regard to Emissions from the Profile Park Power Plant**

As the heights listed in para. 8.4 for the three aviation 'risk zones' above the Profile Park power plant exhaust stacks [i.e. **9m** (re Oxygen), **11m** (re Temperature), & **15m** (re Vertical Velocity)] are significantly lower than Casement Aerodrome's Inner Horizontal Surface elevation (which lies at 131.6m – i.e. at **28.8m above** the tops of the five stacks), the proposed development is not envisioned by AWN to have any adverse effect on aviation (including helicopter operations) at Casement Aerodrome.

8.6 **Further Mitigation**

Taking into account the concerns of the Air Corps and Department of Defence, it is confirmed that, should any negative impacts to Air Corps flight operations occur from flue emissions or otherwise, the owners/operators of the plant will take immediate actions to mitigate any such impacts to an acceptable level.

9. Other Aviation Considerations

9.1 External Lighting

S.D.C.C.'s Condition 3.3 [under "Roads"] states that "prior to commencement of development, a Public Lighting Design for the development must be submitted and agreed by the Public Lighting team of SDCC."

In relation to external lighting in general (including roads lighting) we would advise, from an aviation point of view —

(i) That in this location near an aerodrome, any external lighting should be of the "cut-off" type, i.e. not showing any light above the horizontal which might interfere with air navigation.

(ii) That aviation warning lights be added to the tops of the exhaust stacks, with low-intensity aviation lighting (in accordance with ICAO guidance, and visible from all directions) located to the south-west and north-east edges of the exhaust stack tops.

It may be noted that the developer has agreed that this aviation warning lighting will be provided, and that any observations made by the Air Corps in relation to it (such as compatibility with Night Vision Goggles) will be taken into account.

9.2 Ecology & Landscaping

S.D.C.C.'s Condition 10 "Ecology" states that "prior to the commencement of any permitted development, the developer shall engage the services of an independent qualified ecologist to implement the management recommendations of the Bio-diversity Management Plan", and also states that this Biodiversity Management Plan should include provisions for "wildlife shelters, bat boxes, bird boxes" etc.

From an aviation point of view it should be noted that, while provision for small species (including small non-migrating local birds) should be unproblematical, ecological provision in relation to the larger bird species listed in the Wild Birds Declaration Order (referred to in para. 7.7 above) would be undesirable in the vicinity of an aerodrome (i.e. on this particular site) for bird strike hazard reasons.

9.3 Solar/PV panels

Bearing in mind that reflections from solar/PV panels can affect aviation, it is confirmed that no solar/PV panels are being provided as part of this development.

10. SUMMARY

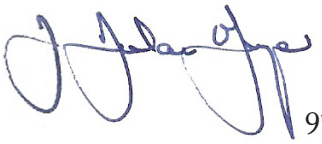
10.1 In regard to the ICAO "Obstacle Limitation Surfaces"—
the site lies under Casement Aerodrome's Inner Horizontal Surface, which is at 131.6m OD, with ground level on the site at 56.8m below it, and with the highest point of the proposed development at 28.8m below that Surface.

10.2 In regard to Cranes on site during construction —
(a) the tallest proposed crane on the site will extend to a maximum of 56m and therefore will not penetrate the I.H.S. (or any of Casement's "obstacle limitation surfaces"); and
(b) in any event, 30 days' advance notice (in accordance with S.I. 215 of 2005) will be given to the IAA, and to the Department of Defence & Casement Aerodrome, of any crane operations on site.

10.3 In regard to Wildlife Aviation Impact it is confirmed —
(a) that all necessary measures to mitigate bird strike hazard will be carried out on site during the construction period;
(b) that no increased bird strike risk is anticipated to arise from the power plant development; and
(c) that any bird-hazard mitigation measures, which the Air Corps may consider necessary, will be carried out at the power plant site.

10.4 In regard to the Power Plant Emissions —
The aviation 'risk zones' above the power plant exhaust stacks extend to 9m (for Oxygen), 11m (for Temperature), & 15m (for Vertical Velocity); and as these are significantly lower than Casement Aerodrome's Inner Horizontal Surface (which lies at 28.8m above the tops of the five stacks), the proposed development is not envisioned to have any adverse effect on flight operations at Casement Aerodrome.

10.5 Overall, it is considered that the permitted power plant development at Profile Park complies with all aviation and aeronautical requirements affecting the location.



9th September 2022
J. Declan O'Dwyer B.Arch MBA RIBA
O'Dwyer & Jones Design Partnership
Aviation Planning Consultants

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APPENDIX

Power Plant Emissions — Analysis vis-à-vis Aviation

by AWN – using MITRE "Exhaust Plume Analyser"

[Extract of aviation-related pages contained within the Environmental Impact Assessment Report for this Power Plant Project]

THERMAL PLUME MODELLING

1.1 Introduction

This appendix provides an assessment of the potential impact of the plumes associated with the operational phase of the Profile Park Power Station on aircraft, and in particular helicopters, in the region.

The issue of plume characteristics and the effect on the operation of helicopters in the region of the site has been assessed below. An assessment has been undertaken to determine the region surrounding the facility where levels of excess temperature, turbulence (vertical velocity) and reduced oxygen could potentially be encountered. Studies undertaken by the MITRE Corporation (MITRE, 2012) and outlined in the user manual for the "Exhaust-Plume-Analyzer" model detail the likely impact of an exhaust plume on aircraft based on a range of parameters / criteria including the thermal buoyancy and temperature of the plume.

The current study is based on detailed site-specific information. The site-specific study, using the Cambridge Environmental Research Consultants (CERC) AMDS-5 model for oxygen, temperature and vertical velocity, allows the actual emission data for the facility to be used as input into the model. In addition, meteorological data for the region, based on three full years of data from Casement Aerodrome (2018-2020) and building data also forms part of the inputs to the model to allow an accurate representation of the impact of the facility in the surrounding environment.

1.2 Methodology

The parameters of the plume which are most relevant to helicopters has been investigated by the Mitre Corporation as part of the development of the "Expanded Model For Determining The Effects Of Vertical Plumes On Aviation Safety" (MITRE, 2012). These parameters have been reviewed below.

1.2.1 Oxygen

The Mitre Corporation report confirms that oxygen levels below 12% are potentially hazardous to helicopters (MITRE, 2012) and thus the oxygen content of the plume with distance from the stack has been investigated.

In relation to the gas generator, the oxygen content of the plume at stack top will typically be 13%.

1.2.2 Temperature

The Mitre Corporation report confirms that temperatures in excess of 50°C are potentially hazardous to helicopters (MITRE, 2012) and thus the temperature of the plume with distance from the stack has been investigated.

In relation to the gas generator, the temperature of the plume at stack top is 592.2K (319°C).

1.2.3 Vertical Velocity

High vertical velocities are also a concern when considering helicopter / plume interactions as they can lead to increased turbulence in the atmosphere. The literature (CASA, 2012) suggests that the critical level for vertical velocities is 4.3 m/s. Thus, modelling has been undertaken to understand the worst-case vertical velocities of the gas generator plume with distance from the stacks.

The change in each of these parameters with distance from the stack has been reviewed below. For each of these parameters, three full years of meteorological conditions has been used in the analysis including periods of atmospheric pressure / temperature inversions. Meteorological data for the years 2018-2020 for Casement Aerodrome have been used in the analysis for all scenarios outlined, with results for the worst case year reported. The ADMS-5 model has the capability to process calm conditions by setting the wind speed to 0.3 m/s and allowing an equal probability for all wind directions. This option has been used in this assessment for both the temperature assessment and the vertical velocity assessment.

The model was also run with a high density receptor grid based on 5m horizontal spacing and 0.5m vertical spacing in the region of the stack top to determine the changes in the parameters above over very short distances. The receptor spacing of 0.5m was selected as the change with vertical distance in oxygen, temperature and vertical velocity from the stack top is rapid and would be difficult to determine with a coarser grid resolution.

1.2.4 Process Emissions

The proposed Profile Park Power Station will have six gas generator stacks at a height of 31.8m (~75m OD). The source information for the modelled emission points has been summarised in Table 1.

Table 1: Summary of Source Information

Scenario	Height Above Ground Level (m)	Exit Diameter (m)	Cross-Sectional Area (m^2)	Temp (K)	Max Volume Flow (Nm^3/hr)	Exit Velocity (m/sec actual)	NO_2	
							Conc. (mg/Nm^3)	Mass Emission (g/s)
Individual stacks	31.8m (75m OD)	1.704	2.28	592.2	133,862	29.54	75.0	2.79

1.3 Results & Discussion

1.3.1 Oxygen / Plume Interaction

The Mitre Corporation report (MITRE, 2012) confirms that depleted oxygen is generally of greatest concern when considering helicopter/plume interactions. The Mitre Corporation report confirms that at an oxygen content below 12% oxygen there is a risk of engine cut-out whilst above this level there is no risk to helicopter engines. Thus, modelling has been undertaken to determine the oxygen percentage of operations both on natural gas and diesel oil.

The following equation is used to model the % of oxygen in the plume with distance from the stack top. For a given emission concentration of any pollutant e (in $\mu g/m^3$), the oxygen content O (%), is related to the plume concentration c (in $\mu g/m^3$) by the following relationship (13% is the plume oxygen percentage at release for gas generators):

$$c / e = (20.95-O) / (20.95-13)$$

Thus, the calculation can be re-arranged to determine the oxygen content (%) of the plume as a function of distance from the stack top. The re-arranged equation is:

$$O (\%) = 20.95- [(c/e) * (7.65)]$$

AERMOD was thus run to calculate the pollutant concentration and identify the distance from the plume centreline where the 12% oxygen level was exceeded. Modelling was undertaken using Casement Aerodrome data for 2018-2020. Shown in

Figures 1 and 2 show the results for the full worst-case year of 2020.

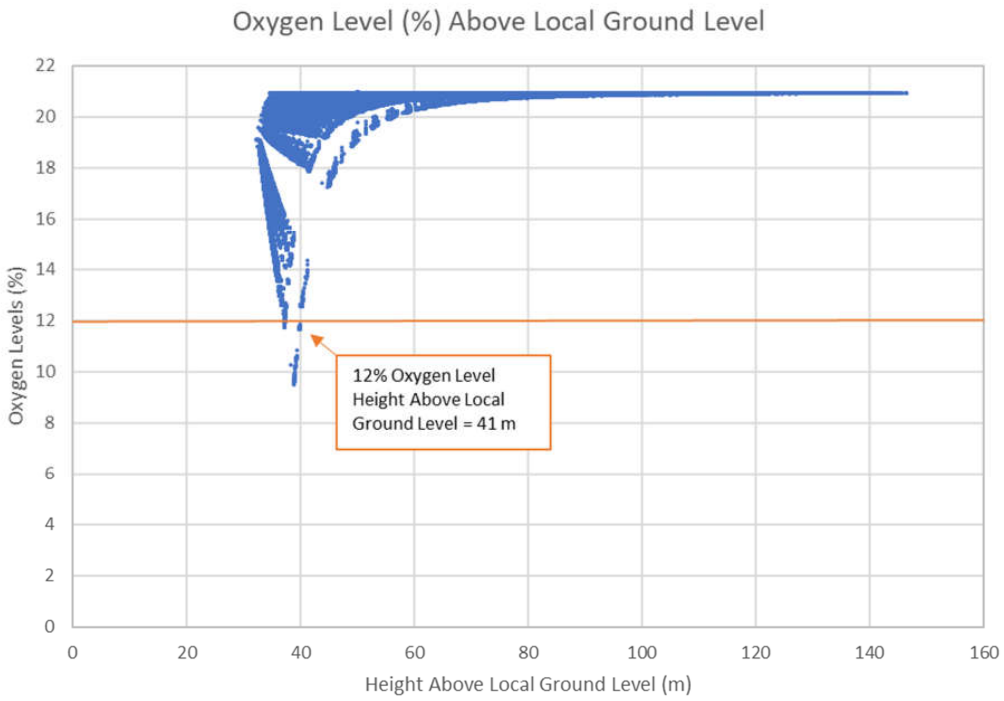


Figure 1: Oxygen Content Of The Plume (%) With Distance Above Ground Level

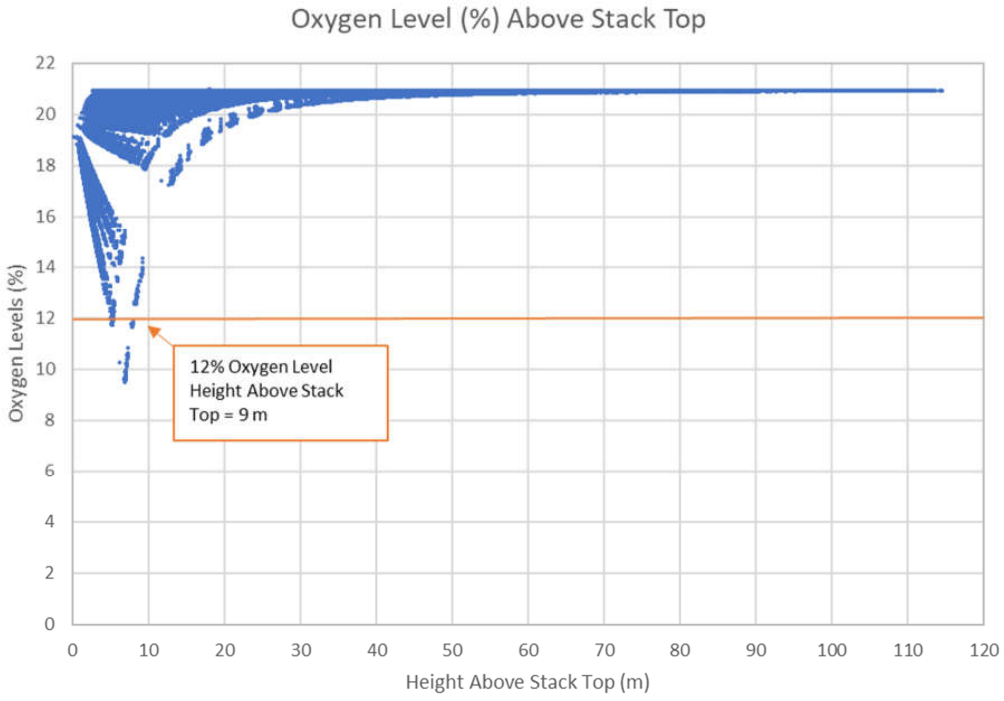


Figure 2: Oxygen Content Of The Plume (%) With Distance From Stack Top

The modelling results confirm that within a distance of 9 m from the stack top (41 m above local ground level) the oxygen content of the stacks plume will be 12% or greater. This analysis is based on every hour of the worst case year 2020 and includes all meteorological conditions including pressure / temperature inversions.

1.3.2 Temperature / Plume Interactions

Temperatures in excess of 50°C are potentially hazardous to helicopters and thus the decrease in the initial temperature of stack plumes (319°C) with distance from the stack has been investigated. Modelling of the temperature of the plume with distance from the stack has been undertaken using the CERC ADMS-5 model for every hour of the year based on Casement Aerodrome 2018-2020 meteorological data. The model has a specific temperature module which can, as part of the model output, give the temperature of the plume centreline with distance from the stack top.

The results are outlined below in Figure 3 and 4 for the worst case year of 2020.

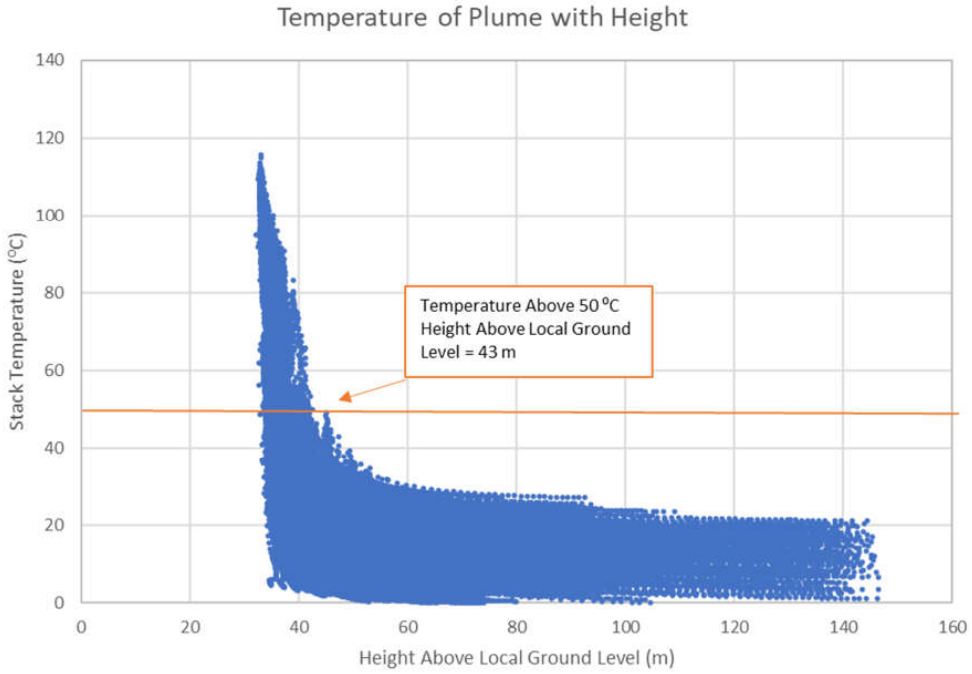


Figure 3: Temperature Of The Plume (°C) With Distance Above Ground Level

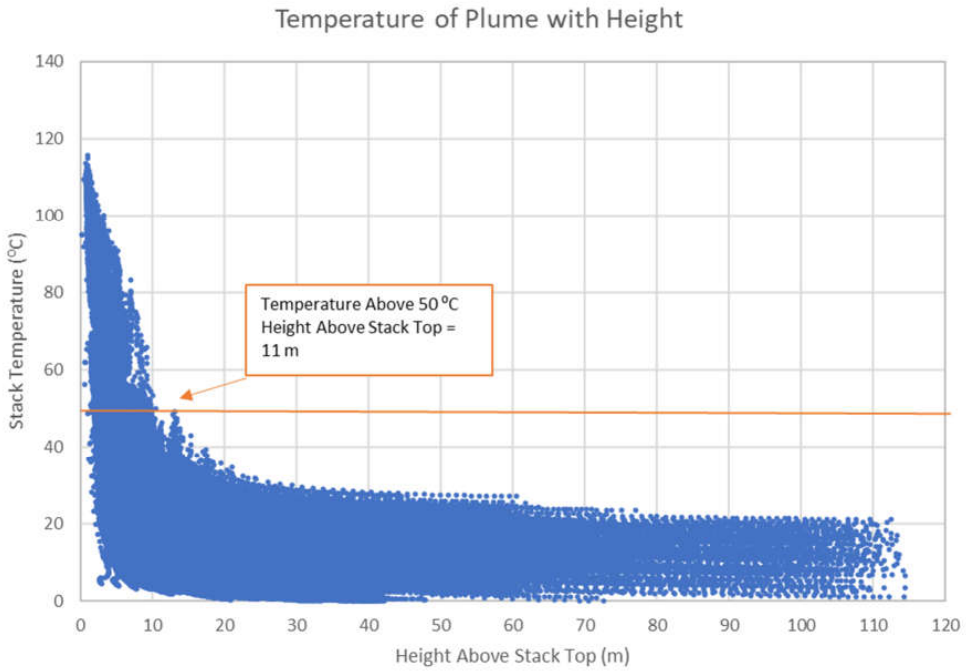


Figure 4: Temperature Of The Plume (°C) With Distance From Stack Top

The results confirm that the plume will be below 50°C within 11 m of the stack top (43 m above ground level) for every hour over the year for the stack including all meteorological conditions including pressure / temperature inversions.

1.3.3 Vertical Velocity / Plume Interactions

High vertical velocities are also relevant when considering helicopter/plume interactions. The Australian CASA (CASA, 2012) consider that the critical level for vertical velocity is 4.3 m/s. Thus, modelling has been undertaken to understand the vertical velocity of the plume with distance from the stack.

Cambridge Environmental Research Consultants (CERC), the developers of the EPA approved AMDS-5 model, were contacted to determine whether vertical velocity could be derived indirectly from the travel time of the plume with distance from the stack. CERC confirmed that the vertical velocity (in m/s) could be derived from an analysis of the plume centreline height (in metres) and the plume travel time (in seconds). The vertical velocity has been calculated for every hour of the year using Casement Aerodrome 2018-2020. The results are outlined below in Figures 5 and 6 for the worst case year of 2020.

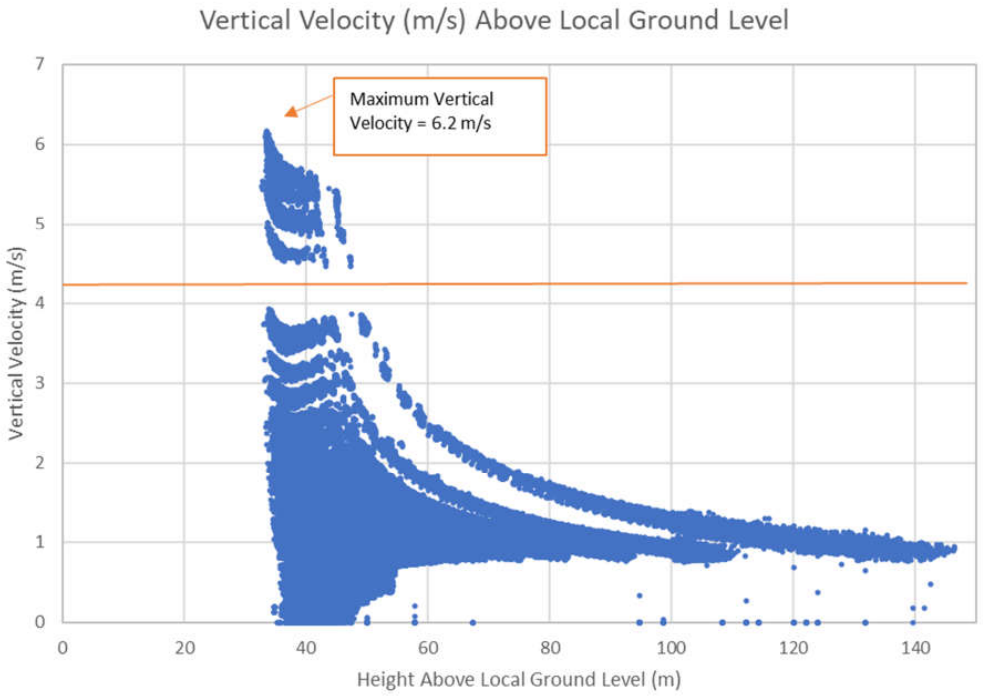


Figure 5: Vertical Velocity Of The Plume (m/s) With Distance Above Ground Level

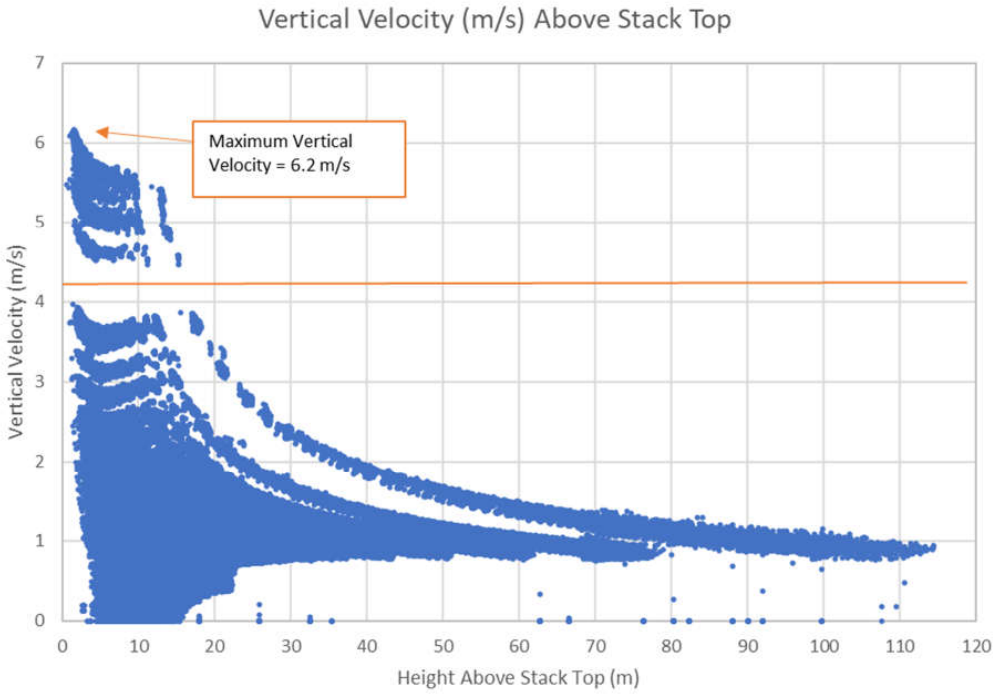


Figure 6: Vertical Velocity Of The Plume (m/s) With Distance From Stack Top

The results confirm that the velocity of the plume will be below 4.3 m/s within 15 m of the stack top (47 m above ground level) of the stack including all meteorological conditions including pressure / temperature inversions.

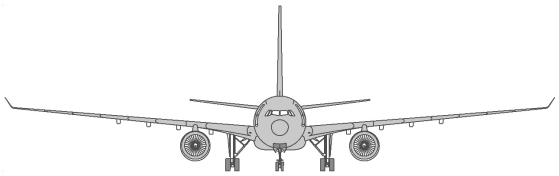
1.4 Summary

Thus, in summary the results of the analysis are as follows.

- **Oxygen Content** – within 9 metres of the stack top the oxygen concentration will increase above the 12% risk level for oxygen.
- **Temperature** – the temperature of the plume will drop to less than 50°C within 11 metres of the stack.
- **Vertical Velocity** – the critical vertical velocity of 4.3 m/s will not be exceeded within 15 metre from the stack top.

Thus, the maximum extent of the risk zone of the plume for each parameter is shown below based on three full years of meteorological data covering all meteorological conditions including pressure / temperature inversions:

- Risk Zone for Oxygen – 9 metres
- Risk Zone for Temperature – 11 metres
- Risk Zone for Vertical Velocity – 15 metres



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