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CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 1.1

Fingal County Council Letter of Consent

Comhairle Contae Fhine Gall
Fingal County Council

An Roinn Forbartha Eacnamaíochta, Fiontraíochta, Turasóireachta & Cultúir
Economic, Enterprise, Tourism and Cultural Development Department

Mr. Paul Hennessy,
Thorntons Recycling Ltd.,
Unit S3B Henry Road,
Park West Business Park
Dublin 12.

30th June 2022

Our Ref: LOC.034.2022

Letter of Consent for impending planning application for Thorntons Recycling Ltd. at Cappogue Industrial Park, Ballycoolin, Dublin 11.

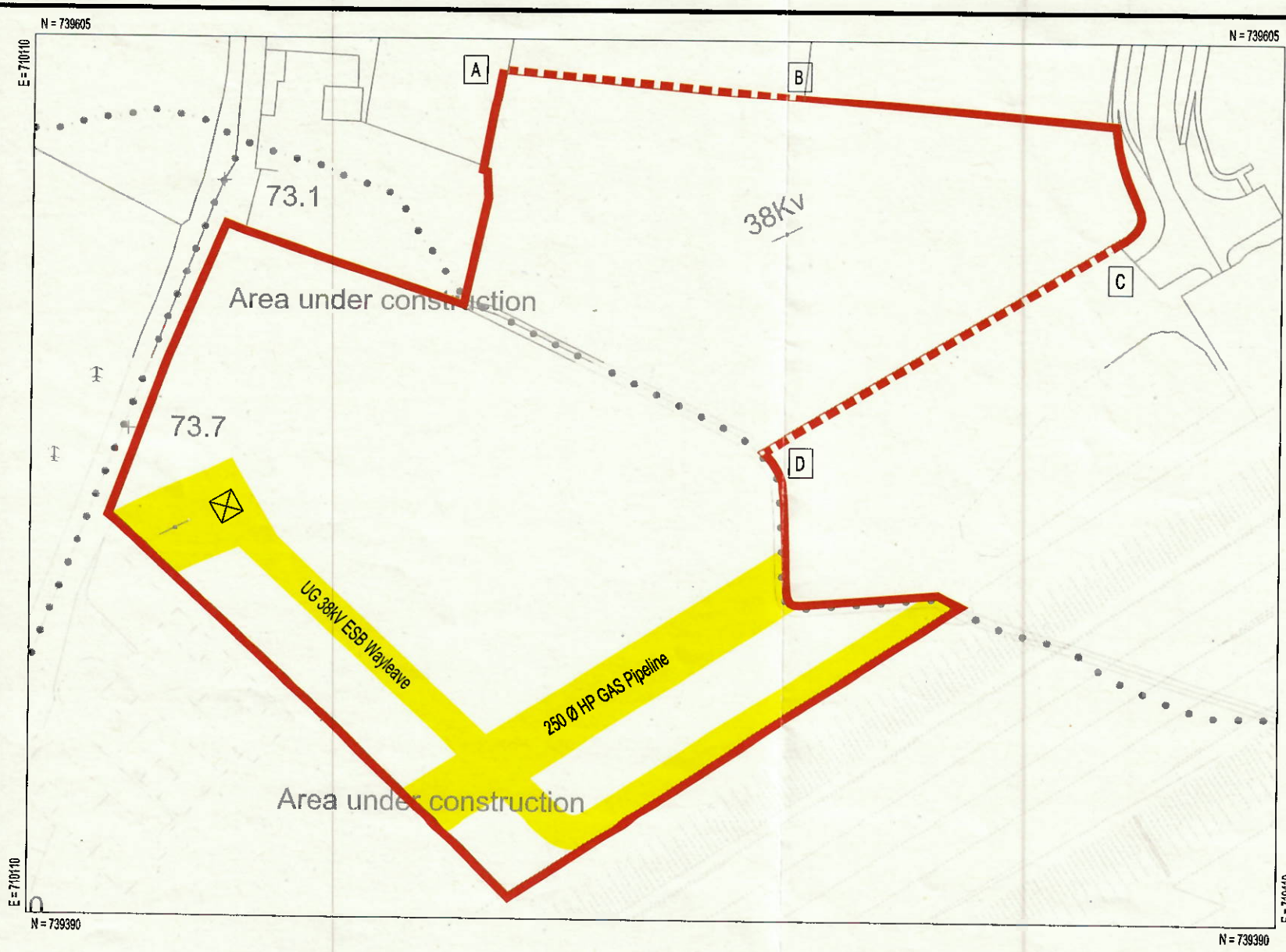
Dear Mr. Hennessy,

I confirm that the Property Services Section, Economic Enterprise, Tourism & Cultural Development Department of Fingal County Council consent only to the inclusion of that land in the ownership of Fingal County Council as identified and shown outlined in red on Drawing No 07_112B_7003 for the purpose of the planning application and for no other purpose. It is the responsibility of the applicant to ensure that the drawing supplied correctly reflect the boundaries of the land stated to be in the ownership of the Council.

Furthermore, it should be noted the within consent does not confer any rights to Thorntons Recycling Ltd in respect of the land identified and this letter shall not constitute a note or memorandum in writing for the purpose of Section 51 of the Land and Conveyancing Reform Act 2009.

In the event that planning permission is granted no works should commence without prior written agreement from the Property Services of Fingal County Council.
This letter is issuing on the basis of the undertaking given by the applicant of prior discussions with Council officials in relation to the land.
Yours sincerely

John Quinlivan
Director of Services
Economic, Enterprise, Tourism & Cultural Development Department



This drawing is produced using the Irish Transverse Mercator (ITM) Geographic Coordinate System

N

Note:

Property boundary outlined in RED.

Dashed line A-B & C-D not to OSi detail

Wayleaves shown Yellow

Site Area : Circa 6.42 acres
2.60 ha

Scale 1:1000

O.S SHEET Ref: 3130-B , 3130-D
Co-Ordinates to Irish Transverse Mercator.
THIS IS A COMPUTER GENERATED MAP

Clifton Scannell Emerson Associates

Project	Cappogue Industrial Lands				
Dwg. Title	Site Disposal Sites H and I				
Drawn By	KF	Scale	1:1000 @ A3	Date	09-05-2019
Checked by	MC	Dwg. Progress	Information	Dwg. No.	07_112B_7003

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APPENDIX 1.2

Projects considering during Cumulative Assessment

Planning App No.	Address	Description	Date Submitted	Final Decision	Decision	EIA
FW22A/0061	Site Nos. 12 & 13, Stadium Business Park, Ballycoolin Road, Dublin 11 located north of Ballycoolin Road and east of industrial, block containing Units A, B, C, D & F/G Stadium Business Park	For a development comprising: (i) construction of 5 no. industrial / warehouse / logistics units contained within 3 no. blocks consisting of: (a) Block A, containing Unit 1 and Unit 2, warehousing / distribution / logistics units comprising 2,011.m each; (b) Block B, containing Unit 3 and 4, industrial / warehousing units comprising 1,381sq.m each; and Block C, containing Unit 5, a warehousing / distribution / logistics unit comprising 1,635sq.m. Each unit will be provided with ancillary office space and staff facilities; (ii) Creation of vehicular access point to the west of the site to provide for public access, repositioning of 2no. existing vehicular access points & the provision of 1 no. new vehicular access point, all 3no. access points to the north for servicing and deliveries; (iii) 135 no. car parking spaces (including 6 no. EV spaces and 5 no. reduced mobility spaces) and 80 no. bicycle parking spaces will serve the development; and (iv) The development will also include all associated SuDS drainage, landscaping, boundary treatments, lighting, CCTV, signage and site development works necessary to facilitate the development.	04/04/2022	26/05/2022	Grant Permission	No
FW21A/0190	Site 11, Stadium Business Park, Ballycoolin Road, Dublin 11	Permission for the construction of 4 n o. industrial units consisting of offices, workshops and accessories, a training unit and storage, welfare facilities, parking for cars and HGV, stormwater retention pond, signage, site fencing, gates lights and all associated works.	31/03/2022	25/04/2022	Grant Permission	No
FW21A/0235	Site B, Cappogue Industrial Park, Ballycoolin Road, Dublin 11.	Construction of a distribution, washing and processing facility for fresh and used cooking oils; including offices, delivery vehicle maintenance, weightbridge, tank farm, lorry wash, external covered storage, signage, fuel tanks, ancillary accommodation and associated site works. Local Authority permits required for used cooking oil process, storage and transfer and for the collection, temporary storage and transfer of food waste (Class 10 operations, along with Disposal Code 15 & Recovery Code 13).	30/11/2021	25/07/2022	Refuse Permission	No
FW21A/0149	Premier Business Park, Ballycoolin Road, Cappoge, Dublin 11.	Construction of 1) a new security hut at the site entrance, 2) a warehouse/light industrial unit of approx. 4,743 sq.m (Unit B), 3) a warehouse/light industrial unit of approx. 5,896 sq.m. (Unit C) and 4) a warehouse/logistics unit of approx. 6,736 sq.m (Unit D), along with all associated site works, car and bicycle parking and landscaping, all on a site are of 4.89 ha. Cappoge Castle, a recorded monument is located on the site.	15/12/2021	26/05/2022	Grant Permission	No
FW21A/0049	North City Business Park, Cappogue, Finglas, Dublin 11	The proposed development will consist of a building with 2 No. single storey semi-detached industrial and/or warehouse units with two-storey ancillary offices and an internal ESB substation. All ancillary site development works to include trucking yard to rear, underground duct work, drainage, utility services, car parking, landscaping, cycle shelter and signage to the proposed units form part of this application. The building has a gross floor area of 4,011 square meters on a 0.9 hectare site.	12/03/2021	15/06/2021	Grant Permission	No
FW21A/0005	Unit 7 (units 7A, 7B & 7C) Northwest Business Park, Ballycoolen (townlands Ballycoolen, Cappoge & Grange), Blanchardstown, Dublin 15	Construction of a high bay warehouse/storage facility to the north of 7B for use as 'Goods Outward' building, all ancillary to the use of the existing buildings and activities on site.	11/01/2021	13/04/2021	Grant Permission	No
FW20A/0122	Cappogue Industrial Park, Cappogue, Dublin 11	Permission for development an an existing C&D waste facility. The proposed development at the 0.75 ha site is for an increase in the rate of waste acceptance and processing at the facility up to 49,500 tonnes per annum, comprising mixed construction and demoliton (C&D) wastes. The planning application is accompanied by an Environmental Impact Assessment Report.	28/07/2020	30/10/2020	Grant Permission	Yes
FW20A/0075	North City Business Park (ie lands north of Cappagh Road), Cappoge, Finglas, Dublin 11	Change of Use for Unit A 7 A&B, as constructed under Reg Ref F07A/1637/E, from Warehouse use to Warehouse/Industry-General including Food, Drink and Flower Preparation/Processing use. The building has a gross floor area of 3,529 square meters and is located on a 0.79 hectare site.	10/09/2020	18/12/2020	Grant Permission	No
FW20A/0037	Panda Materials Recovery Facility, Cappagh Road, Cappoge Td., Finglas, Dublin 11	The development will consist of Installation of roof mounted solar panels over 2 no. existing transfer/recycling waste buildings. The proposed development relates to an activity covered by an existing Waste Licence No. WO26 1-02 issued by the Environmental Protection Agency.	19/01/2021	15/03/2021	Grant Permission	No

FW19A/0128	Unit 1, Cappogue Industrial Park, Cappogue, Dublin 11, D11 TX37	Retention permission is being sought for 368.87m2 of floor space, including ground floor area (347.34m2) and first floor area (21.53m2) measuring a maximum height of 13.5m above ground level within the existing building permitted under previous Planning Permission FW13A/0053 and a 51 m long constructed boundary wall along the western boundary of the site consisting of a 2.7m high concrete wall with a 19m high palisade fence atop (total height 4.6m).	25/03/2020	11/06/2020	Grant Permission	No
PARTXI/008/19	Cappaghfinn, Cappagh Road, Finglas, Dublin 11	Proposed development of 69 no. dwellings & associated site works at Cappaghfinn, Cappagh Road Finglas Dublin 11.	10/10/2019	13/01/2020	Grand Permission	No

Planning App No.	Address	Description	Date Submitted	Final Decision	Decision	EIA
FW22A/0025	Lands within the grounds of Connolly Hospital, Blanchardstown, Mill Road, Abbotstown, Dublin 15, 15 X40D	Retention permission for the development of lands within the grounds Connolly Hospital. The proposed development will consist of 148sqm extension to the existing laboratory to provide additional laboratory space, staining room, cut-up room, specimen store, cytology room, office, specimen reception and plant room in a single storey building with dedicated roof top plant linked to the existing building via a new lobby with a new external pre fabricated chemical store with associated hard and soft landscaping.	10/02/2022	04/04/2022	Grant Permission	No
FW21A/0140	The Courtyard, Sport Ireland National Campus, Snugborough Road, Blanchardstown, Dublin 15, D15Y52H	In the curtilage of the Protected Structure Abbotstown House, amendment to the previously permitted courtyard office development (Planning Ref FW15A/0063) relating to the adaption and refurbishment of the existing single storey structure known as 'Historic Shed'; to provide ancillary office accommodation and meeting spaces (50m²) to the courtyard development in lieu of a bike shed; external signage; all associated site development, hard/soft landscaping, replacement bike parking and excavation works above and below ground.	28/07/2021	13/10/2021	Grant Permission	No
FW21A/0008	The Lower Yard, Sport Ireland National Sports Campus, Snugborough Road, Blanchardstown, Dublin 15	The development is in the curtilage of the protected structure Abbotstown House. The development will consist of: a part two storey and part single storey office development (718m2) within the Lower Yard complex of Abbotstown House which incorporates the existing agricultural structures known as the Long Barn. The works will comprise;- The adaption and refurbishment of the existing single storey structures to provide office meeting and ancillary spaces (194m2); The construction of a two storey extension to provide office space, meeting spaces, reception and ancillary areas (524m2); illuminated external signage (20m2); The demolition of 2no modern stable buildings within the lower yard (130m2); The provision of an extension to the existing car park to provide 24no. additional spaces, bicycle parking; set down areas; and all associated site development, hard landscaping, site lighting and excavation works above and below ground. No works are proposed to the protected structure Abbotstown House as part of this development.	26/01/2021	27/04/2021	Grant Permission	No
FW19A/0080	National Sports Campus, Abbotstown, Dublin 15	Retention of pitch base (area: 6,778.58 sq.m.) and completion of same to construct an all-weather hockey pitch to FIH standard, Global Category, together with associated works to include reduction in the number of permitted floodlights within this area of the campus from 12 no. 20m high 300 lux (associated with 3 No. 7 a-side pitches) to 4 No. 21m high 500 lux floodlights, associated ball nets, boundary fencing and 2 No. 3m HDPE Water Storage Tanks on reinforced concrete base.	24/05/2019	14/08/2019	Grant Permission	No
FW19A/0194	Connolly Hospital, Blanchardstown, Dublin 15 - Townlands of Sheephill and Abbotstown	The proposed development will consist of the provision of a new asphalt surface level ancillary car park (to provide 119 no. car parking spaces) together with associated vehicular access (including access and egress control barriers) and the provision of footpaths. Associated works include site clearance (including tree removal), ground works, landscaping works and provision of external lighting and associated infrastructure provision to serve the public car park (including underground surface water storage attenuation tank)	19/03/2020	15/07/2020	Grant Permission	No
FW18A/0160	The National Sports Campus, Snugborough Road, Blanchardstown, Dublin 15	Fingal County Council under Reg. Ref: FW09A/0061 for a National Sports Campus at a site in Abbotstown Dublin 15 of approximately 89.22 hectares. The proposed amendments relate to an area of 3ha and principally to the covered pitch building of the campus and immediate surrounding landscaping as set out below. The proposed amendments the subject of this application relate to: 1.Internal alterations to the approved covered pitch building; 2.External alterations to the appearance of the approved covered pitch building; 3.Alterations to the pedestrian access to and from the building; and finally, 4.Landscape works in association with item (3) above in accordance with the landscape masterplan approved under parent planning permission. The proposed amendments include the following: 1.Internal alterations to the covered pitch building to include: (a) changes to ground floor layout to consolidate all facilities other than the sports pitches within a centralised block accommodating pitch associated changing rooms, fitness & rehabilitation spaces; (b) changes to first floor layout to accommodate sports administration areas and player recreational spaces; 2.External alterations to include: (a) reduction of overall building footprint; (b) inclusion of single-storey, flat roof, block of 680sqm sitting outside of the main tensile roof structure to incorporate further changing areas and dedicated entrance lobby; (c) changes to elevational treatments to reference the material palette and aesthetic of the adjacent and recently completed National Indoor Training Centre building; (e) 10 no. new fire escape doors to pitch perimeter; (f) inclusion of Sport Ireland signage to the west elevation; (g) roof height increase of 0.5m due to requirements of structural strategy; (h) overhang removed from east elevation; 3.Alterations to the pedestrian access incorporating (a) new perimeter paths and pedestrian walkways for both access and building maintenance (b) link access road off Snugborough Road to provide disabled access vehicular drop-off zone and fire vehicle standing zone; 4.Landscape works in association with item (3) above; to include further soft landscaping around the building perimeter. The above elements involve a total decrease in floor space of 4,600sqm from the approved covered pitch building gross internal floor area of 25,235sqm of the parent permission Reg. Ref: FW09A/0061. The site is located entirely within the national sports campus bounded by Ballycoolin Road to the north east,	31/10/2018	30/01/2019	Grant Permission	No

FW18A/0084	The National Sports Campus, Snugborough Road, Blanchardstown, Dublin 15	1) Minor revisions to the layout of 3 No. outdoor rugby pitches granted under Planning Permission Ref,FW09A/0061; ,2) Construction of a new pavilion building (294m2); 3) Construction of a new ESB substation and switchroom (43.5m2); 4) Erection of a new Maintenance Building (96m2); 5) Erection of 24m high 500 lux flood lighting to 2No. pitches and 24m high 600lux flood lighting to 1No. pitch; 6) Erection of 18m high ball stop netting and 17m high goal posts to each pitch; 7) Provision of a flood light generator 8) Erection of 12m high camera poles 9) The drilling of well(s) on site and the installation of a 163m3 underground water storage tank for irrigation of the pitches; 10) All other associated parking, roads and site services	15/06/2018	12/09/2018	Grant Permission	No
FW18A/0006	The designated Triathlon Ireland site, At National Sports Campus, Abbotstown, Blanchardstown, Dublin 15	The development will consist of a single storey detatched prefabricated temporary office building (162 sq m) with access steps and ramp, bicycle racks and all associated site development works including lining of parking spaces in the existing car park and site drainage works.	12/01/2018	10/04/2018	Grant Permission	No

Planning App No.	Address	Description	Date Submitted	Final Decision	Decision	EIA
310332	Starrus Eco Holdings Ltd T/A Panda, Cappagh Road, Cappoge Townland, Dublin 11	1. It is proposed to increase the annual waste acceptance rate from 250,000 tonnes to 450,000 tonnes so as to expand the recycling/recovery capacity. The increased intake does not require either new buildings, or extensions to existing ones and does not involve any changes to the layout of external areas and drainage systems. 2. It is proposed to amend Permission FW19A/0145 to remove Condition 3b that limits the extended operational hours to 3 years from the final grant of permission. The proposed development relates to an activity covered by an existing Industrial Emissions Licence (W0260-02) issued by the Environmental Protection Agency. An Environmental Impact Assessment Report has been prepared in respect of the proposed development.	26/05/2021	18-Jul-22	Grant Permission	Yes
FW19A/0072	Rosemount Business Park, Ballycoolen, Co. Dublin.	To construct and operate a new commercial vehicle fuelling facility complete with fuel dispensing pumps, overgrund self-bunded fuel storage tanks, contaner store to house data and electrical equipment, new concrete aprons and associated drainage, new Class 1 petrol/oil interceptor and surface water attenuation tank and new boundary fences.	02/09/2019	06-Nov-19	Grant Permission	No
FW17A/0029	Ballycoolin Business Park, Ballycoolin Road, Ballycoolen, Blanchardstown, Co. Dublin	Construction of a new 5m wide and approx.110m long access road including the removal of the existing water tower, the upgrade of the existing verge and the tie in to existing black top	10/03/2017	06-Jun-17	Grant Permission	No

Planning App No.	Address	Description	Date Submitted	Final Decision	Decision	EIA
FS5W/13/18	Dunsink Lane, Finglas, Dublin 15	The replacement of gas powered engines with four containerised electrical power storage units (i.e. batteries) and all associated works is development and is exempted development which comes within the scope of Class 21(a)(iii) of Part 1 and Schedule 2 of the Planning and Development Regulations, 2001 - 2018.	15/10/2018	21-Mar-19	IS NOT Exempted Development	No

Plan Name
Fingal County Development Plan 2017 - 2023
Regional Spatial and Economic Strategy for the Eastern and Midland Region
Project Ireland 2040: The National Planning Framework (2018)
The National Development Plan (2021 - 2030)
Eastern Midlands Region Waste Management Plan 2015 - 2021
Southern Region Waste Management Plan 2015 - 2022
Connact Ulster Region Waste Management Plan 2015 - 2023
Waste Action Plan for a Circular Economy, 2020
Climate Action Plan, 2021
National Biodiversity Action Plan 2017-2021

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APPENDIX 1.3

Project Team CVs

Bernie Guinan

Director

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CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Bernie is Director with FT responsible for Waste & Resource Management and Environmental Science. She has 20 years' experience in delivering and managing projects in environmental sector. Bernie has extensive experience in the preparation of Planning Applications, Environmental Impact Assessment Reports, Appropriate Assessments for a wide range of infrastructure developments for Local Authorities, Public Authorities, Semi-State Bodies and private developers. She has experience delivering expert testimony at Oral Hearings and Court Cases.

Previous Experience Essentials For This Project

- **Oxigen Environmental Ltd. - Materials Recovery Facility, €8-10M, 2020 – Ongoing.**
  Project Director for the development of the facility design and the preparation of planning application, EIAR and NIS for a 90,000 tpa facility that will accept household, commercial, food and construction and demolition waste.
- **Bord an Móna Energy Ltd. - Clonbullogue Ash Repository, 2019-2020- Planning Decision Pending.**
  Project Manager for the preparation of a Planning Application, EIAR and NIS for the continuation of Clonbullogue Ash Repository from 2024 to 2031 for the acceptance of ash from Edenderry Power Station.
- **Bord an Móna Energy Ltd. - Clonbullogue Ash Repository, 2020- Planning Decision Granted by Offaly Co. Co. in 2021.**
  Project Manager for the preparation of a Planning Application, EIAR and NIS for the continuation of Clonbullogue Ash Repository from 2022 to 2023 for the acceptance of ash from Edenderry Power Station.
- **Edenderry Power Ltd. – Continued use of Edenderry Power Plant exclusively using Biomass, 2020-2021**
  Project Manager to prepare and submit a Planning Application, an EIAR and a NIS for the continued operation of Edenderry Power Plant from the beginning of 2024 to the end of 2030 exclusively using sustainable biomass fuel. This Planning Application is currently under consideration by Offaly Co. Co.
- **Bord na Móna Energy Ltd. - Retention Planning Application for a Biomass Facility at Drumman, Co. Offaly – 2020-2021**
  Project Director for the preparation of a Planning Application for the retention and continuation of Drumman Biomass Facility, Co. Offaly. The application process involved conducting pre-planning consultations and preparing the planning application and planning support statement. Permission was granted by Offaly Co.Co. in 2021.
- **Bord na Móna Energy Ltd. - Retention Planning Application for a Croghan Biomass Facility at Croghan, Co. Offaly – 2020-2021**
  Project Director for the preparation of a Planning Application for the retention and continuation of Croghan Biomass Facility, Co. Offaly. The application process involved conducting pre-planning consultations and preparing the planning application and planning support statement. Permission was granted by Offaly Co.Co. in 2021.
- **Bord na Móna Energy Ltd. - Retention Planning Application for a Toar Biomass Facility, Co. Westmeath – 2020-2021**
  Project Director for the preparation of a Planning Application for the retention and continuation of Toar Biomass Facility, Co. Westmeath. The application process involved conducting pre-planning consultations and preparing the planning application and planning support statement. Permission was granted by Westmeath Co.Co. in 2020. This grant was subject to a third party appeal to An Bord Pleanála (ABP) but granted planning in 2021.

Key Information

Qualifications

MSc, BSc. (Envi. Sci & Tech),

Dip. Pollution Assessment Control

Dip. Business Development

Professional Memberships

Chartered Institution of Wastes Management (CIWM)

Employment History

2006- Present

Fehily Timoney & Company, Dublin
Position

2000 – 2006
Fehily Timoney & Company, Cork
Position

1999 – 2000
Entec UK Ltd., Dublin
Position

1997 – 1999
A.T. Cross Ltd., Galway
Position

Bernie Guinan

Director

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- **Powergen Ltd. - Bord na Móna – Development of a Renewable Gas Project 2018 – 2019. Planning was granted by Laois Co. Co. in January 2020**
  Project Manager for the preparation of an EIAR, Planning Application and AA Screening for a 80,000 tpa anaerobic digestion facility, biomethane cleaning plant and gas to grid entry unit, junction upgrade on the R445 and an 1.5KM extension of the GNI local grid network. This planning is subject to a third party appeal to An Bord Pleanála.

- **Quirkes Quarries – Preparation of Planning Application and EIAR 2017-2019. Planning was granted by Kerry Co. Co. 2020**
  Project Director for the preparation of an EIAR and Planning Application for the continuation of use of an existing quarry and the development of an 12 ha extension in Killarney, Co. Kerry. This planning is subject to a third party appeal to An Bord Pleanála.

- **Knockarley Landfill Ltd.- Intensification of Waste Acceptance and the Development of Incineration Bottom Ash Storage, Biowaste Treatment and Leachate treatment Facilities 2016 – 2019. Planning was granted by An Bord Pleanála in 2021.**
  Project Director for the preliminary design and preparation of the EIAR, Strategic Infrastructure Development (SID) Planning Application, NIS, Liaison with the Client and review and approval of the application. The proposed development is for the acceptance of 440,000 tpa of waste. This development is one of the largest waste related SID application in the history of the state at the time of writing.

- **Kerry County Council – South Kerry Greenway – Planning Application and EIS 2015 – 2019. Planning was granted by An Bord Pleanála in 2020.**
  Project Director for the preparation of an EIAR and Planning Application under the Roads Acts for the development of 32 KM for Greenway from Glenbeigh to Rennard. The planning application was lodged to An Bord Pleanála in August 2018 and granted in 2020.

- **Thorntons Recycling Ltd – Construction and Demolition Waste – Retention Planning Application and AA Screening 2019. Planning was successfully grant by Fingal Co.Co** .
  Project Director for the preparation of a Retention Planning Application for a Construction and Demolition facility. The development comprised of a waste processing building, welfare and office accommodation and ancillary infrastructure including surface and foul drainage.

- **Thorntons Recycling Ltd – Intensification of a Construction and Demolition Waste Facility 2020 – Planning Application, EIAR and AA Screening. Planning was successfully grant by Fingal Co.Co** .
  Project Director for the preparation of a Planning Application., EAIR and AA Screening for the intensification of a Construction and Demolition facility to 49,000 tpa. The development comprised of a waste processing building, welfare and office accommodation and ancillary infrastructure including surface and foul drainage.

- **Thorntons Recycling Ltd. - Millennium Park Material Recovery Facility – EIAR, Strategic Infrastructure Development (SID) Planning Application, AA Screening and IE Application 2016-2017. Planning was successfully grant by ABP**.
  Project Director for the preparation of an EIAR, SID Planning Application and IE Licence Application for a Materials Recovery Facility (MRF) and waste transfer station to process up of 170,000 tpa MSW, brown bin and C&D wastes. The development comprised of a waste processing building, a baled storage building, welfare and office accommodation and ancillary infrastructure including surface and foul drainage.

- **EIS for Aviation Fuel Pipeline Dublin Port to Dublin Airport, Ireland, €18.6m 2011 - 2016**
  Project Director for the preparation of planning application, EIS, NIS and flood risk assessment for a 14km pipeline route through Dublin City. A dual application to both Dublin City Council and Fingal County Council requiring over three years consultation with various sections of the local authorities on route selection and EIS scoping.

- **Cork Dockyard Scrap Metal Recycling Facility, Co. Cork Ireland €1.5m 2011 –2013**
  Project Director for the development of a scrap metal recycling facility (45,000 tpa) an RDF storage facility (45,000 tpa) including pre-application consultations, preliminary design, EIS, Stage 1 AA screening report, flood risk assessment and planning application. Permission was refused by Cork County Council but was successfully appealed by FTC to An Bord Pleanála in 2013.

- **Powerstown Landfill Extension of Time Application, Co. Carlow, Ireland €Confidential, 2012**
  Project Director for the preparation of the strategic infrastructure application and EIS for the extension of the life of Powerstown Landfill, Co. Carlow. This site had a complex planning history and required significant liaison with the local authorities' senior counsel on the most appropriate way forward.

- **Railway Procurement Agency, Light Rail Schemes, Dublin, Ireland - 2007 – 2011**
  Project Director for the preparation of the soils, geology, water quality and waste section of the EISs for the Metro North Depot, Metro West and BXD light rail schemes. Role included participation on scoping workshops and preparing expert witness testimony for the metro west and BXD projects.

Bernie Guinan

Director

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- **Peer reviewer of EIS for Silvermines Rehabilitation Project, Co. Tipperary, Ireland, € Confidential, Complete 2009**
  Responsible for the independent review of the EIS for the rehabilitation of Silvermines to determine compliance with planning and environmental legislation.
- **Tegral Holdings Ltd, Athy, Co. Kildare, Ireland €100m - Complete 2009**
  Project Director for the planning application and EIS for the re-location of the Tegral production facilities from Athy town to a greenfield site (46,000 m2 of building development). Preparation of response to third party appeal to An Bord Pleanála. Permission granted by the Board in 2009.
- **Ballywalter Farms Ltd. Bioenergy Facility, Co. Wexford, Ireland €50m, Complete 2009**
  Project Director for the preparation of the planning application, preliminary design EIS and NIS for a 99,000 tpa bioenergy facility. This project proposed the technology anaerobic digestion and substantial on-site wastewater treatment and bio-gas management.
- **Derryclure Landfill, Co. Offaly, Ireland €5m – 2009**
  Project Director for the preparation of the EIS and waste licence review application for the intensification of waste acceptance activities at Derryclure landfill from 40,000 tpa to 100,000 tpa.
- **Curraleigh West to Midleton Gas Pipeline, Co. Cork, Ireland €50m - Complete 2008**
  Project co-ordinator of the strategic infrastructure application for 47 km Bord Gais pipeline.
- **Biological Treatment Facility, Portlaoise, Co. Laois, Ireland €20m - Complete 2008**
  Project Manager for the preparation of the EIS and waste licence application for a 99,000tpa biological treatment facility for a Private Client.
- **Private Client, Co. Wexford, €50M, Complete**
  Project Director for the preparation of planning application, EIS and waste licence application for a 100,000 tpa bioenergy facility.
- **Knockharley IWMF - 2010**
  Project Director for statutory process for the provision of anaerobic digestion (90,000 tpa), composting and ancillary recycling as part of the upgrade of the Knockharley facility.

Richard Deeney

Senior Environmental Scientist

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CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Richard is Senior Environmental Scientist at Fehily Timoney. Richard holds a B.Sc. First Class Honours degree in Environmental Management from Dublin Institute of Technology. Richard works in the Waste and Environment team at Fehily Timoney and is experienced in project managing and coordination of Planning Applications, Environmental Impact Assessment Reports and Environmental Assessment, the development of Environmental Management Plans and Systems, Environmental Auditing and Environmental/Permit/License Compliance.

Richard has excellent experience in the production of high-quality planning applications and associated documentation for various types of development including waste facilities, quarries, renewable energy development, metal processing facilities and tourism development. Richard has provided environmental assessment services to clients from various sectors such as manufacturing, pharmaceuticals, construction, waste management, quarrying, chemicals, the food and drink industry and the petroleum industry.

Key Skills

- Project Management
- Planning Applications
- Environmental Impact Assessment Reports
- Environmental Assessment
- Environmental Management Plans/Systems
- Environmental Auditing
- Environmental/Permit/License Compliance.

Previous Experience Essentials for this Project

- **Claremorris Historic Landfill, 2022**
  Richard was responsible for completing a concurrent Section 177AE application and CPO confirmation application for the Claremorris Historic Landfill Remediation project. Richard was responsible for coordinating the completion of various supporting planning and environmental assessment documentation and for planning submission logistics. Richard was responsible for completing all CPO Documentation and Notices under this project. The Board is due to make a decision on the applications in November 2022.

- **Oxigen Environmental, Material Recovery Facility, 2021 (Ongoing)**
  FT were appointed by Oxigen Environmental to prepare a Planning Application, EIAR and NIS for a proposed Material Recovery Facility based in Derryarkin, Co. Offaly. Richard has been assigned lead planning application/EIAR coordinator on this project. Richard is responsible for coordinating the design of the proposed facility and for completing the planning application and the EIAR for the proposed development, including the carrying out of various EIAR Chapters. Richard is also responsible for coordinating internal and external specialist in carrying out other specialist EIAR Chapters, managing stakeholder consultation and coordinating baseline environmental monitoring and ecological surveys under the project.

Key Information

Qualifications

Advanced Diploma in Planning and Environmental Law,
Kings Inns, Ireland 2017

B.Sc. First Class Honours Degree,
Environmental Management,
Dublin Institute of Technology, 2012

Professional Memberships

Chartered Environmentalist,
The Society for the Environment

Member, Institution of Environmental Sciences (IES)

Member, Institute of Environmental Management and Assessment (IEMA)

Associated Member,
Institute of Air Quality Management (IAQM)

Employment History

2021 – Present

Fehily Timoney & Company
Senior Environmental Scientist

2017 - 2021

Environmental Efficiency Consultants Ltd.
Senior Environmental Consultant

2014 - 2017

Environmental Efficiency Consultants Ltd.
Environmental Consultant

2012-2014

Environmental Efficiency Consultants Ltd.
Intern /
Junior Environmental Consultant

Richard Deeney

Senior Environmental Scientist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Thorntons Recycling, Material Recovery Facility 2021 - 2022**
  Richard is responsible for coordinating the completion of an SID Application, EIAR and NIS for a Material Recovery Facility with a capacity to accept 300,000 tonnes per annum of waste to be based at Cappogue, Co. Offaly. Richard coordinated the completion of baseline environmental monitoring and assessment, and a robust design for the proposed development and is in the process of completing/coordinating the completion of EIAR chapters and an NIS for the proposed development. Planned planning application submission date is Mid-August 2022. Richard was responsible for negotiating the SID pre-application process with the Board, and coordinating the carrying out of stakeholder consultation, including Virtual Public Consultation. Richard also coordinated the carrying out of Geotechnical and Environmental Site Investigation for the project and was involved in coordinating gaining consent for the advance re-routing of electricity supply lines with the ESB under the project.

- **Mr Anthony O' Donoghue, 2021 – 2022**
  Richard was responsible for completing a carefully developed and robust planning/retention planning application for a Mr Anthony O' Donohue. This was a complex case. Unauthorized development in the form of infilling, buildings and timber processing activities were present on-site. It was necessary to regularize the situation and concurrently upgrade the site design to improve traffic safety at the site entrance, surface water and wastewater management on-site, and visual amenity in the vicinity of the site. Richard, as Project Manager, coordinated the preparation of a robust design for the proposed development. This project was made more complicated by the fact the site was situated on a Flood Risk Zone and was hydrologically connected to a Natura 2000. These matters had to be negotiated carefully during the planning process. A favourable RFI was issued in relation to the proposal in May 2022.

- **Quality Recycling Limited, Civic Amenity Facility, 2021 - 2022**
  Richard was responsible for coordinating completing a Planning Application, Planning and Environmental Report, AA Screening and EIA Screening for a proposed Civic Amenity Facility based in Carrick On Suir, Co. Tipperary. Richard coordinated the completion of site entrance and traffic management designs which are considered to be critical to the success of the application given site constraints. Planning Decision due in early July 2022.

- **Tipperary Town Historic Landfill, 2022**
  Richard was responsible for completing a concurrent Section 177AE application and a complex CPO confirmation application for the Tipperary Town Historic Landfill Remediation project. Richard was responsible for coordinating the completion of various supporting planning and environmental assessment documentation. Richard was responsible for completing all CPO Documentation and Notices under this project. Planning submission is currently hold pending management by Tipperary County Council themselves.

- **Edenderry Power Plant, 2021**
  FT were appointed by Edenderry Power Limited to prepare and submit a Planning Application, an EIAR and an NIS for the continued operation of Edenderry Power Plant from the beginning of 2024 to the end of 2030 exclusively using sustainable biomass fuel. Richard was responsible for completing various technical chapters of the EIAR, coordinating the completion of the EIAR, completing the planning application and completing the statutory notices for the proposed development. Richard was also responsible for compiling, collating and submitting the planning application to Offaly County Council. This Planning Application is currently under consideration.

- **Clonbullogue Ash Repository, 2021**
  FT were appointed by Bord na Móna Energy Ltd to prepare and submit a Planning Application, an EIAR and an NIS for the continued operation of Clonbullogue Ash Repository based in Cloncreen, Clonbullogue, Co. Offaly from the beginning of 2024 until the end of 2031. Ash from Edenderry Power Plant is deposited within this ash facility. Richard was responsible for completing various technical chapters of the EIAR, coordinating the completion of the EIAR, completing the planning application and completing the statutory notices for the proposed development. Richard was also responsible for compiling, collating and submitting the planning application to Offaly County Council. This Planning Application is currently under consideration.

Richard Deeney

Senior Environmental Scientist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Health Beacon Ltd, Healthcare Waste Management Facility, 2020:**
  Richard was responsible Completion of a Planning Application for a Healthcare Waste Management Facility based in Bluebell, Dublin 12. Richard coordinated the completion of a supporting planning and environmental assessment report and an AA Screening and EIA Screening report for the proposed facility. Permission for the proposed development was secured. Richard assisted with the development of the proposed design of the facility and provided advice on mitigation and control measures to be implemented at the facility to prevent the release of polluting discharges from the facility. Richard was also responsible for the completion of an IE licence application for the proposed facility.
- **Sancom Ltd., Soil/C&D Material Recovery Facility, Capital Value, 2018 - 2020:** Richard was responsible for the completion and coordination of a Planning Application, an EIAR and other supporting design and environmental assessment work for a large scale inert MRF based in Graney West, Castledermot, Co. Kildare. Richard was responsible for scoping potential environmental impacts, managing stakeholder consultation, completing various EIAR Chapters including Population and Human Health, Air and Climate, and Material Assets, coordinating internal and external specialists responsible for completing EIAR Chapters, and collating, compiling and submitting the planning application pack. Planning permission was ultimately secured. Richard was also responsible for completion of a Waste Licence Application for the proposed facility.
- **DJ Hanley, Waste Material Recovery Facility, 2020:** Richard was responsible for the completion of a Planning Application, as well as supporting environmental assessment and an AA and EIA Screening Report, for a Waste Transfer Station based in the outskirts of Wicklow Town, Co. Wicklow. Richard assisted extensively with the development of the proposed design of the facility and provide key advice in the areas of noise management, dust management, management of aqueous discharges, waste acceptance procedure and waste intake record keeping. Richard was also responsible for the completion of a Waste Facility permit Application for the proposed facility. Permission for the proposed development was secured.
- **Ecoplex, WEEE Storage and Transfer Facility, 2020:** Richard was responsible for the completion of a Planning Application and supporting environmental and planning assessment for WEEE Storage and Transfer Facility based in Redleaf Business park, Donabate, Co. Dublin.

Eoin O'Connor

Project Environmental Scientist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Eoin is a Project Environmental Scientist with Fehily Timoney & Company with 7 years' experience in environmental consultancy. Eoin holds an MSc in Environmental Technology from University College Dublin (2014) and a BSc (Hons) in Environmental Science and Health from Dublin City University (2012). Eoin is an Associate Member of the Chartered Institute of Wastes Management and a Graduate Member of the Institute of Environmental Management and Assessment.

Eoin has a broad skill set and experience gathered whilst working as an Environmental Consultant and working closely with a wide variety of small to large scale clients across a multitude of different industries and sectors. Eoin's key areas of work include environmental impact assessment and risk assessment, contaminated land ad unregulated landfill investigation, contaminated land remediation, licensing (IED/IPC/Waste), environmental compliance and environmental monitoring.

Key Skills

- Environmental risk and impact assessment
- Environmental and operational management of waste processing facilities
- Contaminated land investigation, modelling and remediation
- Environmental monitoring
- Licence compliance

Previous Experience

- **Thorntons Recycling Ltd – Construction and Demolition Waste – Retention Planning Application and AA Screening 2019. Planning was successfully grant by Fingal Co.Co** . Eoin assisted with the preparation of a Retention Planning Application for a Construction and Demolition facility. The development comprised of a waste processing building, welfare and office accommodation and ancillary infrastructure including surface and foul drainage.
- **Thorntons Recycling Ltd – Intensification of a Construction and Demolition Waste Facility 2020 – Planning Application, EIAR and AA Screening. Planning was successfully grant by Fingal Co.Co** .
  Eoin assisted the preparation of a Planning Application., EAIR and AA Screening for the intensification of a Construction and Demolition facility to 49,000 tpa. The development comprised of a waste processing building, welfare and office accommodation and ancillary infrastructure including surface and foul drainage.
- **Powergen Ltd. - Bord na Móna – Development of a Renewable Gas Project 2018 – 2019. Planning was granted by Laois Co. Co. in January 2021**
  Eoin assisted with the preparation of an EIAR, Planning Application and AA Screening for a 80,000 tpa anaerobic digestion facility, biomethane cleaning plant and gas to grid entry unit, junction upgrade on the R445 and an 1.5KM extension of the GNI local grid network. This planning is subject to a third party appeal to An Bord Pleanála.

Key Information

Qualifications

MSc. Environmental Technology,
University College Dublin, 2014

B.Sc. (Hons) Environmental Science and Health,
Dublin City University, 2012

Professional Memberships

Associate Member of the Chartered Institute of Wastes Management

Graduate Member of the Institute of Environmental Management and Assessment

Employment History

Jan 2019- Present

Fehily Timoney & Company, Dublin
Project Environmental Scientist

Nov 2016 – Dec 2018

OES Consulting
Environmental Consultant

May 2015 – Nov 2016

AWN Consulting
Environmental Consulting

Eoin O'Connor

Project Environmental Scientist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Kerry Group – EIAR (IED Licence Application)**
  Project manager and co-ordinator for the preparation of an EIAR to accompany an Industrial Emissions Licence review application associated with the upgrade to the onsite waste water treatment plant, effluent pipeline construction and evaporator building. Also contributed specialist input and chapters to the EIAR (Hydrology, Hydrogeology and Geology) as well as general sections of the EIAR and preparation of the IED Licence review application.

- **Pfizer Ireland/Jacobs – EIS (Planning)**
  Technical input and direct preparation of specialist chapters of EIS to accompany planning application to South Dublin County Council seeking permission for the construction of a new 5-storey manufacturing building, warehouse car park and other associated ancillary aspects of the development. Specialist input included the preparation of Soils, Geology & Hydrogeology chapter, Water (Hydrology) chapter and preparation of accompanying Stage 1 Flood Risk Assessment.

- **Brandon Products Ltd – EIS (Planning)**
  Co-ordinator for the preparation of an EIS submitted to Kerry County Council seeking permission for the expansion of an existing manufacturing facility. Work included the co-ordination of internal and external experts to prepare specialist chapters of EIS and direct preparation of hydrology and geology, hydrogeology chapters.

- **Wastewater Monitoring and Reporting**
  Eoin has both managed and provided support in conducting comprehensive reviews on wastewater monitoring programmes, review of wastewater treatment and management systems and impact and compliance assessment for IE/IPC licensed sites. This work has included assimilative capacity and dispersion assessment and modelling on receiving water bodies for the purpose of examining potential existing impact, for the determination of appropriate emission limits values and determining compliance with specified licence emission limits or environmental water quality standards. These assessments required extensive review of wastewater monitoring data, compilation of data and preparation of detailed reports.

- **Materials Treating and Coating Facility**
  Eoin was the project manager and primary client contact in carrying out a comprehensive investigation into potential environmental odour and water quality impacts. This work comprised the preparation of the correspondence to the Local Authority on behalf of the client in response to legal requests, site walkover and survey, review of existing emissions management systems and practices, management and supervision of the implementation of an air quality and water quality assessment.

- **Kerry Group (multiple sites)**
  Project management and direct technical input to the preparation of multiple licence review applications for large scale dairy processing facilities from initial scoping to submission. Work included project management and oversight on project team, direct preparation and compilation of licence review application and all necessary accompanying documentation and reports.
  Client contact for all matters relating to the application and liaison with the Agency. Provided further client support on all matters relating to licence compliance following grant of reviewed licence.

- **Multiple Sites**
  Provision of ad-hoc support on licence compliance (new and existing licences) including, review and update of environmental management systems, preparation of environmental monitoring reports, preparation of responses to the Agency and Compliance Investigations.

- **Amazon, Cruiserath**
  Environmental due diligence assessment for a proposed development. Responsibilities included supervision of site investigation including the excavation of trial pits throughout the site, soil sampling, analysis, interpretation of soil analysis results and reporting.

- **Dublin Airport North Runway Development - Environmental Assessment**
  Project involved the investigation of areas of potential contamination and unregulated waste disposal within the development boundary at the Dublin Airport North Runway project. Responsible for review of site investigation data and development of additional soil/waste sampling programme. Data was analysed and informed appropriate disposal route for material. A comprehensive review/audit of waste transport records was also conducted to confirm the utilisation of appropriate waste handlers and waste handling facilities.

Eoin O'Connor

Project Environmental Scientist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **IE Licence Applications and Reviews**

Eoin has both managed and provided support on the preparation of applications for new IE/IPC licences and licence reviews for multiple clients. The preparation of the licence applications requires an in-depth and comprehensive examination of how a facility operates and the how environmental impacts and emissions are best managed. IE/IPC licensed facilities by their nature are large-scale operations and can have a wide variety of operational and environmental sensitivities e.g. storage of hazardous chemicals and fuel, environmental pollution and public health risks and robust regulatory requirements. An integral aspect of the licence applications was to the ensure that sufficient environmental protection is in place.

- **Kerry Group (multiple sites)**
  Project management and direct technical input to the preparation of multiple licence review applications for large scale dairy processing facilities from initial scoping to submission. Work included; project management and oversight on project team, data gathering and management, direct preparation and compilation of licence review application and all necessary accompanying documentation and reports including environmental impact assessment, BAT/BREF compliance review, materials and resource consumption, nutrient management plans etc. Client contact for all matters relating to the application and liaison with the Agency. Provided further client support on all matters relating to licence compliance following grant of reviewed licence.

Chris Cronin

Technical Director

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Chris holds an honours degree in Agricultural Engineering specialising in soil and water and a master's degree by research in drainage of saline alkaline soils. He has more than 40 years' experience working in Ireland, United Kingdom, France, Spain, Thailand, Libya, Egypt, Oman, Iraq, Swaziland, Nigeria, UAE, KSA, Bahrain, Malta and Pakistan, on: large and small scale pumped and open channel water supply, irrigation and drainage systems (flows 50 l/s to 1000 m^3/s), associated structures (river headworks, falls, outlets); small dams and reservoirs; hydro-electric schemes; coastal and river protection works; soil conservation; vegetation management; waste management (AD plants, above and below ground tanks, landfill design, cells, cap, gas collection, utilisation, flaring, development of gas management software, surface and sub surface drainage), slope stability, settlement (waste and peat bogs), Infrastructure (services and roads),

Chris has 20 years waste management experience engineering and commercial experience with contractors, consultants and industry encompassing contract management, detailed design and operations experience. Chris's specialist design expertise includes: Waste management facility design, landfill gas, civil infrastructure, open channel and pipeline hydraulics.

Key Skills

- Waste Management facility design
- Landfill gas and leachate treatment
- Civil Infrastructure
- Surface and sub surface drainage
- Pipeline Hydraulics

Previous Experience Essentials For This Project

Reference Disciplines:
1 Settlement, 2 Leachate treatment, 3 Tank Integrity, 4 Dewatering, 5 M&E, 6 Buildings, 7 Retaining wall, 8 Gas, 9 Photovoltaic, 10 Fire main, 11 Remediate cells, 12 Restoration and aftercare, 13 After-use, 14 Financial modelling, 15 Groundwater, 16 Surface water, 17 Lo cal Landfill Gas, 18 Unregulated landfills, 19 Wetlands, 20 Statutory Consents, 21 Other.

Landfill Design and Remediation Projects

- **Basketstown landfill (2014 to present)** Reference Disciplines 1,2,3,5,16,19
  Chris has been project manager since 2014 carrying out groundwater risk assessments, leachate treatment trials and groundwater modelling for Basketstown Landfill.

  The trials examined innovative wetland approaches using a vertical wetland with flows going upwards to facilitate self-cleansing of the vertical stone filter. The trials also examined MBBR aeration as a pre-treatment, without pH dosing, to reduce elevated ammonia.

  Extensive groundwater modelling using MODFLOW software was used to define the aquifer characteristics and set up to model the impact of alternate sheet pipe configurations on groundwater flow/dewatering of the unlined landfill.

Key Information

Qualifications

Bachelor of Science Degree, Soil & Water Engineering (Hons), Cranfield Institute of Technology, Bedfordshire, UK, 1979

Master of Science Degree, Drainage, Cranfield Institute of Technology, Bedfordshire, UK, 1982

Professional Memberships

Chartered Engineer (1989)

Chartered Environmentalist (2005)

Chartered Waste Manager (2011)

Member, Institution of Agric. Engineers

Member, Institution of Engineers of Ireland

Member, Institution of Wastes Management

Employment History

2000- Present
Fehily Timoney & Company

1997 – 1999
Nomix Chipman

1992 – 1997
Binnie Black and Veatch

1995 – 1997
Howard Humphries/Brown and Root

Chris Cronin

Technical Director

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Arthurstown (2002-2019)**. Reference Disciplines 2,3,4,5,6,8,9,10,12,14,17,19,20
  Chris was project manager on the 4,000,000 million tonne Engineered landfill built under a design build contract during the last cell development and final capping works on the Arthurstown landfill facility.

  Chris was responsible for producing contractor detailed designs and, construction support and operational support to South Dublin County Council in relation to groundwater control, leachate and gas management.

  Chris was responsible for developing proprietary landfill gas balancing software titled "A management and auditing model for balancing landfill gas extraction" originally for the Arthurstown facility comprising in excess of 150 wells with gas flows that peaked at 13,000 m^3/hour but later modified to suit any landfill gas collection system. The system developed by Chris facilitates gas data capture by a GA5000 gas analyser which is downloaded to produce automated audit reports which are subsequently accessed by a GIS interface. Live data from manifolds was also captured via Ambisense™ monitoring equipment which relays data to an iPad and to the site SQL database. The Ambisense™ equipment also detailed live temperature readings at respective manifolds and CO monitoring.

  Chris was responsible for developing specialist gas calibration software "A spread sheet tool to calibrate LANDGEM Gas modelling prediction software for site specific MSW facilities using data from Arthurstown Gas Extraction Audits".

  Chris was responsible for supervising fire main installation and developing the restoration and aftercare plan. Chris prepared the ELRA and Cramp submissions to Agency on behalf SDCC in 2019.

  In addition, Chris also prepared design build tender documents and managed a leachate treatment sequential batch reactor upgrade for the process design and carried out site supervision of upgrades. The upgrade increased the 75 m^3/day leachate treatment capacity to 300 m^3/day. Chris also designed and supervised construction of the leachate rising main.

  Chris developed groundwater models and to reduce groundwater pumping following deposition of waste which required innovative groundwater uplift mitigation measures including retrofitting of duckbill valves and rupture discs in SBR tanks to prevent the below ground tanks floating once groundwater pumps were turned off following cessation of waste activities on site.

- **Principal Engineer:** Balleally Surface Water Project **(August 2015 – April 2019)**. Reference Disciplines 5,,8,,12,16
  Responsible for all technical design reviews and for detailed design modifications to site and road surface drainage, barrier wall and development of standard details for capping

- **Kinsale Road for Cork City Council (2012-2013)**. Reference Disciplines 1,2,3,4,5,7,8,11,12,14,15,18,19
  Chris was project manager responsible for 3 no. separate contracts for remediation capping works including twin pipe landfill gas extraction systems to historic licensed and unlicensed landfill activities mining and relocation of waste and gas management during the period 2002 to 2012.

  This work required installation of a barrier sheet pipe wall to contain leachate migration and detailed studies (including dewatering/ leachate level control) and groundwater control systems to define the reasons for historic rotational failures and to successfully prevent future rotational failures by controlling leachate levels within the landfill

  Chris was responsible for: Gas migration studies to assess potential gas migration pathways using UK EA guidance note, LFTGN03; Tier II risk assessments using EPA Guidance on EPA Code of Practice Environmental Risk Assessment for Unregulated Waste Disposal Sites (2007); geotechnical investigations; detailed design, preparation of contract documents, procurement, tender evaluation, construction support, final account. Chris was also responsible for other development works on the adjacent licensed facility requiring on-site leachate conditioning, sheet pile works capping, groundwater risk assessments, control and land stabilisation works following rotational failures.

  Chris was responsible for design and installation of two methane stripping plants and a leachate rising main. Chris applied an innovative stone trap solution to prevent precipitate (magnesium and calcium) following aeration blocking discharge pipework. This solution negated the need for expensive pH dosing.

  The landfill system had in excess of 50 wells and produced gas in excess of 1000 m^3/hour. Balancing of gas extraction using systems designed by Chris was designed to mitigate the risk of off-site gas migration into sensitive receptors.

- **Park and Ride for Cork City Council (2003-2006)**. Reference Disciplines 1,5,7,8,10,11,12,14,15,16,19
  Chris was project manager and principal design engineer for Park & Ride Kinsale Road, Cork, Ireland. Chris was responsible for design, contract documents and site supervision for €4,300,000 development. Works included: sheet pile retaining walls, flexible pavement to accommodate predicted settlements of 300 mm, gas and leachate collection systems, piled building, specialist dual barrier lining system for buildings, SCADA controls, live monitoring of landfill gas below the cap, specialist landfill gas blower support systems to mitigate the risk of insufficient extraction from flares during maintenance or other flares causing gas migration from the site.

Chris Cronin

Technical Director

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Ballaghveny Landfill, Tipperary County Council (2016-present)**. Reference Disciplines 1,2,3,4,5,6, 8,9,11,12,13,14,15,16,17,18,20
  Chris was project manager overseeing groundwater trials, detailed design, preparation of contract documents, construction supervision and construction support and for remediation works at Ballaghveny landfill to address leachate leaks from engineered cells, to support licence compliance in relation to same and to prepare tender documents and to oversee construction works in the role of Employers Representative designed to reduce impact of leachate on groundwater and to facilitate reopening of cells to accept waste. Works on site included but are not limited to, groundwater modelling, installation of groundwater monitoring sensors below the engineered barrier of landfill cells, leak location, remediation works to cells, surface water drainage, landfill gas management and refurbishment of landfill infrastructure on existing cap, Bunded leachate storage facility, new M&E building, refurbishment and upgrading of all M&E related works on site.

- **Youghal Landfill Cork Council (2020-present)**. Reference Disciplines 1,4,5,8,12,13,16,17,20
  Chris is project manager overseeing detailed design, preparation of contract documents, construction supervision and construction support for final capping works at Youghal landfill.

  The works required gas pump trials, remediation of old gas collection systems, installation of new gas collection systems (wells and pipework), new surface and sub surface drainage systems, licence compliance.

- **Cork County Council Expert Witness Hydrology (2019-present)**. Reference Disciplines 14, 15, 16, 20
  Chris was Expert Witness and the lead author in preparing a hydrology assessment of flooding in farmland, east cork on behalf of Cork County Council (CCC) (defendant). CCC was/is being sued by a farmer for flood related damages to his farmland associated development of road, adjacent commercial developments and remedial works to flood walls in cork harbour. The study required: an assessment of technical reports prepared by two specialist consultants and preparation of a new report explaining the drainage related causes and impacts of works carried out in the 1990s with reference to in the 1980s greenfield conditions; design studies, construction drawings and AA screening and NIS. This work is ongoing.

- **Zero Waste Scotland, Scotland (ZWS) (2011-2013)**. Reference Disciplines 5,8,
  Chris was project manager for research trials at the Auchinlea site (Financed by ZWS with support from Scottish Environment Protection Agency (SEPA) in Scotland investigating the management of GHG emission from historic landfill sites. The trials examined oxidation of low calorific methane using flares, biological filters, micro turbines with thermal oxidisers, remote operation of flares using ecatcher software and remote monitoring of boreholes and gas extraction systems using research tools developed by Dublin City University. In addition, characteristic curves were developed for multiple valves used in the landfill industry and software was developed to define flows based on head loss observation across valves. The works subsequently published in a 2013 CIWM publication and presented at the ISWA conference in Vienna 2013.

- **Unlicensed Landfills Scotland (2012-2013)**. Reference Disciplines 8,17
  Chris was project manager on a ZWS/SEPA project for review of options to reducing green-house gas emissions and gas migration from historic landfills producing low calorific gas. Chris was responsible for: Estimating national greenhouse gas emissions, conducting research trials and making recommendations to statutory bodies to facilitate long term management of low calorific landfill gas and odour emissions.

  Chris has extensive landfill related relevant experience which will supplement the remediation experience described above: The following describes pertinent technical and contract related experience that will support remediation works.

- **East Galway Landfill (2016 – ongoing)**. Reference Disciplines 1,3,4,5,7,10,12,15,19
  Chris is currently project manager and principal designer for the cell and final cap contract of the east Galway landfill facility. Chris was responsible for the open tender procedure in accordance with EU and national procurement rules, tender submission comprising Volume 1 Suitability Assessment Questionnaire; Volume 2 Instructions to Tenderers; Volume 3 Preliminary Safety & Health Plan; Volume A1 Works Requirements – General Specification; Volume A2 Works Requirements – Particular Specification; Volume A3 Works Requirements – Drawings; Volume B Form of Tender & Schedule; Volume C Pricing Document; Volume D Novated Design Documents; Volume E Conditions of Contract using PW-CF3 V.2.2; Contract administration and Construction support. Chris has been responsible for settlement studies, void assessment, gas audits, detailed design of the ring main and wells heads on existing wells, new wells, relocation of HTLC flares, site supervision, ongoing design support for gas management, M&E works associated with upgrading power and SCADA systems or groundwater, flare and other landfill related services to support current capping works.

Chris Cronin

Technical Director

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Marlinstown (2007-2013)**. Reference Disciplines 1,3,4,5,8,12,14,15,16,19
  Chris was project manager for: Site investigation works at Marlinstown Landfill, interpretative report which identified a number of potential landfill gas migration pathways impacted by both saturated "perched water tables" and underlying saturated and unsaturated gravel lenses; detailed design and specification of a permeable (i.e. venting) cap type; and preparation of the tender documents. Responsible also for detailed design and preparation of contract documents for final cap including gas management design.
- **Buhair Landfill Site Remediation, Bahrain for Bauer Resources GMBH (2014)** Reference Disciplines 1,2,4,5,8,12,13,16,17
  Chris prepared the remediation plan and detailed designs for remediation works including but not limited to management of: landfill gas, odour, fire, groundwater extraction, groundwater treatment, surface water diversion.
- **Landfill Gas and Environmental Management Reporting Software (2002-2012)** Reference Disciplines 5,8,13,14
  Project manager for development of proprietary landfill gas management software used on selected sites within Ireland requiring software developments using: Excel, SQL databases, and MP5 reporting software.
- **Silliot Hill Landfill (2009-2012)**. Reference Disciplines 1,3,4,5,6,8,12,15,16,18,19
  Project Manager for gas management operational balancing and Design Engineer for 3 capping contracts and one leachate conditioning contract at Silliot Hill facility.
- **EPA (2010)** Reference Disciplines 1,2,3,4,5,8,11,12,13,14,15,16,18
  Co-author Landfill Technical Information Resource for EPA, Ireland. Internal report and WIKI resource for Environmental Protection Agency for reference and training purposes responsible for gas management related inputs. Internal Agency resource not published.
- **EPA (2011)** Reference Discipline 8
  Co-author for EPA publication Guidance Note for Monitoring of landfill Gas Flares and Engines.
- **Offaly County Council (2012)** Reference Disciplines 8,15,19,20
  Project Manager for Midlands Region landfill gas ultilisation contracts over 3 counties.
- **Health and Safety (2000-2019)**. Reference Disciplines 1 through 19
  Chris has acted on behalf of FT managing PSDP duties on multiple landfill and gas management contracts with responsibilities that have included but are not limited to preparation of: preliminary health and safety plans, design risk assessments and method statements and risk assessments for site works. Chris has been responsible for compiling safety files as part of the administration for civil related construction management projects including but not limited landfill gas systems, capping cell works and management of landfill fires in Ireland and overseas.
- **Marlinstown Landfill (2007-2013)**. Reference Disciplines 1,8,19
  Project Manager for: Site investigation works at Marlinstown Landfill, interpretative report which identified a number of potential landfill gas migration pathways impacted by both saturated "perched water tables" and underlying saturated and unsaturated gravel lenses; detailed design and specification of a permeable (i.e. venting) cap type; and preparation of the tender documents. Responsible also for detailed design and preparation of contract documents for final cap including gas management design and full time monitoring of landfill gas parameters using Ambisence technologies.
- **Ballynagran Landfill (2015-2016)** Reference Discipline 20
  Chris was project manager for developing financial models to develop gates fees for a new cell development and for providing expert gas management support to manage a landfill fire.
- **Bottlehill Landfill (2005–2010)** 1,2,3,4,5,6,10,15,16,19
  Project Manager for €10,000,000 Bottlehill landfill development. Works included, cell development, infrastructure, work shop and buildings, storm water attenuation, settlement ponds, leachate systems and associated M & E and SCADA
- **Donohill Landfill** Reference Disciplines 1,2,3,4,5,7,8,10,11 ,12,15,16,18,19
  2003 -2005 Project Manager and Design Engineer responsible for design, contract documents and site supervision of Area 4 landfill cell on peat bog and Phase 1 capping works including position papers and SEW reports to Agency

  2006 Project Manager and Design Engineer responsible for the design of a landfill gas management and balancing model for Donohill MSW landfill. Subsequent presentation to the EPA and at the recent CIWM course in Ireland - Practical Management of Landfill Gas.

  2010 Project Manager and Design Engineer for piggy back liner cell development Donohill MSW landfill and waste placement operations to facilitate site specific landfill stability issues.

Chris Cronin

Technical Director

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Buhair Landfill Site Remediation, Bahrain for Bauer Resources GMBH 2014.** Reference Disciplines 1,2,4,16,17
  Chris prepared the remediation plan and detailed designs for remediation works including but not limited to management of: landfill gas, odour, fire, groundwater extraction, groundwater treatment, surface water diversion.
- **Silliot Hill Landfill (2009-2012)** Reference Disciplines 1,2,3,4,5,8,12,19
  Project Manager for gas management operational balancing and Design Engineer for 3 capping contracts and one leachate conditioning contract at Silliot Hill facility. FT installed a stone trap to mitigate risk of calcium and magnesium precipitate build-up in rising main post aeration.
- **Offaly County Council (2012)** Reference Disciplines: 8
  Project Manager for Midlands Region landfill gas ultilisation contracts over 3 counties.
- **Min Ryan Park Wexford (2019)** Reference Disciplines: 13
  Detailed design for skateboard park and ground remediation works
- **Tramore Valley Park Kinsale Road (2017)** Reference Disciplines:2, 12 & 13
  Detailed design and design reviews for landscaping and park related works associated with cycle tracks, amenity areas, wetland and retaining walls on engineered landfill cap.
- **Ashbourne Park (2018)** Reference Disciplines: 14
  Design reviews for landscaping and park related works
- **Historic landfills (2014-2021)** Reference Disciplines: 1,2,8,16,17,19
  Project manager for historic landfill related studies (Tier 1,2 or 3) on multiple sites in Tipperary and Kerry.
- **Miscellaneous Landfills (2000-2018)**. Reference Disciplines:1 through 20
  Chris since 2000, in roles of Resident Engineer, Principal Engineer, Technical Director Project manager or other been involved in capping, gas management and capping remediation works at the following landfills: Kinsale Road, Beaumont quarry, Bottlehill, Youghal, Ballydonagh, Killurin, Holmstown, Donohill, Silliot Hill, Gowran, Ballyragget, Drehid, Knockharley, Scotch Corner, North Kerry, Timoole, Banemore, Basketstown, Ballaghveny, East Galway, KTK, Ballealy, Ballynagran, Gozo (Malta), Sajja (UAE) Buhair (Bahrain) Jeddah (KSA).
- **Recycling CENTRE Upgrade Works, Newport Wales (2015–2016)**
  Responsible for the technical reviews of works associated with the extension of an existing recycling depot in Newport Wales. Works included: preparation of a detailed pre- construction cost estimate, detailed structural design of buildings, detailed drainage design and preparation of contract documentation.
- **Civic Amenity Preliminary Design Construction Budget Development, Skibbereen Civic Amenity Site (2018)**
  Project Director, responsible for producing detailed design, tender documents and construction drawings.
- **Kinsale Road Sanitary Landfill, Cork - €30M (2000–2012)**
  Project Manager responsible for Phases 1 2 and 3 capping, leachate collection system, leachate conditioning plant (methane stripping), split level and single level civic amenity and Park n Ride development.
- **Transfer Station East Cork (2007–2009)**
  Design Engineer for Kinsale Road Transfer Station studies and conceptual design layout for East Cork Transfer station.
- **Composting and Materials Recovery Wexford (2010)**
  Conceptual design studies for Composting and Materials Recovery Facility Wexford Client Veolia.
- **Transfer Station Ballymount (2012)**
  Project Manager for redesign of slab using fibre reinforced concrete for Dublin City Ballymount Baling transfer station (600,000 tonnes per annum).
- **Sajja Landfill, Sharjah, United Arab Emirates (2008)**
  Project Manager for 3 projects: Audit of facility; Facilitator for handover between old and new Operators, and Project support (5 man team over 3 months) developing designs and operational procedures for whole operation. The 2.5 million tonne per annum Sajja facility accepts municipal solid waste, construction and demolition waste, tyres, timber, solid and liquid hazardous wastes and waste water treatment sludges. The facility also comprises a waste transfer facility for recovered materials (Compost, Tyres, Wood and C&D materials).
- **Jeddah Municipality (2011)**
  Technical review and financial modelling for dirty MRF facility.

Chris Cronin

Technical Director

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Cork City Council (2000–2005)**
  Client Representative for DemCon Construction and demolition materials recovery facility at Kinsale Road recovering C&D materials for capping and road works.
- **Tipperary County Council (2007)**
  Cashel Transfer station. Drainage works technical support to mitigate flooding problems at transfer station.
- **Veolia Environmental Services (2006–2008)**
  Project Manager and Design Engineer for Veolia Environmental Services Ltd – Refurbishment of Transfer Station and Materials Recovery Facility at Forge Hill, Cork. Construction work includes two buildings, a two- storey office building and to existing materials recovery building. Construction also includes site development works e.g. provision of hard standings, drainage and services.
- **Ashgrove Waste Management Facility**
  Project Manager for facility upgrades and preparation of SEWs.
- **Brinny Pharmaceutical**
  Technical Director responsible for technical reviews of new petrol interceptor installation.

David Daly

Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

David Daly is a Project Ecologist working as part of the Energy and Planning Team at Fehily Timoney and Company. He holds a Bachelor of Science (BSc) in Ecology from University College Cork, obtained in 2017, and a Master of Science (MSc) in Species Identification and Survey Skills from University of Reading, obtained in 2019. His degrees focused on conservation of habitats, flora and fauna, with strong emphases on European and international legislation, and practical field skills.

Since joining FT, David has carried out numerous habitat surveys, including surveys of woodland, grassland, and peatland habitats, and also qualitative assessments and mapping of the same. He has also carried out numerous mammal surveys including bat, badger, otter, and general mammal surveys. Bird surveys completed by David since joining FT include winter vantage point surveys, Irish Wetland Bird Surveys, hen harrier roost watches and breeding transects.

A large portion of his work is focused on the survey and assessment of proposed wind and solar energy development sites, and he has carried out comprehensive ecological work on a number of sites, from flora and fauna surveys and habitat mapping to Ecological Appraisals, AA Screening Reports, and Ecological Enhancement Plans.

Key Skills

- Bat identification using bat detectors, behavioral characteristics & software-based analysis of recorded calls
- Bat roost survey
- Bird identification
- Habitat assessment
- Plant identification
- Invasive species survey
- Ecological clerk of works.
- Mammal identification (field signs, live sightings & trail camera survey)
- Report writing and impact assessment (Ecological Impact Assessment, AA Screening & Stage 2 Natura Impact Statement)
- Derogation Licence applications

Project Experience

Project Surveying Experience with FT

- **Bat Surveys**

  Bat activity transect surveys for tree felling works in Dublin City

  Bat activity transects, preliminary roost assessment, hibernation surveys, static detector deployment and subsequent data analysis for a windfarm site in Co. Westmeath

  Bat detector deployment and subsequent data analysis for a proposed windfarm site in Co. Cork

  Bat activity transects for a landfill remediation project in Co. Kerry

  Preliminary roost assessment for a consented windfarm site in Co. Laois

Key Information

Qualifications

MSc. Species Identification and Survey Skills, University of Reading, 2019

BSc. Ecology, University College Cork, 2017

Employment History

2021- Present

Fehily Timoney and Company
Project Ecologist

2019- 2021

Inís Environmental Consultants
Ecologist

2019

Ecus Ltd.
Seasonal Ecologist

David Daly

Project Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Habitat Surveys**

  Survey of peatlands for a proposed windfarm site in Co. Tipperary. Associated releve surveys of potential Annex I habitats
  Survey of peatlands for a proposed windfarm in Co. Galway
  Survey of peatlands and agricultural lands of main windfarm site, grid connection and turbine delivery route for a proposed windfarm project in Co. Waterford
  Survey of agricultural lands of proposed solar farm in Co. Offaly
  Survey of multiple bridge maintenance works in Co. Cork
  Habitat survey for a proposed recycling plant in Co. Dublin
  Post-construction habitat monitoring of enhancement lands for hen harrier at a windfarm site in Co. Limerick

- **Bird Surveys**

  IWeBS and breeding bird transects for a road improvement scheme in Co. Clare
  Vantage point surveys for wintering birds at a proposed windfarm site in Co. Longford
  Hinterland surveys for a proposed windfarm site in Co. Offaly
  Targeted whooper swan surveys at a proposed windfarm in Co. Cork
  Hen Harrier roost survey for a proposed windfarm in Co. Offaly
  Breeding bird transects for a proposed recycling plant in Co. Dublin

- **Mammal (non-volant) Surveys**

  Otter survey for landfill remediation works in Co. Tipperary.
  Otter survey for a proposed windfarm site in Co. Cork.
  Badger survey for a consented windfarm site in Co. Laois
  General mammal survey for proposed windfarm sites in Co. Westmeath, Co. Tipperary, Co. Galway, Co. Offaly, and Co. Waterford

- **Additional Surveys**

  Marsh fritillary surveys for marsh fritillary larvae of a proposed windfarm site in Co. Tipperary.

Additional Previous Experience

- **Ecologist, Inís Environmental Consultants, Ennis, Co. Clare, 2019– 2021**

  David was an Ecologist responsible for Habitat, invasive species and protected species surveys (birds, bats, mammals). He was also Ecological Clerk of Works on telecommunication projects and building refurbishment works.
  David was responsible for report writing (Appropriate Assessment Screenings, Natura Impact Statements, Ecological Impact Assessments, Protected Species Reports) and project management.

- **Seasonal Ecologist, Ecus Environmental Consultants, Basingstoke, UK, April – September 2019**

  David was a Seasonal Ecologist. He was responsible for Habitat and protected species surveys (bats, badgers, dormice, great-crested newts and reptiles).
  David was also responsible for report writing (Preliminary Ecological Appraisals, Desk Studies, Risk Assessments) and ArcGIS Mapping.

Jon Kearney

Principal Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Jon is a specialist planner and ecologist with over 15 years' experience in both the UK and Ireland. His skills include an extensive knowledge of planning environmental law and planning requirements for ecology and biodiversity. Jon's experience spans ecology survey techniques and methodology, ornithological surveys, mitigation design, water quality assessment, Appropriate Assessment and Ecological Impact Assessment. Jon has completed ecological assessments, EcIAs, Environmental Impact Assessment Reports (EIAR) and Appropriate Assessments for a wide variety of projects in Ireland and the UK. He has considerable experience of EIS/EIAR and ecological constraints work, which often includes extensive reference to, and interpretation of, Article 6 of 'The Habitats Directive', and to other EU, UK and Irish conservation legislation.

Key Skills

Jon has experience in the following:

- Preparing successful tender submissions for a wide range of projects and establishing a network of new clients for ecological services,
- Planning environmental law and planning requirements for ecology and biodiversity,
- Project management and management of ecology team.
- Expert witness for Ecology / AA.
- Ecology survey techniques and methodology,
- Expert review of Ecological report and Appropriate Assessments,
- Ornithological surveys,
- Mitigation design and implementation,
- Water quality assessment,
- Appropriate Assessment,
- Ecological Impact Assessment,
- Ecological Clerk of Works,
- Ecological supervision, collaboration with other disciplines at both planning and construction stages

Previous Experience Essential for this Project

- **Kerry Historic Landfills**
  Kerry are proposing a series of remediation works to eight historic Landfill sites. Jon is the lead ecologist for these projects, coordinating ecological surveys and managing the preparation of both the Stage One Appropriate Assessment Screening Reports and Stage Two Natura Impact Statements for these sites.
- **Millennium Park materials processing and transfer facility, Dublin City**
  The proposed development was for a materials processing and transfer facility at the Millennium Business Park site for the acceptance of up to 170,000 tonnes per annum of municipal solid waste (MSW) from commercial and domestic sources. Jon prepared the Flora and Fauna chapter of the EIS and the Appropriate Assessment Screening Report. He also prepared an invasive species management plan for the proposed development.

Key Information

Qualifications

M.Sc. Ecological Management and Biological Conservation,
Queens University Belfast, 2005

BSc. Applied Ecology
University College Cork 2004

Professional Memberships

MCIEEM Full member of the Institute of Ecology and Environmental Management

Employment History

July 2015 - Present
Fehily Timoney & Company
Principal Environmental Scientist

2010 – 2015
Malachy Walsh and Partners

2009 – 2010
Renewable Energy Systems Ltd.

2007 – 2009
RPS Consulting Engineers

2007
Mott McDonald

2006 – 2007
Mouchel

2005 – 2006
Freelance Ecologist

Expert Witness

Expert Witness at the following oral hearings:
Pairc Uí Chaoimh
Doolin Pier

Publications

Jon Kearney (2010). Kerry slug (*Geomalacus maculosus)* recorded at Lettercraffroe, Co. Galway. Irish naturalists Journal **31** No. 1 p68 - 69

Jon Kearney

Principal Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Knockharley Landfill, Co. Meath**
  The proposed development was for an existing landfill facility where waste disposal and recovery activities are undertaken. Jon both conducted and coordinated ecological surveys (habitats, bats, mammal, birds and water quality), and prepared the Biodiversity chapter of the EIAR and reviewed the Natura Impact Statement.
- **Pairc Ui Chaoimh redevelopment, Cork City**
  Project ecologist for the redevelopment of Pairc Ui Chaoimh. Jon prepared the Flora and Fauna chapter of the EIS and the Natura Impact Statement. Jon was the expert witness for ecology representing the GAA at the subsequent An Bord Pleanála oral hearing following which the project received full planning.
- **Development of Beamish and Crawford Site, Cork City**
  Heineken Ireland Ltd. and BAM applied successfully for planning permission to build a multi-purpose development on the site of the old Beamish and Crawford Brewery on South Main Street, Cork City centre. Jon was the project ecologist for the project. He carried out habitat surveys and bat surveys within this urban site and the greater surroundings. He prepared the Ecological Impact Assessment and Appropriate Assessment. Jon was also involved in the consultation process with NPWS and designed a habitat enhancement plan including the installation of green roof as part of the design of the development.
- **Doolin pier development Co Clare**
  A new harbour development comprising of a 103 metre pier new pier structure, revetment, bed rock dredging, access road and associated works at Doolin, Co Clare. The new facility offered improved access to the Aran Island from the mainland. Jon was the project ecologist for the EIA. Coordinating and undertaking: Ecological survey (fauna, flora and habitats). Production of an NIS and terrestrial ecology chapter of the EIS. Expert witness at oral hearing for project which received planning.
- **Dairygold Redevelopment, Mallow, Co. Cork (2014)**
  Jon coordinated the Natura Impact Statement and Biodiversity chapter along with ecological surveys at the site for this brownfield site. Surveys undertaken included those for habitats, mammals, bats and water quality (Q sampling/physiochemical). The project subsequently received full planning.
- **Dunkettle Interchange, Co. Cork**
  Jon is the lead ecologist, overseeing a team of ecologists on this scheme. Responsibility for compliance with ecological planning conditions and ecology EIA and NIS commitments for the reconfiguration of the Dunkettle Interchange to a free flow interchange including:
  - A series of direct road links between the N8, the N25 and the N40 and links to the R623 regional Road in Little Island and Burys Bridge in Dunkettle;
  - 1 grade separated junction arrangement, 4 roundabouts, 51 major structures of various forms;
  - Intertidal area with numerous lagoons within and adjacent to the works areas.
  - Extensive pre-construction surveys
  - Responsible for translocation of moth plants, water beetle and rare plants.
  - Supervision of site clearance.
  - ECoW early works contract.
- **Upperchurch Wind Farm, Co Tipperary**
  Jon was the project ecologist for Upperchurch Wind Farm in Tipperary. He both coordinated and conducted bat, mammal, habitat and ornithological surveys within the study area of the 22 turbine Wind Farm. He prepared the Ecological Impact Assessment, Appropriate Assessment and Ecological Management and Habitat Restoration Plan. Jon was also involved in the consultation process with NPWS.
- **'O Grianna Case' Derragh Wind Farm, Co. Cork**
  Jon was the project ecologist for Derragh Wind Farm for the most recent application in 2015. The planning for the previous application had been over turned in the high court in the 'O' Grianna Case' due to lack of consideration for the Grid Route. Jon prepared the Natura Impact Statement and Flora and Fauna Chapter of the EIS for the most recent revised application which received planning from An Bord Pleanála.
- **Cork Area Strategic Plan-Strategic Environmental Assessment (SEA).**
  The Cork Area Strategic Plan (CASP), adopted in 2001, provides a framework for the full integration of land use, transportation, social and economic elements for the Cork area up to 2020. Prepared ecology chapter of the SEA.
- **Strategic Area Plans Cork County**
  Prepared the biodiversity, flora and fauna chapter for the Strategic Environmental Assessment for the following towns:
  - Macroom
  - Clonakilty
  - Kinsale
  - Skibbereen
  - Fermoy
  - Mallow

Jon Kearney

Principal Ecologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Southeast Clare habitat mapping**
  Carried out phase I habitat survey for Clare County Council of all habitat types within a total study area of 400km2. Habitats were classified to level 3 according to a guide to habitats in Ireland (Fossitt, 2000). The information gathered was used to produce a comprehensive habitat map of the region. Among the EU Annex I habitats recorded during the survey was 'depressions on peat substrates of the rhynchosporion (7150)'.
  This habitat was previously unrecorded within the region and maybe designated as a site of international importance following further investigation.

Other AA Screening Reports and Natura Impact Statements prepared by Jon

- Client: Louis Keating / Clare County Council - Kilrush Marina redevelopment and dredging, Co. Clare (2012)
- Client: GSK - Various projects including a coastal revetment, and several new buildings within the plant, Co. Cork (2010-2015)
- Client: Fenit Harbour Board - Fenit Marina and Harbour Extension Preliminary Ecological Studies & EIA Screening, Co. Kerry (2011)
- Client: The Department of Arts, Heritage and the Gaeltacht - Clifden and Inishbofin Airport Terminals (2011)
- Ardcooney Integrated Tourism Masterplan, Co. Clare
- Client: Scartaglen Wind Farm Ltd - Scartaglen Wind Farm Phases I and II, Co. Kerry (2012 - 2015)
- Client: Castlegregory golf club - Castlegregory golf course club house (2013)
- Client: Ecopower - Glencarbry Wind Farm, Co. Tipperary
- Client: Ecopower - Boolabrien Wind Farm, Co. Waterford
- Client: Ecopower - Knocknamona Wind Farm, Co. Waterford
- Client: Ecopower - Derrynadivva Wind Farm, Co. Mayo
- Client: Ecopower - Killavoy Wind Farm, Co. Cork
- Client: Met Eireann - Valentia Met Eireann Air monitoring Facility
- Client: Western Power - Knockranny Wind Farm, Co. Galway
- Client: Solar Sense - Cahir Solar Farm, Co. Tipperary
- Client: Solar Sense - Ballyhale Solar Farm, Co. Kilkenny
- Client: Solar Sense - Glenamoy House Solar Farm, Co. Meath
- Client: Kerry County Council - N70 Kilderry road, Co. Kerry

Key skills and experience

- Have applied for, conducted surveys and supervised construction work under the terms of and completed final reports for several derogation licences for bats, badger, otter, pygmy shrew, electrofishing, reptiles, water vole, dormouse and Kerry slug.
- Expert Witness (Project Ecologist): at three An Bord Pleanála Oral Hearings, Cluddaun Wind Farm (Mayo), Pairc Ui Chaoimh (Cork) and Doolin Pier (Clare)
- Phase I habitat surveys, Fossitt (2000), vantage point survey (birds), transect surveys (birds), point count (birds), AnaBat (Bats), Q sampling (kick samples), White clawed crayfish surveys, electrofishing, mammal surveys (Longworth traps, field surveys, dormouse tubes, motion detection cameras).

Declan Morrissey

Senior Project Scientist/Hydrogeologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Declan is Senior Project Scientist/Hydrogeologist with Fehily Timoney with ten years postgraduate experience. Declan holds a Bachelor of Science in Environmental Management (2009) from Technological University Dublin and a Master of Science in Environmental Sciences (2010) from University of Dublin, Trinity College.

Declan worked in Alberta, Canada for seven years as an environmental scientist and project manager of a hydrogeology group prior to returning to Ireland in 2019. Declan specialises in hydrogeological assessment, water supply, surface water and dewatering management, groundwater monitoring design and execution and environmental site assessments (baseline and contaminated land). Declan also has experience in project management, desk-based research, data analysis, modelling and input into environmental impact assessment reports. Since joining Fehily Timoney in 2020, Declan has been involved in a range of contaminated land projects, Tier 1, 2 and 3 Environmental Risk Assessments and environmental impact assessments.

Key Skills

- Hydrogeology
- Project Management
- Environmental Monitoring
- Data Analysis, and Interpretation
- Environmental Reporting
- Environmental Site Assessment/Site Investigation
- Conceptual Site Modelling
- Stakeholder Engagement

Previous Experience Essentials for This Project

- **Edenderry Power Plant, 2021**
  FT were appointed by Edenderry Power Limited to prepare and submit a Planning Application, an EIAR and an NIS for the continued operation of Edenderry Power Plant from the beginning of 2024 to the end of 2030 exclusively using sustainable biomass fuel. Declan was responsible for completing the Soils and Geology and Scoping and Consultation chapters of the EIAR and coordinating the completion of the EIAR. This Planning Application is currently under consideration.

- **Clonbullogue Ash Repository, 2021**
  FT were appointed by Bord na Móna Energy Ltd to prepare and submit a Planning Application, an EIAR and an NIS for the continued operation of Clonbullogue Ash Repository based in Cloncreen, Clonbullogue, Co. Offaly from the beginning of 2024 until the end of 2031. Ash from Edenderry Power Plant is deposited within this ash facility. Declan was responsible for completing the Soils and Geology and Scoping and Consultation chapters of the EIAR and coordinating the completion of the EIAR. This Planning Application is currently under consideration.

Key Information

Qualifications

Bachelor of Science, Technological University Dublin, 2009

Master of Science, Environmental Sciences, University of Dublin, Trinity College, 2010

Professional Memberships

Member, International Association of Hydrogeologists

Employment History

2020 – Present
Fehily Timoney & Company
Senior Project Scientist/Hydrogeologist

2019 – 2020
TOBIN Consulting Engineers
Project Manager/Hydrogeologist

2012 – 2019
Millennium EMS Solutions Ltd., Canada
Environmental Scientist/Project Manager

2011 - 2012
TMS Environment
Environmental Scientist

Declan Morrissey

Senior Project Scientist/Hydrogeologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Unregulated Historical Landfills, Tier 1 Environmental Risk Assessment, Leitrim County Council, 2021**
  Declan was responsible for the preparation of Tier 1 environmental risk assessment reports for 6 no. unregulated historic landfills located in Leitrim (Ballinamore, Drumshanbo, Drumkeeran, Kiltyclogher, Whitakers Bridge, Cornastalk).
  Work included an initial site walkover and inspection of site conditions and characteristics, comprehensive desk study review of landfill site and surrounding environment, development of a Conceptual Site Model and preparation of a Tier 1 Environmental Risk Assessment report in accordance with the EPA Code of Practice on Environmental Risk Assessment for Unregulated Waste Management.

- **Annagh Wind Farm, 2021**
  Declan provided the hydrogeological input of the Land, Soils and Geology EIAR chapter for the proposed Annagh Wind Farm, Co. Cork.

- **Unregulated Historical Landfills, Certificates of Authorisation, Longford County Council, 2021**
  Declan was responsible for the preparation of the Certificate of Authorisation applications for 2 no. unregulated historic landfills (Cartron Big and Ballymulvey). The applications included the completion of the application form and procurement of supporting documentation (Tier 1, 2 and 3 Risk Assessments, Appropriate Assessment Screening Reports, Qualified Persons documents, ownership details).

- **Former Halting Site at Dublin Airport North Runway Project, 2021**
  Declan was responsible for undertaking an intrusive site investigation to define and delineate the extent of any potential contamination at a former halting site within the Dublin Airport North Runway Project boundary. Declan supervised the excavation of 10 no. trial pits, recorded ground conditions encountered, noted any olfactory evidence of potential contamination and collected soil samples for chemical analysis. Results were compared to waste acceptance criteria to determine suitable facilities for disposal. The management of materials at the site and disposal at suitable facilities were recorded.

- **Unregulated Historical Landfills, Certificates of Authorisation, Kerry County Council [ongoing]**
  Declan was responsible for the preparation of the Certificate of Authorisation applications for 6 no. unregulated historic landfills (Lenamore, Ahascra, Listowel, Ardfert, Tralee, Dingle). The applications included the completion of the application form and procurement of supporting documentation (Tier 1, 2 and 3 Risk Assessments, Appropriate Assessment Screening Reports, Qualified Persons documents, ownership details).
  Declan has also engaged with the EPA for 4 no. unregulated historic landfills (Coolcalagh, Milltown, Kenmare, Cahersiveen) co-located with licensed sites to determine the best approach for the Certificate of Authorisation application. The preparation of Technical Amendment applications to amend the site boundaries in ongoing.
  Declan is currently managing biodiversity surveys to support the preparation of Natura Impact Statements for 3 no. sites (Sneem, Tralee and Rockfield). Surveys are being completed for habitats, invasive species, otters, birds, bats and aquatics. These sites will be subject to planning applications to An Bord Pleanála. Declan will prepare the EIAR screenings, Construction and Environmental Management Plans and planning applications.

- **Historic Landfill Assessment & Registration, Carlow County Council [ongoing]**
  Declan is engaged in an assessment of a historical landfill on behalf of Carlow County Council at an unregulated landfill site located at Haroldstown, Co. Carlow. A Tier 2 Risk Assessment which included recommended remediation options was completed for the site in 2015. Declan has been required to review groundwater monitoring results in the period post risk assessment and to amend the remediation design. Declan is also preparing a preliminary cost estimate for remediation works and carrying out the EPA registration process for the historic landfill site.

- **Bord na Móna Contaminated Land Site Assessments [ongoing]**
  Responsible for the preparation of Tier 1 Assessments for 3 no. sites in Cork, Limerick and Sligo, sites investigation design for completion of additional detailed site investigations to fully delineate the extent of potential waste deposition, preliminary safety and health plans, procurement documentation for tender site investigation contractors. Project is currently awaiting approval for Tier 2 works.

Declan Morrissey

Senior Project Scientist/Hydrogeologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Scotch Corner Landfill, 2020-2021**
  Declan was responsible for the preparation of a report which assessed the impact of additional leachate removal wells on groundwater and surface water quality at Scotch Corner Landfill, Co. Monaghan. The report required an assessment of leachate, ground and surface water quality (including trend assessments). Responsibilities included procuring and management of site investigation contractor for additional groundwater monitoring wells and preparing preliminary safety and health plan.

- **Unregulated Historical Landfills, Tier 3 Environmental Risk Assessment, Kilkenny County Council, 2020**
  Declan was engaged in the preparation of 2 no. Tier 3 quantitative risk assessments on behalf of Kilkenny County Council for unregulated landfill sites located at Skehana and Sevenhouses, Co. Kilkenny. Declan's work involved the review of previous site investigation and monitoring, analysis and interpretation of additional surface water monitoring data, confirmation of potential risks associated with the site and the preparation of an appropriate remediation plan and cost estimates.

- **Unregulated Historical Landfills, Tier 2 Environmental Risk Assessment Site Investigation, Kilkenny County Council, 2020**
  Responsible for the preparation of Tier 2 site investigation design for 2 no. unregulated historic landfills at Talbotsinch and Dungarvan, Co. Kilkenny. Responsibilities included preparing preliminary safety and health plan, procuring and management of site investigation contractor, geophysical survey and topographic survey contractors, management of environmental soil and groundwater sample collection and gas monitoring, coordination of third-party laboratory services.

- **Clonbullogue Ash Repository, 2020**
  FT were appointed by Bord na Móna Energy Ltd to prepare and submit a Planning Application for the continued operation of Clonbullogue Ash Repository based in Cloncreen, Clonbullogue, Co. Offaly for 2023. Declan was responsible for the compilation of the Planning Support Statement, completing the planning application and completing the statutory notices for the proposed development. Declan was also responsible for compiling, collating and submitting the planning application to Offaly County Council. Planning permission was ultimately secured.

- **Ummeras Wind Farm, 2020**
  Prior to joining Fehily Timoney, Declan was project manager and involved in the identification of constraints, scoping, site investigation, preparation of the Lands, Soils and Geology and Hydrology and Hydrogeology chapters for a proposed wind farm. Declan was involved in the completion of surface water sampling at the site and the write-up of the Surface Water Management Plan.

- **Derryadd Wind Farm, 2019**
  Declan acted as expert witness in relation to the oral hearing as part the Bord na Móna Derryadd Wind Farm in Co. Longford. The role involved review of existing hydrological and hydrogeological information, production of a précis of evidence and acting as expert witness for the arbitration hearing.

- **Trascan Solar Farm, 2019**
  Declan assisted as Project Manager for the Trascan Solar Farm Project Planning Application. Key responsibilities included managing the TOBIN team and sub-consultants, directly liaising with the client and landowner, consulting with the Planning Department and the Development Applications Unit (DAU), writing sections of and reviewing the Planning and Environmental Considerations Reports, reviewing GIS mapping and Planning Application drawings, completing the Planning Application forms, fee calculations, and newspaper and site notices, and submitting the final application to the County Council.

- **Water Supply, 2019**
  Task lead for groundwater supply projects at Thomastown, Co. Kilkenny and Ballylooby, Co. Tipperary involving desk-based research, pumping well design, site supervision, data analysis, licence application and liaising with statutory consultees.

- **Grassy Mountain Coal Project, 2017**
  Declan provided hydrological, geological and hydrogeological technical input while undertaking an assessment at the Grassy Mountain Coal Project in Southern Alberta, Canada.

Declan Morrissey

Senior Project Scientist/Hydrogeologist

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **West Edmonton Landfill Expansion Application, Alberta, Canada, 2015 - 2017**
  Responsible for managing the environmental assessment for the expansion of the landfill, including site investigation design, preparing preliminary safety and health plan, procuring and management of site investigation contractor, geophysical survey and topographic survey contractors, management of environmental soil and groundwater sample collection, coordination of third party laboratory services, interpretation of results, and preparation of report in support of the application required under the Environmental Protection and Enhancement Act (EPEA).

- **Wainwright Landfill Expansion Application, Alberta, Canada, 2014 - 2016**
  Responsible for managing the environmental assessment for the expansion of the landfill, including site investigation design, preparing preliminary safety and health plan, procuring and management of site investigation contractor, geophysical survey and topographic survey contractors, management of environmental soil and groundwater sample collection, coordination of third party laboratory services, interpretation of results, and preparation of report in support of the application required under EPEA.

- **Thorhild Landfill Expansion Application, Alberta, Canada 2014 - 2015**
  Responsible for managing the environmental assessment for the expansion of the landfill, including site investigation design, preparing preliminary safety and health plan, procuring and management of site investigation contractor, geophysical survey and topographic survey contractors, management of environmental soil and groundwater sample collection, coordination of third party laboratory services, interpretation of results, and preparation of report in support of the application required under EPEA.

- **Surface Water Management at Mining Facilities, 2013-2017**
  Declan was responsible for the management of surface water dewatering operations at the Coal Valley Coal Mine and Total Joslyn oil sands project in northern Alberta, Canada. The projects involved the management of dewatering activities to ensure that surface water released off-site to watercourses were within regulatory and licence limits. Declan also assisted in providing technical input, liaising with clients, regular surface water monitoring and weekly, monthly and annual reporting.

- **Groundwater and Surface Water Monitoring Programme Design, 2012 - 2019**
  Declan was responsible for the establishment of surface water and groundwater monitoring programmes at a number of Stream Assisted Gravity Drainage (SAGD) facilities prior to their construction in Northern Alberta, Canada. The work included a review of the proposed facility layout to identify sources and contaminants of potential concern, the completion of a site investigation to identify potential pathways and a site walkover to establish potential receptors. The draft programme was reviewed by the project manager and client, with final submission to the regulator for approval. Once the monitoring programme was approved, this was subject to the conditions of the specific operational licence.

- **Groundwater and Surface Water Monitoring, 2011-2019**
  Declan has completed an extensive number of surface water and groundwater monitoring programmes in Ireland and Canada, including in landfills, quarries, pharmaceutical facilities, mines, oil and gas facilities, applying industry approved sampling and monitoring techniques. Field preparation consisted of reviewing monitoring plans/programmes and previous monitoring reports for recommendations for alternations to monitoring plans/programmes, discussions with project managers, clients and stakeholders via various mediums (phone, video-conferencing, email) for site information and access, communication with laboratories and equipment companies for monitoring and sampling containers and equipment. Monitoring consisted of collecting biological and chemical samples in approved containers using industry accepted methods, recording of field parameters including pH, temperature and dissolved oxygen. Post-monitoring, storage of samples during transport, delivery of samples to laboratory and submitting same with Chain of Custody with required holding times. Field notes were uploaded to the project file and a summary of the works was submitted to the project manager and client, identifying any issues during the work, lessons learned and improvements for the following monitoring events. Once the laboratory results were received, the data was subject to the process of quality control and quality assurance by comparing the results of field blanks, trip blanks and duplicates. If anomalies were identified, the laboratory were contacted and if necessary, the sample was reanalysed for the parameter(s) of concern. Once the laboratory results were identified to be satisfactory, the data was inputted to the appropriate database for extraction in various formats for analysis, reporting and mapping.

CIARA NOLAN MSc (Hons) BSc Eng AMIAQM AMIEnvSc
Senior Air Quality Consultant

EDUCATION

BSc (Hons) Energy Systems Engineering — University College Dublin 2014
MSc (Hons) Applied Environmental Science — University College Dublin 2016

MEMBERSHIP OF PROFESSIONAL ORGANISATIONS

Associate Member of the Institution of Environmental Sciences (IES)
Associate Member of the Institute of Air Quality Management (IAQM)

KEY SKILLS

- Senior Air Quality Consultant at AWN Consulting.
- Experience in the assessment and reporting of air quality and odour impacts associated with industrial and infrastructural projects.
- Experience in monitoring indoor air quality and ambient air quality.
- Extensive experience in the presentation of technical information in the written form.
- Detailed knowledge of air quality standards, air dispersion modelling guidance and impact assessment methods.
- Detailed knowledge of the National Roads Authority Publication "Guidelines For The Treatment Of Air Quality During The Planning and Construction Of National Road Schemes" (2011)
- Experience in the use of software packages such as DMRB, AERSCREEN, AERMOD, TANKs for the air quality assessments of major infrastructural and industrial projects.
- Experience in the assessment of climate related impacts due to industrial and infrastructural projects.

CAREER SUMMARY

AWN Consulting, Senior Air Quality Consultant, 2022 to date

Senior Environmental Consultant with the responsibility for Air Quality. Projects include the preparation of Air Quality and Climate chapters for numerous EIAR for a range of project types including commercial, residential, large infrastructural, data centre and industrial. Experience in air dispersion modelling using USEPA AERMOD software, modelling projects include data centre developments, EPA IE licence applications and various EIA reports.

AWN Consulting, Air Quality Consultant, 2016 – 2021

PROJECT EXPERIENCE

Air quality consultant, involving baseline surveys, impact assessment, development of air dispersion models, impact assessment and preparation of air quality reports for the following key projects:

• N69 Foynes to Limerick Road Improvement Scheme EIAR • Glenamuck District Distributor Road Scheme EIAR & Oral Hearing • EIA for Various Data Centres incl. air dispersion modelling of emergency generators • Kingspan Insulation Fugitive Emissions Survey • Fugitive Emissions Assessment for chemical tank storage site • Odour Management Plan – BMS Biologics	• Odour Management Plan – Abbott Ireland • Upperchurch Windfarm Grid Connection & Related Works EIAR • Shire Pharmaceutical Plant EIAR & IE Licence Application • Garrett Motion IE Licence Review Application • Cumulative Air Dispersion Modelling of Data Centre Developments in West Dublin • EIA for various residential developments

awnconsulting

John Cullen

Senior Project Acoustic Engineer / Environmental Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

John is a Senior Project Acoustic Engineer / Environmental Engineer with Fehily Timoney & Company. He holds a BAgrSc in Agri-Environmental Science from University College Dublin, a P.Grad.Dip in Environmental Engineering from Trinity College Dublin and a Diploma in Acoustics and Noise Control from the Institute of Acoustics. He is a member of the Institute of Acoustics and the Institute of Engineers Ireland.

John has extensive experience in carrying out environmental noise surveys and assessments on behalf of a wide range of clients. He has completed noise impact assessments for a range of developments. He has carried occupational noise and hand-arm/whole body vibration risk assessments in accordance with the requirements of the Irish & UK workplace noise & vibration regulations. He has acted as Lead acoustic consultant carrying out building acoustics assessments to evaluate compliance with the acoustic criteria outlined in the WELL building standard.

Other environmental consultancy projects include:

Bord Bia 'Origin Green' sustainability audits. Duties include site audits, reporting, member verification & liaising with Bord Bia.

Project Manager for the delivery of the continual environmental monitoring schedule for a leading quarry operator at numerous sites throughout Ireland, including noise, dust, air emissions and water quality. Duties included coordinating regular sitework & field monitoring, managing junior staff, interpreting monitoring results & data, reporting, liaising with the client and Local Authorities.

Noise and air emissions monitoring for the validation of newly installed gas engines used for power generation at multiple sites throughout the UK. Tasks included coordinating site visits and monitoring, on-site air and noise monitoring and technical report writing.

Indoor Air Quality Assessment at a refurbished brewery in Kissumu, Kenya for a multinational brewing organisation to assess performance with regards to the requirements of the LEED building performance standard. Duties included coordinating & completing on-site air monitoring and technical report writing.

Previous Experience Essentials For This Project

- **Fehily Timoney and Company, 2022 – Ongoing**
  John is a Senior Project Acoustic Engineer / Environmental Engineer with the Waste and Environmental Team.

- **Self Employed – Environmental & Acoustic Consultant, April 2021 – 2022**
  Carrying out subcontract acoustic & environmental consultancy services.
  Environmental noise monitoring & assessments, noise impact assessments, occupational noise & vibration assessments, sound insulation testing and building acoustics assessments.
  Environmental consultancy services including air quality assessments, bund integrity assessments, and verification audits for the Bord Bia 'Origin Green' sustainability programme.

Key Information

Qualifications

Diploma in Acoustics and Noise Control, Institute of Acoustics via Trinity College Dublin
2019 – 2020

Post Graduate Diploma in Environmental Engineering (NFQ Level 9) (P.Grad.Dip), Trinity College Dublin
2014 – 2015

Agri-Environmental Science (NFQ Level 8) (BAgrSc)
University College Dublin
2009 – 2013

Professional Memberships

Institute of Engineers Ireland (MIEI)
Institute of Acoustics (AMIOA)
Institute of Environmental Sciences (MIEnvSc)
Institute of Air Quality Management (MIAQM)

Employment History

2022- Present
Fehily Timoney & Company
Senior Project Acoustic Engineer / Environmental Engineer

2021- 2022
Self-employed Environmental & Acoustic Consultant

2016- 2021
Environmental Efficiency Consultants
Environmental & Acoustic Consultant

2015 - 2016
Philip Farrelly & Co.
Agri-Environmental Consultant

2014 - 2015
Verdé Environmental Group
Environmental Operative

- **Environmental Efficiency Consultants, Bray, January 2016 – April 2021**
  John was an Environmental & Acoustic Consultant providing environmental consultancy services to clients across a wide range of sectors, including industrial, pharmaceutical, construction/quarrying and agri-food/drink. He was working as part of a multi-disciplinary team delivering environmental reports, management plans, impact assessments, licence/permit applications and environmental compliance consultancy. Working across various areas of environmental consultancy, specialising in noise & acoustics. His role involved developing project proposals & quotations, project management, research, carrying out and coordinating environmental monitoring & field surveys (Air quality, biodiversity, bunds, noise, vibration & water), liaising with sub-contractors and regulatory bodies, interpreting monitoring results & data, and technical report writing. Other duties included completing verification audits for the Bord Bia 'Origin Green' sustainability programme, carrying out occupational air, noise & vibration risk assessments, and indoor air quality assessments.

- **Philip Farrelly & Co., Balbriggan, March 2015 – January 2016**
  John was an Agri-Environmental Consultant providing technical agri-environmental advisory services to clients. He was also responsible for soil sampling & analysis, nutrient management planning, biodiversity surveys, and agri-environmental scheme consultancy.

- **Verdé Environmental Group, Kilcoole, January 2014 – March 2015**
  John was an Environmental Operative responsible for contaminated site investigation, drilling works, environmental monitoring (soil, water & air), site remediation and groundworks, and installing/maintaining on-site remediation systems.

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TRAFFICWISE
traffic & transportation solutions

EMPLOYEE PROFILE

Name	Julian Keenan (Project Lead Specialist)
Qualifications	Degree Civil Engineering BE (Hons) University College Galway (1990) BTech Highways & Transportation Engineering Diploma Quality Assurance to BS5950 MIEI, MCHIT
Position	Director

Trafficwise is a firm of consulting engineers specialising in traffic and transportation planning and geometric roads design. Julian Keenan is a director of Trafficwise Limited and holds a degree in civil engineering, a Bachelor of Engineering (Hons.) obtained from University College, Galway, in 1990. He is a member of the Institution of Engineers of Ireland and a member of the Chartered Institution of Highways and Transportation. He has over 30 years engineering experience, including approximately seven years in local government in the United Kingdom and over 23 years of private engineering consultancy services in Ireland, of which 18 years are with Trafficwise Limited. He has specialised in roads design and traffic and transportation planning for approximately 25 years.

Julian Keenan's consultancy experience includes advising clients in relation to road schemes, residential, commercial, industrial and leisure developments for which the key work involves provision of professional services in the design and appraisal of schemes, including the preparation of planning applications and appeals. He has represented clients at An Bord Pleanála oral hearings for commercial development, strategic infrastructure development and represented landowners and stakeholders in relation to various road schemes and infrastructural works. He has given sworn evidence before the Property Arbitrator, including in relation to road schemes, and has provided expert witness testimony in the High Court.

Appendix A

Sample Waste Industry Project Experience

Project Client Status	WASTE/ENERGY INDUSTRY PROJECTS Brief Description of Commission
KTK Landfill Site Kilcullen, Co Kildare **Client:** KTK Sand & Gravel/Celtic Waste/ Greenstar Ltd. *Permission Granted* *(Operating)* *Project Value €88M*	**Engineered Landfill Development (2002)** Preparation of Transport Assessment for EIS. Preparation of Preliminary and Later Detailed Geometric Roads and Access Layouts. Weighbridge/Waste Inspection Area/Concrete Slab Design Traffic Management Advice and Adhoc Consultation re: Roads and Traffic Matters during Construction
Knockharley Landfill Site Nr. Kentstown, Co Meath **Client:** Greenstar Ltd *Permission Granted - An Bord Pleanála* *(Operating)* *Project Value €120M*	**Engineered Landfill Development (2002, 2004,2014,2019,2021)** Preparation of Transport Assessment for EIS. Preparation of Geometric Roads and Access Layouts from National Primary Road. Road Safety Audit, Design of Access Road and Underpass Traffic Management Advice and Adhoc Consultation re: Roads and Traffic Matters during Construction Expert Representation at An Bord Pleanala Orla Hearing(s) Application to An Bord Pleanala for Strategic Infrastructure Development Permitted 2021
Waste Transfer and Recovery Facility Beauparc, Rathdrinagh, Co Meath **Client:** Panda Waste Limited *Permission Granted* *(Operating)*	**Waste Recovery Facility (2004, 2014, 2017)** Preparation of Transport Assessment for EIS Design of Proposed Access Arrangements and Assessment of Internal Vehicular Operation
Ballynagran Residual Landfill Ballynagran, Coolbeg, Co Wicklow **Client:** Greenstar Ltd. *Permission Granted* *(Operating)* *Project Value €120M*	**Engineered Landfill Development (2004)** Preparation of Transport Assessment for EIS Preparation of Preliminary Geometric Roads and Access Layouts. Preliminary Design of Access Road and M11 Overpass/Interchange Traffic Management Advice and Adhoc Consultation re: Roads and Traffic Matters during Construction
Fassaroe Waste Transfer Facility Bray, Co Wicklow Former Noble Waste Management Facility **Client:** Greenstar Ltd. *Permission Granted* *(Operating)*	**Waste Recovery Facility (2005)** Preparation of Detailed Geometric Roads, Access and Facility Layouts. Layout of Compactor Access, Design of; Disposal Area, Transfer Buildings, Site Drainage, Car Park, Access Road, Weighbridge, Wheel-Wash and Civic Amenity Bring Centre (Refurbishment of Existing Site)
East Galway Residual Landfill Nr. Kilconnell, Co Galway **Client:** Greenstar Ltd. *Permission Granted – ABP - (Closed)* *Project Value €120M*	**Engineered Landfill Development (2002)** Preparation of Transport Assessment for EIS Preparation of Preliminary Geometric Roads and Access Layouts Preparation of Detailed Roads Layout Arrangements 12km Road Improvement Expert Representation at An Bord Pleanala Orla Hearing
Ballycoolin Materials Recovery Facility Cappagh Road, Fingal, Co Dublin **Client:** Panda Waste Limited *Permission Granted - (Operating)* *Project Value €50M*	**Waste Recovery Facility (2007)** Preparation of Transport Assessment for EIS. Preparation of Preliminary Geometric Roads and Access Layouts. Facility Layout Design
KTK Land Restoration Project (Inert) Ballymore Eustace, Co Kildare **Client:** KTK Sand & Gravel *Permission Granted - (Exhausted)*	**Land Restoration Project (2007)** Preparation of Transport Assessment for EIS Preparation of Preliminary and Later Detailed Geometric Roads and Access Layouts including Safety Appraisal

Millennium Business Park, Ballycoolin **Materials Recovery Facility** Cappagh Road, Fingal, Co Dublin **Client:** Greenstar Limited *Permission Granted - (Operating)* *Project Value €50M*	**Waste Recovery Facility (2007)** Preparation of Transport Assessment for EIS. Preparation of Preliminary Geometric Roads and Access Layouts. Facility Layout Design
Landfill Development Brownfield, Donard, Co Wicklow **Client:** ERML *Permission Refused*	**Engineered Landfill Development (2006)** Preparation of Transport Assessment for EIS Preparation of Detailed Geometric Roads and Access Layouts.
Waste to Energy Facility, Nr Kilworth Project Vale, between Mitchellstown & Kilworth **Client:** Bioverda *Permission Refused*	**450,000t/a Anaerobic Digestion Plant (2006)** Preparation of Transport Assessment for EIS. Preparation of Detailed Geometric Roads and Access Layouts. Facility Layout Design Representation at An Bord Pleanala Oral Hearing
Landfill Development Usk, Kilcullen, Co Kildare **Client:** Greenstar	**Engineered Landfill Development (2007)** Preparation of Detailed Geometric Roads and Access Layouts requested by An Bord Pleanala (Designs and proposals accepted by Board). Approximately 3km of road improvement works together with junction improvements. Representation at An Bord Pleanala Orla Hearing No.2
Calf Field Residual Landfill Ballynadrummy, Nr Longwood **Client:** Thornton *Permission Refused – An Bord Pleanála*	**Engineered Landfill Development (2007)** Did not prepare Transport Assessment for EIS Preparation of Preliminary Geometric Roads and Access Layouts Preparation of Detailed Roads Layout Arrangements Representation at An Bord Pleanala Orla Hearing
Waste to Energy Facility Huntstown Power, Huntstown Quarry **Client:** Energia *Facility Under Construction* *Project Value €70M*	**Anaerobic Digestion Plant (2012)** Preparation of Transport Assessment for EIS. Preparation of Detailed Geometric Roads and Access Layouts. Facility Layout Design
Waste to Energy Facility Little Island Cork **Client:** Stream BioEnergy *Facility Under Construction* *Project Value €50M*	**Anaerobic Digestion Plant (2012)** Preparation of Transport Assessment for EIS. Preparation of Detailed Geometric Roads and Access Layouts. Facility Layout Design
Waste to Energy Facility Ballymena, Co. Antrim **Client:** Stream BioEnergy *Permission Granted - (Operating)* *Project Value €50M*	**Anaerobic Digestion Plant (2012)** Preparation of Transport Assessment for EIS. Preparation of Detailed Geometric Roads and Access Layouts.
JV of Various Meat Industry Rosegreen, Nr Cashel **Client:** JV *Permission Refused at ABP*	**Development of Anaerobic Digestion Plant at Existing Rendering Plant adjacent to the Coolmore Stud (2006)** Preparation of Transport Assessment for EIS Preparation of Preliminary and Later Detailed Geometric Roads and Access Representation at Oral Hearing
Oweninny Wind Farm Carrickmacross, Mayo **Client:** ESB & Bord Na Mona *Permission Granted – (Under Construction)* *Project Value €800M*	**Wind Farm Development** **Preparation of Scheme and Assessment of Development Impacts (2015)** Presentation of Expert Evidence to Oral Hearing Cross-examination of Planning Authority.

www.colmflynnarchaeology.ie

COLM FLYNN BA MIAI

Senior Archaeologist

Colm Flynn is a Senior Archaeologist with over 20 years' experience in cultural resource management and Licensed fieldwork. Colm has proven detailed experience in archaeological impact assessment, specialising in the production of bespoke archaeological mitigation plans for developments in areas of archaeological potential. He has completed more than 100 Licensed archaeological fieldwork activities and has provided consultancy services for several large-scale amenity projects including the Portumna Blueway, County Galway, Victoria Lock and Meelick Weir Project, County Offaly, and Cavan Burren Geopark Project, Blacklion, and developments at National Monument sites, including St. Francis Abbey Kilkenny, St. Canice's Cathedral, and Kilmainham Gaol, Dublin. Colm has an excellent working relationship with all of the Statutory Authorities.

Professional Qualifications/Certifications

- Licensed Archaeologist (Republic of Ireland 2006, Northern Ireland 2016)
- Galway Mayo Institute of Technology. BA (Hons.) Archaeology, 2 (I)
- Member of the Institute of Archaeologists of Ireland (MIAI)

Key Skills

- Licensed fieldwork
- Cultural Resource Management
- Archaeological Mitigation Measures for Conservation Projects
- Pre-planning consultancy

Key Project Experience

Portumna Blueway Project, County Galway,– Consultant Archaeologist

Development of Cultural Heritage aspect of EIAR, liaising with statutory agencies and applying for Ministerial Consent for Development Works, on-site archaeological mitigation, and reporting. For Waterways Ireland.

Victoria Lock and Meelick Weir Project, River Shannon, Co Offaly – Consultant Archaeologist

Development of Cultural Heritage aspect of EIAR, liaising with statutory agencies and applying for Ministerial Consent for Development Works, on-site archaeological mitigation, and reporting. For Waterways Ireland.

Riverside Park, River Nore, Kilkenny City– Consultant Archaeologist

Development of Cultural Heritage aspect of Part VIII Planning Publication, liaising with statutory agencies and applying for Ministerial Consent for Development Works, on-site archaeological mitigation, and reporting. For Kilkenny County Council.

Cavan Burren Geopark Project, Blacklion, Co. Cavan – Consultant Archaeologist

Production of Archaeological Assessment for Part 8 planning, and liaising with statutory agencies. construction mitigation measures, excavation, and post excavation analysis, and reporting. For Cavan County Council.

Abbey Quarter Project. St. Francis Abbey, Kilkenny City – Consultant Archaeologist

Compilation of Archaeological reports for Part VIII Planning Publication, liaising with statutory agencies and applying for Ministerial Consent for Development Works, pre-construction mitigation measures, excavation, and post excavation analysis, and reporting. For Kilkenny County Council.

Kilmainham Gaol Enhancement Project, Kilmainham, Dublin 8 – Consultant Archaeologist

Compilation of Archaeological reports for Planning Application, liaising with statutory agencies and applying for Ministerial Consent for Development Works, construction mitigation measures, excavation, and post excavation analysis, and reporting. For Office of Public Works.

Rory Curtis **GDip – Landscape Architecture** **BEng – Design and Innovation** **BA – Photography** **MILI**	**Position:**	Landscape Architect
	Professional Experience	
	Rory has been with Macro Works Ltd since 2017, having previously worked as a Landscape Architect for Atkins Global in the UK for a period of 5 years. He is a valuable member of our LVIA team and brings a high degree of rigour to his assessments, as well as being a professionally qualified photographer. Originally from County Wicklow, he is a full corporate member of the Irish Landscape Institute. Rory is currently the project Landscape Architect for a number of linear infrastructure and road projects where his organisational skills and attention to detail are vital. Previous key projects include the High Speed Two rail link between London and Birmingham and the Birmingham New Street Station.	

Bruna Ferrari Felipe

Project Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Profile

Bruna is a Project Environmental Engineer of Fehily Timoney and Company. Bruna holds a BE of Environmental Engineering from UNESP, Sao Paulo State University, Brazil.

Since joining FT in 2019 Bruna has been involved in a range of contaminated land projects and Tier II Environmental Risk Assessments (ERA). Bruna has been responsible for the data collation, validation and analysis for the preparation of ERA reports for a range of landfill related projects, including works related to meeting environmental monitoring and license compliance for a variety of landfills. She has also been involved in the preparation of Appropriate Assessment reports and an European Sites library to the Department of Agriculture, Food and Marine. Prior to joining FT Bruna completed work relating to the development of bespoke waste management software, waste data analysis and implementation of waste management plans.

Key Projects/ Previous Experience Essentials for This Project

Landfill

- **Project Engineer, Remediation of Contaminated Lands at Whitestown Co. Wicklow, 2019 – ongoing**
  Responsible for preparing the environmental monitoring reports, which includes collating the extensive environmental monitoring data (surface water, groundwater, soils) and automatically screening the results against the pertinent environmental assessment criteria utilizing both Excel and specialist geotechnical databasing software HoleBase. Also assisting with the bill of quantities review for the geotechnical services and the planning history search.
- **Project Engineer, Environmental Assessment of Historic Landfill at Corkeeran, Co. Monaghan, 2018 – ongoing**
  Bruna was responsible for the preparation of the Tier 2 Assessment for the historic landfill, including desk assessment, development of Conceptual Site Model, data collocation and analysis, screening of results against published guidelines for surface and groundwater.
- **Project Engineer, Tier 3: Skehana and Sevenhouses Historic Landfills, 2020 – 2021**
  Responsible for the preparation of the Certificate of Authorisation Application for both historic landfill sites.
- **Project Engineer, Ballymaurice Historic Landfill Tier 2 & 3, 2021 – ongoing**
  Bruna was responsible for the preparation of the Tier 2 Assessment for the historic landfill, including desk assessment, development of Conceptual Site Model, data collocation and analysis, screening of results against published guidelines for surface and groundwater.
- **Project Engineer, Tier 1 ERA Portumna Historic Landfill, 2021**
  Responsible for the preparation of the Tier 1 Assessment for the historic landfill, including the desktop assessment, development of Conceptual Site Model and the Risk Assessment.
- **Graduate Engineer, Tier 2 / 3 Assessment for North Kerry Landfills, 2019 – ongoing**
  Bruna was responsible for the preparation of Tier 2 Assessment for 2 No. Historic Landfill sites in north Kerry, including desk study assessment, development of Conceptual Site Model, data collation and analysis, screening of results against published guidelines for surface and groundwater.
- **Graduate Engineer, Tier 2 / 3 Assessment for Mid Kerry Landfills, 2019 – ongoing**
  Responsible for the preparation of Tier 2 Assessment for one Historic Landfill site in mid Kerry, including desktop assessment, development of Conceptual Site Model, data collation and analysis, screening of results against published guidelines for surface and groundwater.

Key Information

Qualifications

BE (Hons) Environmental Engineering
UNESP, Sao Paulo State University, Brazil

Employment History

2019—Present
Fehily Timoney and Company, Cork
Graduate Engineer

2017—2017
FP Environmental Engineering, Sao Paulo, Brazil

Bruna Ferrari Felipe

Project Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Graduate Engineer, Thorpes and Oldcourt, 2020 – ongoing**
  Bruna assisted the preparation of Tier 3 Assessments for 2 No. Historic Landfill sites in Kilkenny, including data collation and validation, data analysis, screening of results against published guidelines for surface water. She was also responsible for the preparation of the certificate of authorisation application for both landfill sites.
- **Graduate Engineer, Tipperary Historic Landfill Sites, 2019 – ongoing**
  Responsible for the preparation of Tier 2 Assessment for 4 No. Historic Landfill sites across Tipperary, including desktop assessment, development of Conceptual Site Model, data collation and analysis, screening of results against published guidelines for surface and groundwater. Bruna also assisted with the AA Screening report for all landfill sites, her responsibilities included desktop assessment using ArcGIS, identification and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites and planning search.
- **Graduate Engineer, Galway Historic Landfill Sites, 2019 – ongoing**
  Responsible for the preparation of Tier 2 Assessment for 3 No. Historic Landfill sites across Galway, including desktop assessment, development of Conceptual Site Model, data collation and analysis, screening of results against published guidelines for surface and groundwater. Bruna also assisted with the AA Screening report for the landfill sites, her responsibilities included desktop assessment using ArcGIS, identification, and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites and planning search. The Certificate of Authorisation application for these sites were also Bruna's responsibility.
- **Graduate Engineer, Tier 2 Scotch Corner Historical Landfill – 2019 – ongoing**
  Bruna assisted with the research for future options to the landfill, including continuation of landfilling, development of solar farm, grid management infrastructure, integrated constructed wetland and co-located waste developments.
- **Graduate Engineer, ERA of Historic Landfills at Killycard and Killycronaghan, Co. Monaghan – 2020**
  Bruna assisted with the response to EPA Notice to support Certificate of Authorisation application.
- **Graduate Engineer, Engineering Consultancy Services Framework at Balleally former Landfill, 2020 – ongoing**
  Bruna assisted the preparation of several Specified Engineering Works, such as Vertical Well Analysis, Landfill Gas Management, Topographic Monitoring Points and Electrical Control Building. She was also responsible for the preparation of Leachate Treatment Plant Report, describing the existing plant, its currents issues and future options to solve them.
- **Graduate Engineer, Claremorris Tier 3 and Remediation Plan, 2019 – ongoing**
  Assisted with the Tier 3 report, including desk study and site investigation results.
- **Graduate Engineer, Arthurstown Landfill, 2020 – ongoing**
  Bruna assisted the annual emissions report (AER) calculations for air and leachate prior to submission for EPA through an online portal.
- **Graduate Engineer, Annual Landfill Emissions Reporting: Multiple Waste Licence Sites**
  Bruna assisted the annual emissions calculations for air and leachate in collation and analysis of all annual data prior to submission for EPA through an online portal. Sites included, Balleally, Dunsink, Ballyogan and East Galway Landfills

AA Screening Reports

- **Graduate Engineer, Assistance to Department of Agriculture, Food and Marine (DAFM), 2020 – ongoing**
  Assisting the preparation of AA Screening, AA Reports and AA Determinations for several forestry sites, including thinning, felling, and forestry roads. Bruna was responsible for triaging files, assessing the quality of biodiversity and road maps, harvest plans and NISs. Responsible for identifying European Sites within 15 km of c. 200 No. project sites and calculate their distance using ArcGIS. Bruna was also responsible for gathering and compiling information related to Conservational Objectives of the European Sites, such as Qualifying Interests and Special Conservation Interests in order to organise and keep a library updated to the DAFM.
- **Graduate Engineer, Decommissioning and removal of bulk fuel storage tanks, 2020 – ongoing**
  Bruna assisted the preparation of the AA Screening report for the decommissioning and removal of bulk fuel storage tanks and the development of a high-quality public amenity in New Ross, county Wexford. Her responsibilities included identification and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites and planning search.
- **Graduate Engineer, Shonagree Wind Farm Ecology Surveys 2019/20, 2019 – ongoing**
  Bruna assisted the preparation of the AA Screening report for the Shonagree Wind Farm, county Cork. Her responsibilities included desktop assessment using ArcGIS, identification and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites and planning search.
- **Graduate Engineer, EIAR, Planning and IPPC Review - Edenderry Power Ltd, 2020 – ongoing**
  Assisting the preparation of the AA Screening report for Edenderry Power Ltd, for the continuation of Clonbullogue Ash Repository, county Offaly, Bruna was responsible for the desktop assessment using ArcGIS, identification and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites and planning search.
- **Graduate Engineer, Bilboa Wind Farm ecological Surveys, EcIA and AA 2019/20, 2019 – ongoing**
  Bruna assisted the preparation of the AA Screening report for the Bilboa Wind Farm, county Carlow. Her responsibilities included desktop assessment using ArcGIS, identification and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites and planning search.

Bruna Ferrari Felipe

Project Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Graduate Engineer, Croaghaun Wind Farm, Carlow – 2019 – ongoing**
  Assisting the preparation of the AA Screening report for Croaghaun Wind Farm, county Carlow, Bruna was responsible for the desktop assessment using ArcGIS, identification and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites and planning search.
- **Graduate Engineer, TA Scotch Corner Landfill – 2019 – ongoing**
  Assisting the preparation of the AA Screening report for the proposal of alteration of the existing licence boundary at the Scotch Corner Landfill site in Co. Monaghan, Bruna was responsible for the desktop assessment using ArcGIS, identification and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites.
- **Graduate Engineer, Carlow CC Historic Landfill Assessment and Registration, 2020 – ongoing**
  Bruna assisted the preparation of the AA Screening report for the Haroldstown Landfill, county Carlow. Her responsibilities included desktop assessment using ArcGIS, identification and description of European Sites within 15 km of the project site, screening matrix of the likely effects on these sites and planning search. She was also responsible for data collation and analysis, screening of results against published guidelines for surface water, groundwater and landfill gas.

Design and Pricing

- **Project Engineer, Oxygen Waste Transfer EIAR and NIS: Derryarkin and Rochfortbridge, 2020 - ongoing**
  Responsible for preparing the Firewater Risk Assessment for the development using the EPA Excel tool.
- **Graduate Engineer, HWRC and Depot Costings - Mitchel Troy Monmouthshire, 2020 – ongoing**
  Bruna was responsible for measuring and pricing multiple design options for the redevelopment of the existing waste operations site to include for the provision of a new Household Waste Recycling Centre and new household waste collection operation. Pricing was completed based off a specimen design, using principal quantities and engineering assumptions. Rates used were as per latest UK internal library and published rates. The project was completed on the WRAP Wales Collaborative Change Programme framework.
- **Graduate Engineer, Vale of Glamorgan Waste Transfer Station Costings – 2019 – ongoing**
  Responsible for measuring and pricing works associated with the development of an existing Waste Transfer Station to accept multiple waste streams under a revised waste collection strategy. Pricing was completed based off a specimen design, using principal quantities and engineering assumptions. Rates used were as per latest UK internal library and published rates. The project was completed on the WRAP Wales Collaborative Change Programme framework.
- **Graduate Engineer, Carmarthenshire Waste Transfer Station Costings – 2019**
  Responsible for measuring and pricing works associated with the development of an existing Waste Transfer Station to accept multiple waste streams under a revised waste collection strategy. Pricing was completed based off a specimen design, using principal quantities and engineering assumptions. Rates used were as per latest UK internal library and published rates. The project was completed on the WRAP Wales Collaborative Change Programme framework.

Data Analysis

- **Project Engineer, Covanta WtE: Repak Packaging Study Q3 and Q4, 2021**
  Bruna was responsible for preparing the Sampling Plan and compiling the data on Excel for the preparation of the Survey Report for the Repak Packaging Study.
- **Project Engineer, Thorntons 2021 MDR Inputs Repak Survey, 2021**
  Responsible for preparing the MDR intake survey and compiling the data on Excel for the preparation of the Survey Report for the Repak Survey.
- **Project Engineer, Indaver Repak Waste Characterisation Studies, 2021**
  Bruna was responsible for preparing the Sampling Plan for the Repack Packaging Study.
- **Project Engineer, Dublin Airport PFOS Investigation, 2021 – ongoing**
  Bruna was responsible for collating the environmental monitoring data (surface water and groundwater).
- **Graduate Engineer, Repak Studies Glanway, 2020**
  Bruna was responsible for preparing the Sampling Plan and compiling the data on Excel for the preparation of the Survey Report for the Repak Packaging Study.
- **Graduate Engineer, Guidance for Public Authorities on the Provision of Article 6(3) and Article 6 (4) of the Habitats Directive, 2020 – ongoing**
  Responsible for the baseline research of other European countries guidance documents related to the Habitats Directive and for the compilation of the appendices in order to assist the elaboration of the Irish Guidance Document.
- **Graduate Engineer, Irish Prison Service Environmental Framework – 2020 – ongoing**
  Responsible for reviewing and compiling the legal requirements contained in the Discharge Licences for Irish Prisons.

Bruna Ferrari Felipe

Project Engineer

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

- **Graduate Engineer, Dunkettle Interchange, 2019 – ongoing**
  Bruna assisted with air quality data statistical analyses for PM2.5, PM10 particulate monitoring at a Pharma-Chem facility adjacent to proposed significant works., The project involved reviewing all continuous emissions monitoring testing data collected from the air monitors on site, data was collected for 12 months at 2 locations at 15 minute interval. Bruna was responsible for collating and validating the significant data sets in Excel, prior to preparing detailed statistical analysis, prior to preparing a draft of the air quality monitoring report.
- **Researcher, Final Year Project – Bespoke Waste Management Software, 2016 - 2017**
  Responsible, together with IT team, for the development of a bespoke waste management software solution adequate to Brazilian laws to assist and manage the waste generation for multiple types of business. The development happened simultaneously with the university's waste management plan development, involving surveys, database creation, data collation, validation, and analysis.

Site Work

- **Project Engineer, Environmental Compliance Audit, 2021 – ongoing**
  Bruna assisted 2 no. and conducted 1 no. site walkovers and audits for compliance assessment with legislative requirements for environmental management in the jurisdictions of Northern Ireland (NI) and the Republic of Ireland (ROI) for the Irish Lights.
- **Project Engineer, Ballyogan Environmental Monitoring, 2017 – ongoing**
  Assisted with annual monitoring for groundwater, surface water and landfill gas.
- **Project Engineer, Stewarts Hospital Ecology Surveys, 2021 – ongoing**
  Bruna assisted with the conduction of Bat Survey in the vicinity of Stewarts Hospital.
- **Project Engineer, SID Application, EIAR and IE Licence Application for Thorntons, 2021 – ongoing**
  Assisted with the conduction of the noise monitoring at residential locations near the existing Thorntons Wate Processing Facility at Recycling State, Finglas, Co. Dublin.
- **Project Engineer, Coolkeeragh Stability Project, 2021 – ongoing**
  Bruna assisted with the conduction of the sightline assessment and the hydrological assessment on site and the preparation of the respective reports.
- **Graduate Engineer, CNG design support - Kill North, Newhall, City North and Virginia, 2019 - ongoing**
  Bruna assisted with the conduction of Baseline Noise Survey in the vicinity of Virginia Transport.
- **Graduate Engineer, Derryhogan Yard, Littleton, 2019 – 2020**
  Assisted the supervision of Site Investigations at the site, which included 5 Trial pits and the collection of environmental samples from trial pits for waste classification.

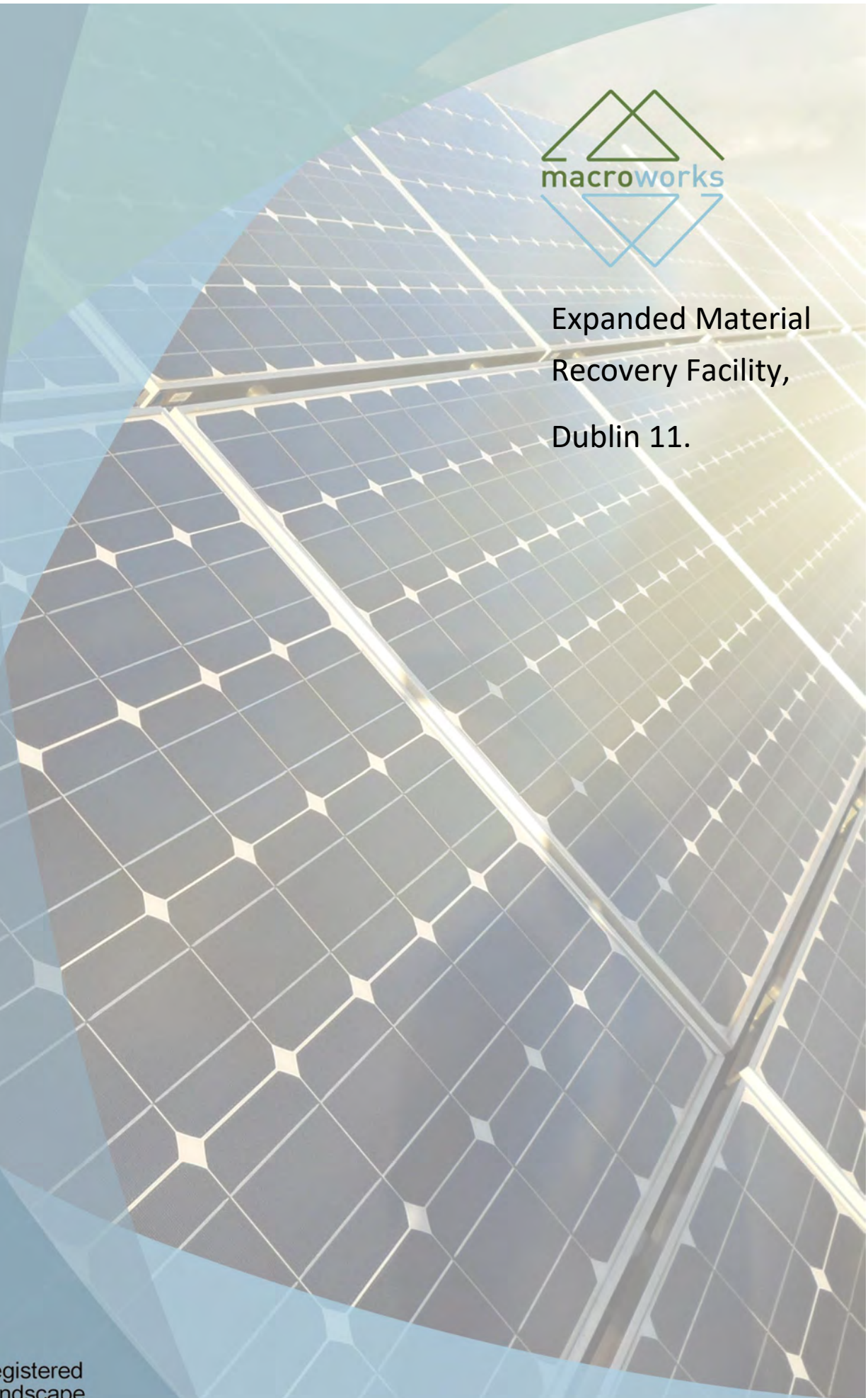
FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 4.1

Solar Panel Glint and Glare Assessment

GLINT AND GLARE ASSESSMENT



macroworks

Expanded Material Recovery Facility,

Dublin 11.

Registered Landscape Architect

October 2022

1 INTRODUCTION

Macro Works Ltd. was commissioned to undertake a glint and glare assessment for a roof-mounted photovoltaic (PV) panel installation on the roof of the Expanded Material Recovery Facility at Cappogue and Dunsink, Dublin 11 (Figure 1 refers).

Figure 1: Aerial view indicating the approximate location of the proposed development (red pin).

PV panels were initially planned to be mounted on the roof of the proposed extended portion of the existing MRF Building 1 (referenced herein as Array 3) and on both the western and eastern slope of the roof of the proposed Building MRF 3 (referenced herein as Array 1 and 2 respectively). The PV panels will remain in a fixed position throughout the day and year (i.e. they will not rotate to track the movement of the sun).

2 STATEMENT OF AUTHORITY

Macro Works' relevant experience includes nineteen years of analysing the visual effects of a wide range of infrastructural and commercial development types. This experience includes numerous domestic and international wind and solar energy developments. Macro Works has assessed the effects of glint and glare for many solar development sites throughout Ireland to date.

3 METHODOLOGY

The process for dealing with aviation receptors is as follows:

1. The Federal Aviation Administration (FAA) approved Solar Glare Hazard Analysis Tool (SGHAT) is used to determine if any of these aviation receptors has the potential to theoretically experience glint or glare. This tool also calculates the intensity of such reflectance and whether it is acceptable by FAA standards.
2. SGHAT does not account for terrain screening or screening provided by surface elements such as existing vegetation or buildings, therefore the results of the SGHAT may need to be considered, in conjunction with an assessment of existing intervening screening that may be present, to establish if reflectance can actually be experienced at the receptors.
3. Finally, if necessary, additional assessment is undertaken using Macro Works' bespoke model which would into account any screening provided by any proposed mitigation measures.

4 GUIDANCE

Guidance has been prepared by the Federal Aviation Authority[1] to address the potential hazards that solar developments may pose to aviation activities, and this has been adopted for use by the Irish Aviation Authority. SGHAT was developed in conjunction with the FAA in harmony with this guidance and is commonly regarded as the accepted industry standard by aviation authorities internationally when considering the glint and glare effects upon aviation related receptors.

[1] Harris, Miller, Miller & Hanson Inc.. (November 2010). Technical Guidance for Evaluating Selected Solar Technologies on Airports; 3.1.2 Reflectivity. *Technical Guidance for Evaluating Selected Solar Technologies on Airports*. Available at: https://www.faa.gov/airports/environmental/policy_guidance/media/airport-solar-guide.pdf

4.1 FEDERAL AVIATION AUTHORITY

Within the FAA's interim policy, a 'Review of Solar Energy System Projects on Federally Obligated Airports'[2] it states:

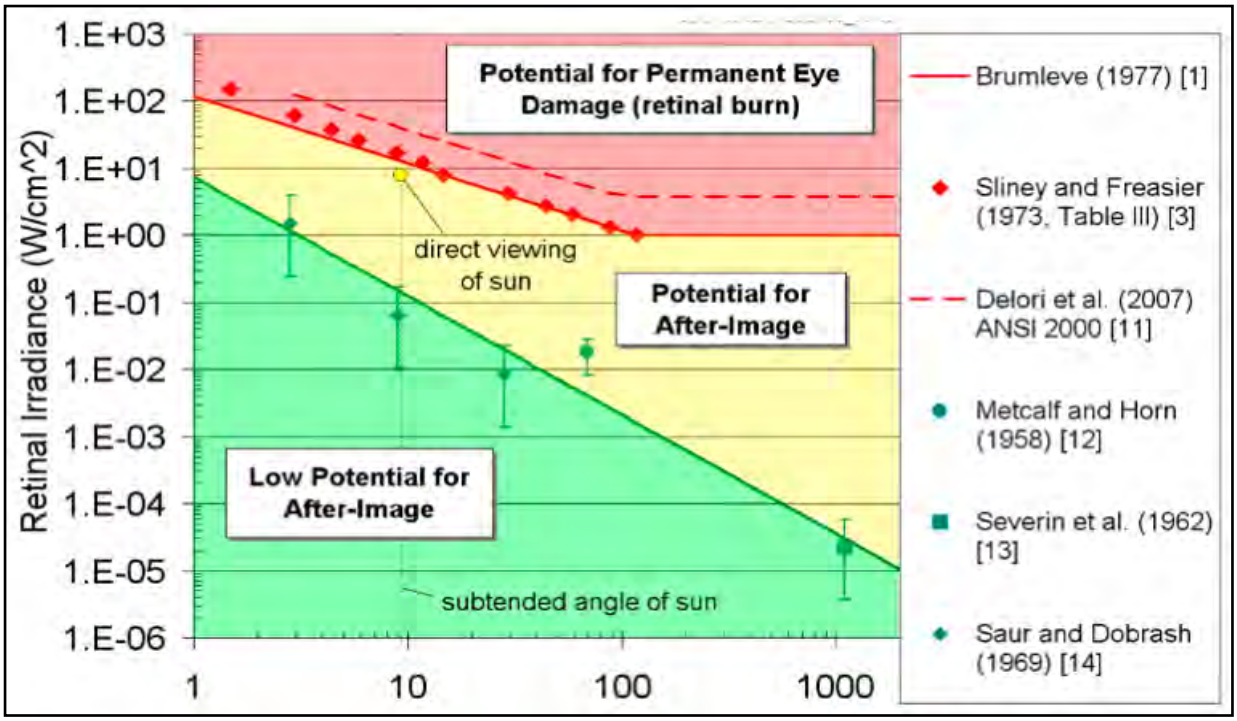
> *"To obtain FAA approval to revise an airport layout plan to depict a solar installation and/or a ''no objection'' to a Notice of Proposed Construction Form 7460–1, the airport sponsor will be required to demonstrate that the proposed solar energy system meets the following standards:*
>
> - *No potential for glint or glare in the existing or planned Airport Traffic Control Tower (ATCT) cab, and*
> - *No potential for glare or ''low potential for after-image'' (shown in green in Figure 1* [Figure 2 refers]*) along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two (2) miles from fifty (50) feet above the landing threshold using a standard three (3) degree glidepath."*

In summary, glare at an ATCT is not acceptable but glare with a *''low potential for after-image''* is acceptable along final approach paths to runways.

4.2 SOLAR GLARE HAZARD ANALYSIS TOOL

The SGHAT was designed to determine whether a proposed solar energy project would result in the potential for ocular impact as depicted on the Solar Glare Hazard Analysis Plot (Figure 2 refers). SGHAT analyses ocular impact over the entire calendar year in one minute intervals from when the sun rises above the horizon until the sun sets below the horizon. One of the principal outputs from the SGHAT report is a glare plot per receptor that indicates the time of day and days per year that glare has the potential to occur. SGHAT plot classifies the intensity of ocular impact as either Green Glare, Yellow Glare or Red Glare. These colour classifications are equivalent to the FAA's definitions regarding the level of ocular impact e.g. 'Green Glare' in the SGHAT is synonymous to the FAA's *''low potential for after-image','* and so forth. The various correlations are illustrated on the Solar Glare Hazard Analysis Plot**.**

[2] Federal Aviation Administration (FAA). (2013). Department of Transportation - Federal Aviation Administration. *Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports*. Vol 78 (No 205), 63276-63279.



Solar Glare Ocular Hazard Plot: The potential ocular hazard from solar glare is a function of retinal irradiance and the subtended angle (size/distance) of the glare source. It should be noted that the ratio of spectrally weighted solar illuminance to solar irradiance at the earth's surface yields a conversion factor of ~100 lumens/W. Plot adapted from Ho et al., 2011.

Chart References: Ho, C.K., C.M. Ghanbari, and R.B. Diver, 2011, Methodology to Assess Potential Glint and Glare Hazards from Concentrating Solar Power Plants: Analytical Models and Experimental Validation, J. Solar Energy Engineering, August 2011, Vol. 133, 031021-1 – 031021-9.

Figure 2: Figure 1 from the FAA Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports

5 IDENTIFICATION OF RELEVANT RECEPTORS

Dublin Airport is an international airport operated by the Dublin Airport Authority. Its nearest runway is located approximately 4.5km northeast of the proposed development (Figure 3 refers).

Figure 3: Aerial view (Google Earth Pro) showing the location proposed development (red pin) relative Dublin Airport.

5.1 AIR TRAFFIC CONTROL TOWERS

Dublin Airport has a new Air Traffic Control Tower (ATCT) (Ref: '2-ATCT' in SGHAT) located to the west of the main terminal buildings and, with a viewing height of 75.6m Above Ground Level (AGL), is considerably taller than the older ATCT (Ref: '1-ATCT' in SGHAT) at just 21.9m AGL (Figure 4 refers). Both ATCTs were analysed for potential impacts.

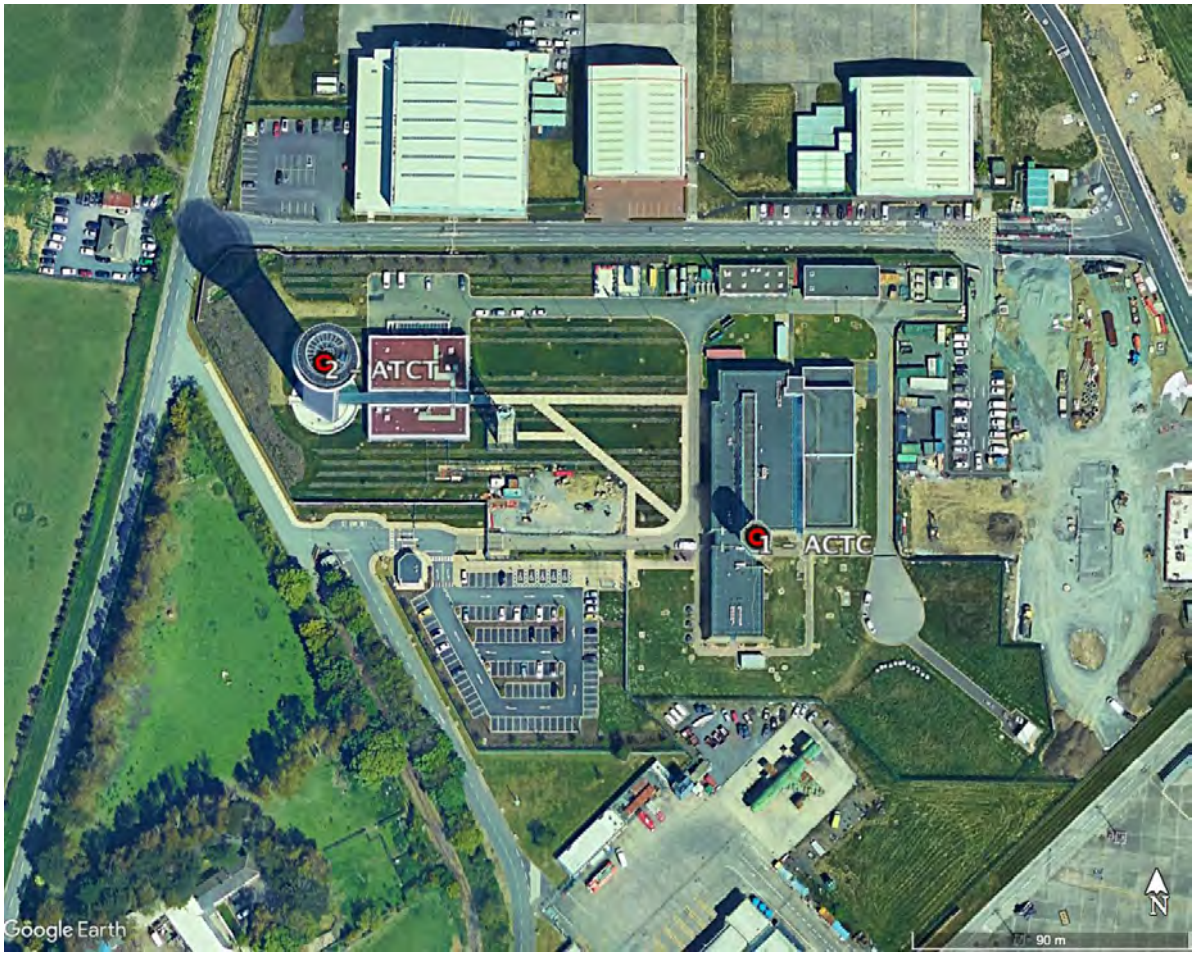


Figure 4: Location of the Air Traffic Control Towers at Dublin Airport (red centre icons).

5.2 RUNWAYS

Dublin Airport hosts 2 operational runways 10/28 and 16/34. A 3rd runway 10L/28R was recently constructed to the north to help accommodate increasing passenger numbers that will run parallel to runway 10/28 to the south. This will render the 16/34 runway as a purely taxiing runway when operational (Figure 5 refers). All 6 runway approaches will be assessed. This includes the recently proposed northern runway (approach 10L and 28R).

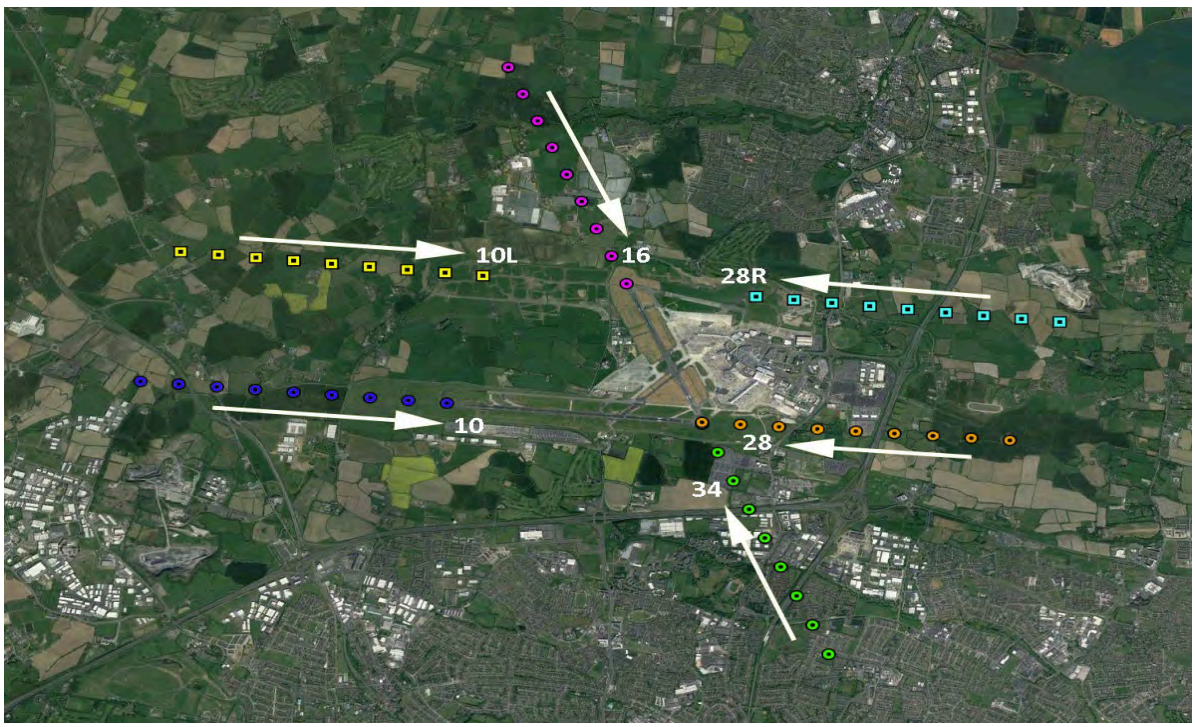


Figure 5: Aerial view (Google Earth Pro) showing 2 mile approach lines to runways at Dublin Airport (at ¼ mile intervals) as assessed by SGHAT. Includes the proposed northern runways 10L and 28R.

6 RESULTS

6.1 RUNWAY APPROACHES

The SGHAT results are contained in Appendix A and show that of the six runway approaches analysed, all runway approaches at Dublin Airport have the theoretical potential to receive glare. In this instance, SGHAT calculated the potential glare to be '*Green Glare*'. SGHATs '*Green Glare*' classification regarding the intensity of the potential glare is synonymous with FAA's *'low potential for temporary after image'*. *'Green Glare'* / glare with a *'low potential for temporary after image,'* regardless of the number of minutes per year, is considered by the FAA to be an **acceptable level of reflectance effect for runway approaches**.

6.2 AIR TRAFFIC CONTROL TOWERS

The SGHAT results contained in Appendix A also show the theoretical potential for impacts at both ATCTs in Dublin Airport as a result of PV panels on the eastern slope of the roof of the proposed Building MRF 3 only (referenced as Array 2). SGHAT calculated this potential glare to be '*Green Glare*'. SGHATs '*Green Glare*' classification regarding the intensity of the potential glare is synonymous with FAA's *'low potential for temporary after image'*. *'Green Glare'* / glare with a *'low potential for temporary after image,'* regardless of the number of minutes per year, is considered by the FAA to be an unacceptable intensity of reflectance effect for an ATCT. This result is not unexpected or uncommon as the SGHAT software does not account for screening as a result of intervening terrain, buildings or vegetation. It is most likely that PV panels on the eastern slope of the roof of the proposed Building MRF 3 would not have had an impact on the ATCT due to intervening structures and vegetation.

6.2.1 Mitigation Measure

Although PV panels on the eastern slope of the roof of the proposed Building MRF 3 could theoretically result in impacts that the ATCT at Dublin Airport, this PV array is relatively small and is located over 4.5km from the ATCT hence is unlikely to be a concern. However, out of an abundance of caution the proposed PV panel array was re-designed specifically to entirely remove panels from the eastern slope of the roof of the proposed Building MRF 3 to ensure there is no potential for any glint and glare effects to occur at the ATCT at Dublin Airport.

6.3 OVERALL CONCLUSION

From the analysis and discussions contained herein, it is considered that there will not be any hazardous glint and glare effects upon the Dublin Airport aviation receptors identified as a result of the roof-mounted solar PV installation as currently proposed.

APPENDIX A:

SGHAT RESULTS – RUNWAYS APPROACHES AND AIR TRAFFIC CONTROL TOWERS (ATCT)

FORGESOLAR GLARE ANALYSIS

Project: **Dublin Airport SGHAT**
Site configuration: **Thorntons Waste Recycling**
Analysis conducted by Luis Dominguez (luis@macroworks.ie) at 06:37 on 26 Aug, 2022.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	FAIL	Receptor(s) marked as ATCT receive green and/or yellow glare

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 74635.12200
Methodology: V2

PV Array(s)

Name: Array 1
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 281.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.395069	-6.342548	73.56	8.47	82.03
2	53.395022	-6.342147	73.56	13.28	86.84
3	53.394416	-6.342348	73.56	13.28	86.84
4	53.394464	-6.342749	73.56	8.47	82.03
5	53.395069	-6.342548	73.56	8.47	82.03

Name: Array 2
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 101.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.395017	-6.342106	73.56	13.27	86.82
2	53.394969	-6.341704	73.56	8.46	82.01
3	53.394363	-6.341906	73.56	8.46	82.01
4	53.394411	-6.342307	73.56	13.27	86.82
5	53.395017	-6.342106	73.56	13.27	86.82

Name: Array 3
Axis tracking: Fixed (no rotation)
Tilt: 6.0°
Orientation: 187.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.395115	-6.341310	73.56	12.14	85.70
2	53.395075	-6.340717	73.56	12.14	85.70
3	53.394939	-6.340742	73.56	10.48	84.04
4	53.394978	-6.341336	73.56	10.48	84.04
5	53.395115	-6.341310	73.56	12.14	85.70

Flight Path Receptor(s)

Name: 10L Runway
Description: None
Threshold height: 15 m
Direction: 95.8°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 120.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	53.436880	-6.280253	71.90	15.20	87.10
Two-mile	53.439822	-6.328592	74.90	180.90	255.80

Name: 10 Runway
Description: None
Threshold height: 15 m
Direction: 95.8°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 120.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	53.422405	-6.289520	74.00	15.30	89.30
Two-mile	53.425327	-6.337846	80.30	177.60	257.90

Name: 16 Runway
Description: None
Threshold height: 15 m
Direction: 156.1°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 120.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	53.436699	-6.261764	66.50	15.20	81.70
Two-mile	53.463138	-6.281428	69.70	180.70	250.40

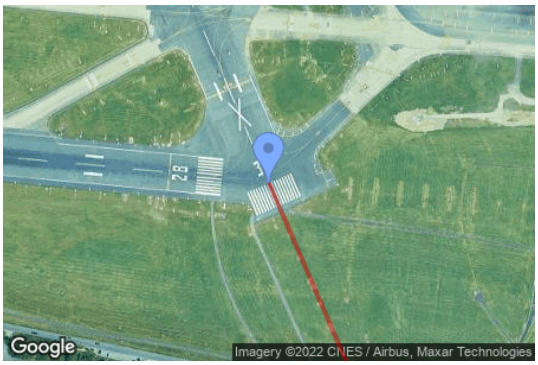
Name: 28R Runway
Description: None
Threshold height: 15 m
Direction: 275.9°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 120.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	53.435084	-6.240975	65.50	15.30	80.80
Two-mile	53.432097	-6.192645	34.00	215.50	249.50

Name: 28 Runway
Description: None
Threshold height: 15 m
Direction: 275.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 120.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	53.420299	-6.251111	62.00	15.20	77.20
Two-mile	53.417517	-6.202763	41.90	204.00	245.90

Name: 34 Runway
Description: None
Threshold height: 15 m
Direction: 336.6°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 120.0°



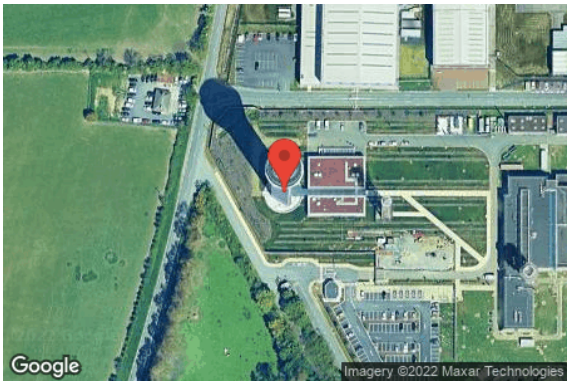
Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	53.420211	-6.249810	62.20	15.30	77.50
Two-mile	53.393680	-6.230504	49.00	197.10	246.10

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
1-ATCT	1	53.428489	-6.262201	65.90	21.90
2-ATCT	2	53.428937	-6.264259	65.60	75.60

Map image of 1-ATCT

Map image of 2-ATCT



GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
Array 1	10.0	281.0	0	0	-
Array 2	10.0	101.0	22,335	0	-
Array 3	6.0	187.0	383	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
10L Runway	3143	0
10 Runway	3426	0
16 Runway	5533	0
28R Runway	2142	0
28 Runway	1986	0
34 Runway	4945	0
1-ATCT	766	0
2-ATCT	777	0

Results for: Array 1

Receptor	Green Glare (min)	Yellow Glare (min)
10L Runway	0	0
10 Runway	0	0
16 Runway	0	0
28R Runway	0	0
28 Runway	0	0
34 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0

Flight Path: 10L Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: 10 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: 16 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: 28R Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: 28 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: 34 Runway

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: 2-ATCT

0 minutes of yellow glare
0 minutes of green glare

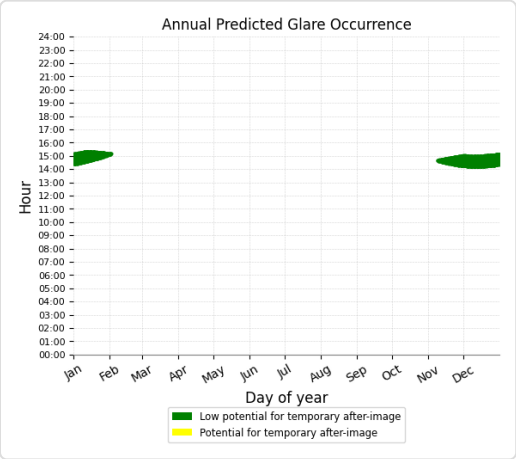
Results for: Array 2

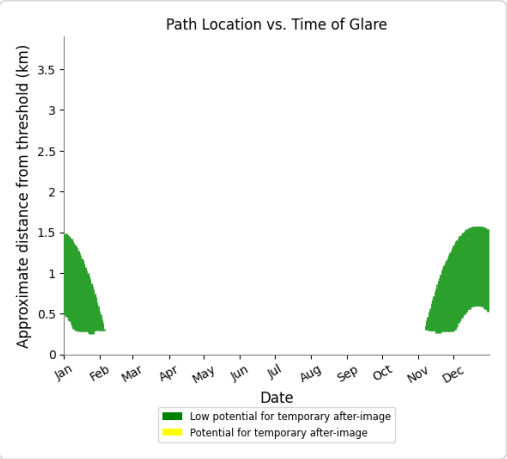
Receptor	Green Glare (min)	Yellow Glare (min)
10L Runway	3143	0
10 Runway	3426	0
16 Runway	5533	0
28R Runway	2142	0
28 Runway	1986	0
34 Runway	4562	0
1-ATCT	766	0
2-ATCT	777	0

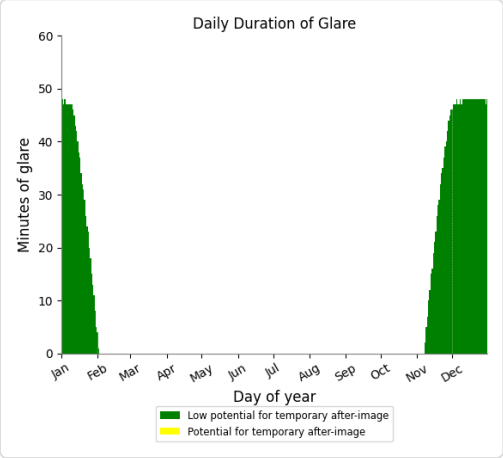
Flight Path: 10L Runway

0 minutes of yellow glare

3143 minutes of green glare



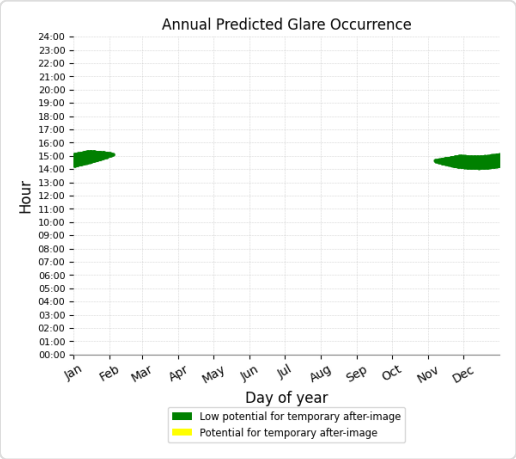


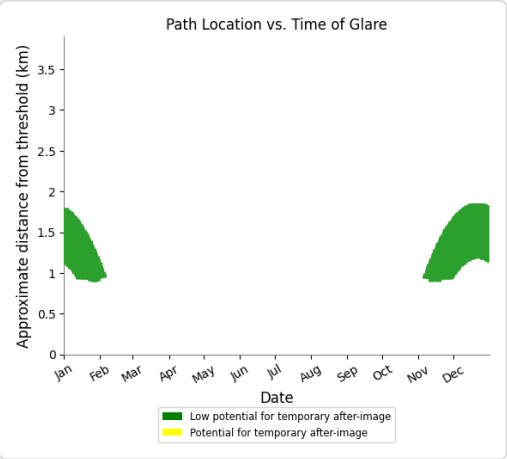


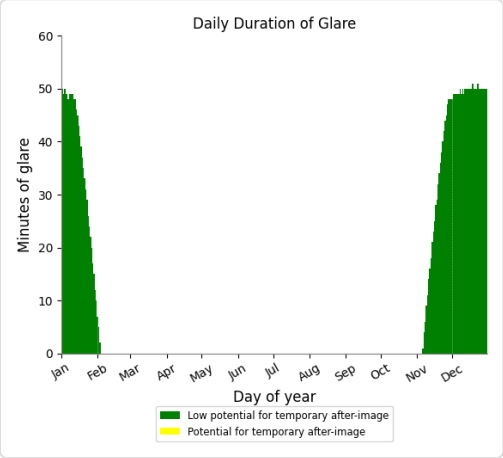
Flight Path: 10 Runway

0 minutes of yellow glare

3426 minutes of green glare



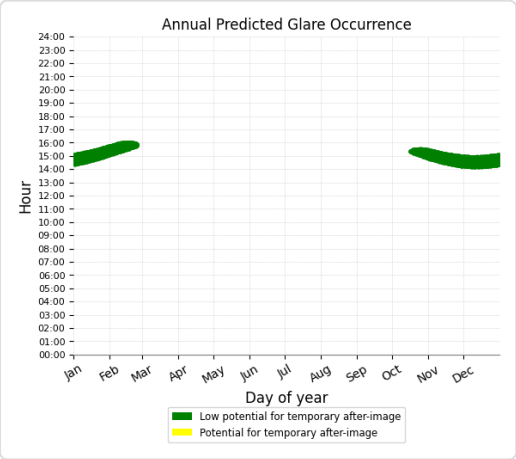


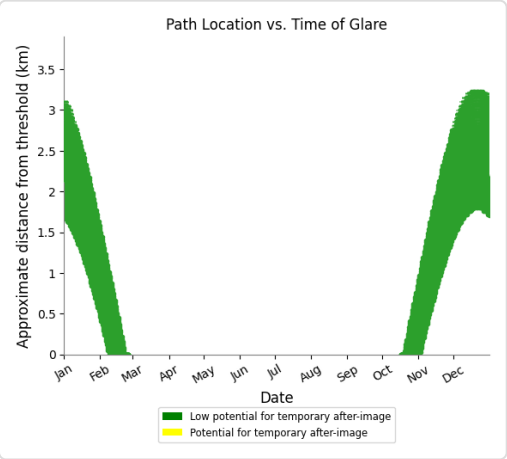


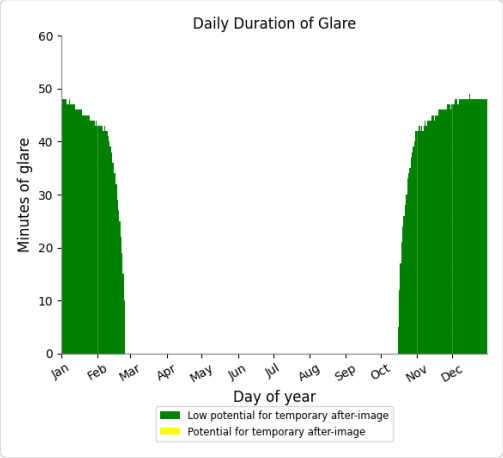
Flight Path: 16 Runway

0 minutes of yellow glare

5533 minutes of green glare



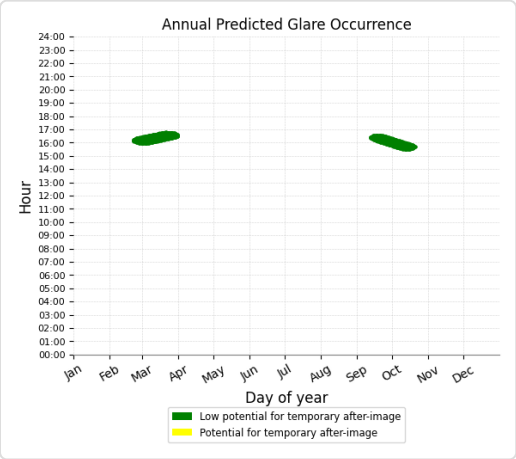


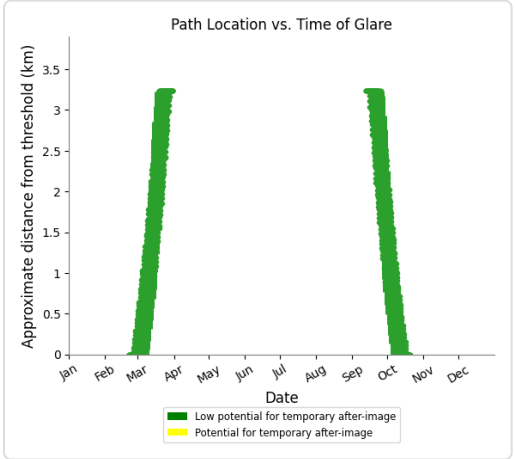


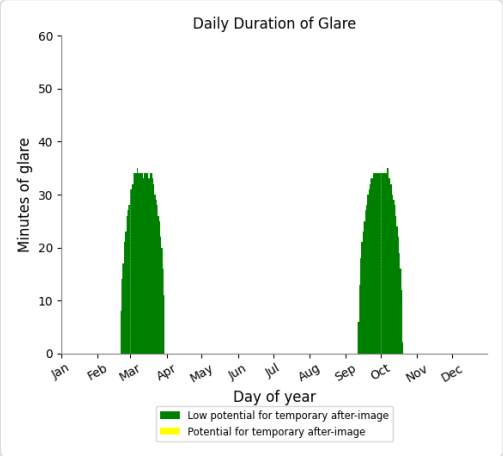
Flight Path: 28R Runway

0 minutes of yellow glare

2142 minutes of green glare



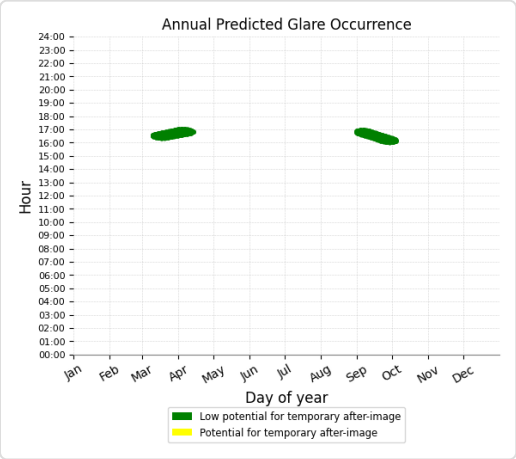


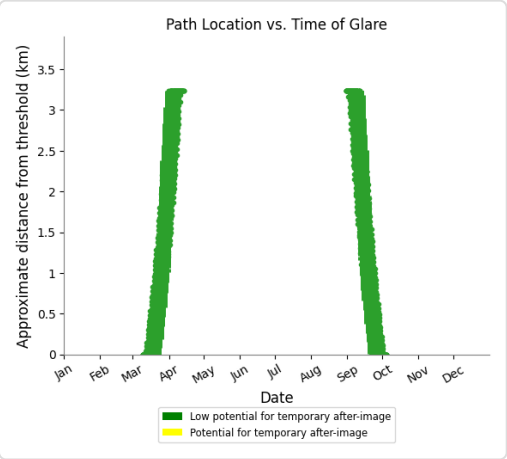


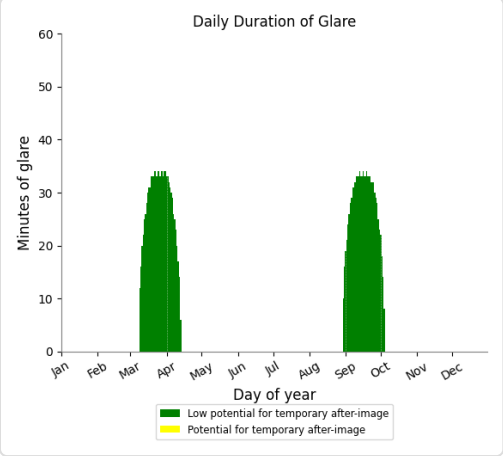
Flight Path: 28 Runway

0 minutes of yellow glare

1986 minutes of green glare



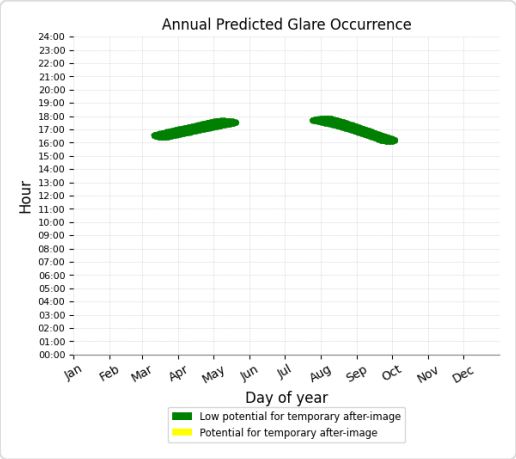


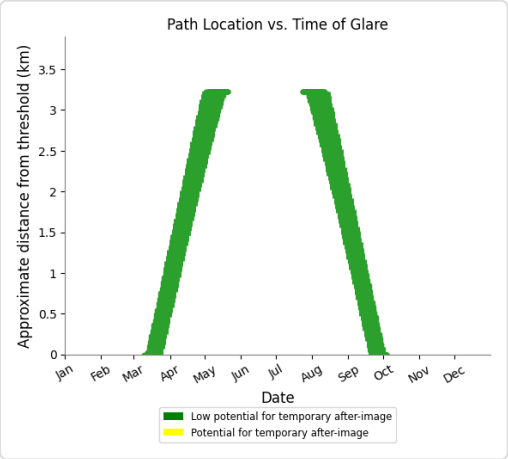


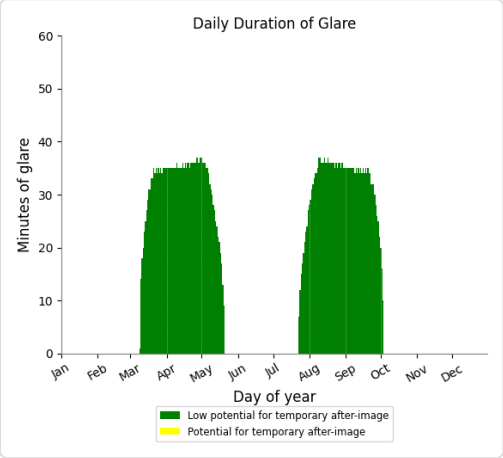
Flight Path: 34 Runway

0 minutes of yellow glare

4562 minutes of green glare



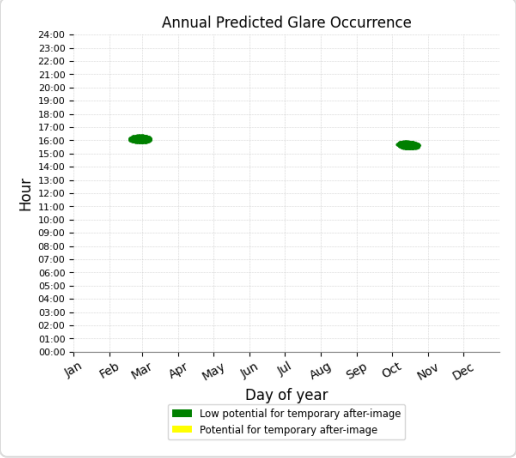


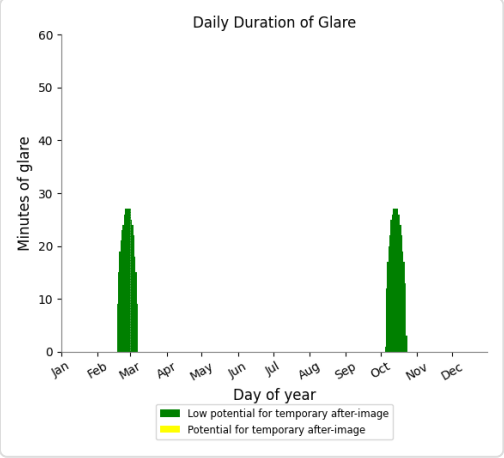


Point Receptor: 1-ATCT

0 minutes of yellow glare

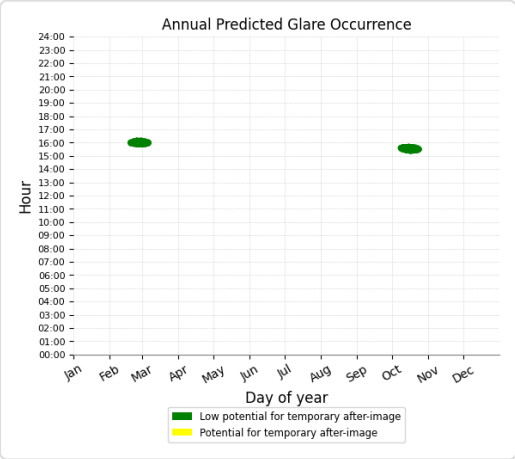
766 minutes of green glare

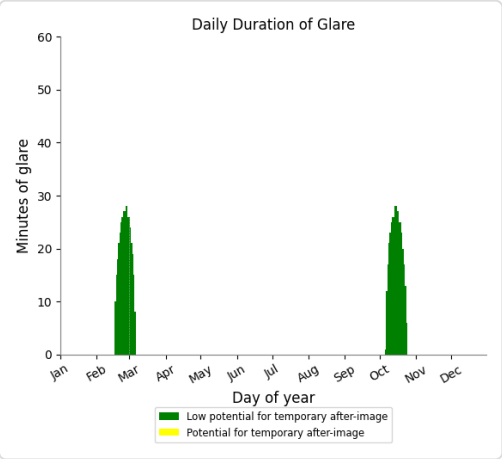




Point Receptor: 2-ATCT

0 minutes of yellow glare
777 minutes of green glare





Results for: Array 3

Receptor	Green Glare (min)	Yellow Glare (min)
10L Runway	0	0
10 Runway	0	0
16 Runway	0	0
28R Runway	0	0
28 Runway	0	0
34 Runway	383	0
1-ATCT	0	0
2-ATCT	0	0

Flight Path: 10L Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: 10 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: 16 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: 28R Runway

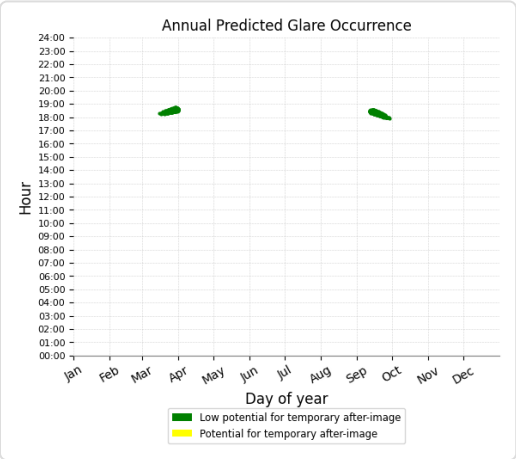
0 minutes of yellow glare
0 minutes of green glare

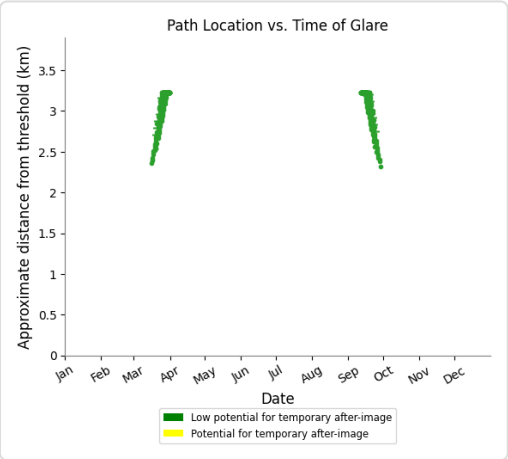
Flight Path: 28 Runway

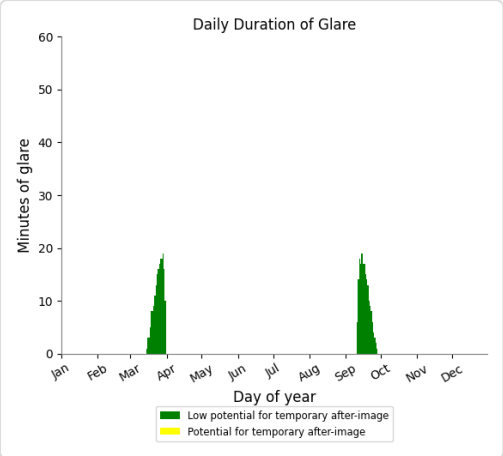
0 minutes of yellow glare
0 minutes of green glare

Flight Path: 34 Runway

0 minutes of yellow glare
383 minutes of green glare







Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: 2-ATCT

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

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& PLANNING

APPENDIX 4.2

Construction Environmental Management Plan

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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN FOR THE EXPANSION OF A MATERIALS RECOVERY FACILITY AT CAPPOGUE AND DUNSINK, BALLYCOOLIN ROAD, DUBLIN 11

Construction And Environmental Plan

Prepared for: Padraig Thornton Waste Disposal Ltd. T/A Thorntons Recycling

Thorntons recycling

Date: November 2022

J5 Plaza, North Park Business Park,
North Road, Dublin 11, D11 PXT0, Ireland

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TABLE OF CONTENTS

1. EIA SCOPING, CONSULTATION AND KEY ISSUES 1

1.1 General Introduction and Purpose 1
1.2 The Applicant 2
1.3 The Site 2
1.4 Overview of the Proposed Development 4

2. EXISTING SITE ENVIRONMENTAL CONDITIONS 6

2.1 Geological Conditions 6
2.2 Hydrogeological Conditions 6
2.3 Hydrological Conditions 7
2.4 Ecological Conditions 7
2.5 Archaeology, Architectural and Cultural Heritage Conditions 9

3. OVERVIEW OF CONSTRUCTION WORKS 11

3.1 Site Layout 11
3.2 Construction Period 11
3.3 Overview of the Construction Sequence 11
3.3.1 Advance Works 12
3.3.2 Development of Temporary Construction Site Compound 13
3.3.3 Site Clearance 13
3.3.4 Site Earthworks 14
3.3.5 Installation of Site Services and Surface Water Management Systems 14
3.3.6 Construction of Site Hard Stand and Granular Formation Surfaces 15
3.3.7 Construction of Site Buildings 15
3.3.8 Installation of Additional Ancillary Site Infrastructure and Elements 16
3.4 Construction Working Hours 17

4. ENVIRONMENTAL MANAGEMENT PLAN 18

4.1 Introduction 18
4.2 Project Obligations 18
4.2.1 EIAR Obligations 18
4.2.2 Planning Permission Obligations 18

4.2.3 Other Obligations 19
4.3 Environmental Management System 19
4.3.1 Environmental Policy 19
4.3.2 Training, Awareness and Competency 19
4.3.3 Register of Environmental Aspects 20
4.3.4 Register of Legislation 20
4.3.5 Objectives and Targets 20
4.3.6 Non-Conformance, Corrective and Preventative Action 20
4.3.7 EMS Documentation 21
4.3.8 Control of Documents 21
4.4 Environmental Mitigation Measures 21
4.4.1 Population and Human Health 22
4.4.1.1 Construction Phase Health and Safety Management 22
4.4.2 Biodiversity 22
4.4.2.1 Habitats and Flora 23
4.4.2.2 Birds 24
4.4.2.3 Terrestrial Mammals 24
4.4.2.4 Bats 24
4.4.2.5 Other Taxa 25
4.4.3 Soils, Geology and Hydrogeology 25
4.4.3.1 Construction Design 25
4.4.3.2 Sediment Control Measures 26
4.4.3.3 Measures for Preventing Hydrocarbons Spills 26
4.4.3.4 Measure for Preventing the Release of Cement Based Products 26
4.4.3.5 Measures to Protect the Surface Waters during Culverting Works 26
4.4.4 Hydrology and Surface Water Quality 26
4.4.4.1 Measures to Protect the Surface Waters during Culverting Works 26
4.4.4.2 Sediment Control Measures 27
4.4.4.3 Measures for Preventing Hydrocarbons Spills 28
4.4.4.4 Measure for Preventing the Release of Cement Based Materials 28
4.4.5 Air Quality and Climate 29
4.4.5.1 Air Quality 29
4.4.5.2 Climate 30
4.4.6 Noise and Vibration 30
4.4.7 Archaeological, Architectural and Cultural Heritage 31

4.4.8 Landscape and Visual Impacts 32
4.4.9 Construction Waste Management Plan 32
4.4.9.1 Assignment of Responsible Personnel 32
4.4.9.2 Waste Generated 32
4.4.9.3 Waste Prevention 33
4.4.9.4 Waste Recycling 33
4.4.9.5 Waste Disposal 33
4.4.9.6 Training 33
4.4.10 Construction Traffic Management Plan 33
4.4.10.1 Construction Staging 35
4.4.10.2 Construction Plant and Vehicles 35
4.4.10.3 Consultation and Notification 35
4.4.10.4 Mitigation Measures 36
5. SAFETY & HEALTH MANAGEMENT PLAN 38
5.1 Introduction 38
5.2 Project Obligations with Respect to Health and Safety 38
5.2.1 Statutory Obligations 38
5.2.2 The Preliminary Safety and Health Plan 40
5.2.3 The Management of Health and Safety during the Construction Phase 42
5.2.4 The Construction Stage Safety and Health Plan 43
6. EMERGENCY RESPONSE PLAN 45
6.1 Introduction 45
6.2 Emergency Response Plan 46
6.2.1 Emergency Response Liaison 46
6.2.2 Reporting Emergencies 46
6.2.3 Designated Responder 46
6.2.4 Emergency Alarm 47
6.2.5 Emergency Reporting 47
6.2.6 Medical Protocol 47
6.2.7 Emergency Response 47
6.2.8 Escape and Evacuation Procedure 48
6.2.9 Prevention of Illness/Injury due to Weather/Elements 48
6.2.10 Environmental Emergency Procedure 49

6.2.11 Emergency Response Plan – Haul Routes 49

LIST OF FIGURES

Page

Figure 1-1: Site Location Map 3
Figure 4-1: Hedgerow level of cut (Teagasc) 23

LIST OF TABLES

Table 3-1: Materials Balance 14
Table 4-1: Potential wastes generated during construction phase 32

1. EIA SCOPING, CONSULTATION AND KEY ISSUES

1.1 General Introduction and Purpose

This document is the Construction and Environmental Management Plan (CEMP) for the expansion of a Materials Recovery Facility at Cappogue and Dunsink, Ballycoolin Road, Dublin 11 and has been prepared for Padraig Thornton Waste Disposal Ltd. T/A Thorntons Recycling to accompany the planning application for the proposed development.

This document sets out the construction and environmental management concerns associated with the proposed development. This plan will be developed further to reflect input during the consenting stage and at the post-planning and construction stages, by the developer and the appointment of the Contractor to the project. Any adjustments to the CEMP will be carried out on the basis that they do not increase the impacts as addressed in the EIAR and AA.

This document should be read in conjunction with the EIAR prepared for the proposed development, along with other relevant drawings and documentation. In the case of any ambiguity or contradiction between this CEMP and the EIAR, the EIAR shall take precedence.

This CEMP sets out the key environmental management concerns associated with the construction of the proposed development, to ensure that during this phase of the development, the environment is protected and impacts on the environment are minimised.

The document is divided into six sections:

Section 1: Introduction: this section provides details on the existing site and the proposed development.

Section 2: Existing Site Environmental Conditions: this section provides details of the existing geological, hydrological, ecological and archaeological, architectural and cultural heritage conditions on proposed site. These conditions are to be considered by the Contractor in the construction phase of this proposed development.

Section 3: Overview of Construction Works: this section provides an overview of the construction works proposed.

Section 4: Environmental Management Plan (EMP): this section outlines the main requirements of the EMP, the project obligations, the Environmental Management System (EMS) and outlines the environmental mitigation measures for the protection of the environment including measures relating to ecological protection, noise and dust minimisation, surface water management, archaeology, architectural and cultural heritage management, and construction waste and traffic management.

Section 5: Safety & Health Management Plan: this section defines the work practices, procedures and management responsibilities relating to the management of safety and health during the design and construction of the proposed development.

Section 6: Emergency Response Plan: this section contains predetermined guidelines and procedures to ensure the health, safety and welfare of everybody involved in the project and to protect the environment during the construction phase of proposed facility.

1.2 The Applicant

The applicant for the proposed development is Padraig Thornton Waste Disposal Ltd. T/A Thorntons Recycling, which is hereafter referred to as 'The Applicant.'

Thorntons Recycling is a family-owned business established in 1979. The company operates waste management facilities in Counties Dublin, Meath, Wicklow and Kildare serving over 5,500 commercial customers and 75,000 household customers each day. The company employs over 560 no. staff. Thorntons head office is in the Parkwest Business Park, Dublin 12. The company's customer base includes household, commercial and industrial (C&I) and construction and demolition (C&D) sectors.

1.3 The Site

The proposed development site is 3.38 ha in size. The development site encompasses the Applicant's existing waste facility site (0.75 ha in size) together with lands to the south of this facility situated in the townlands of Cappogue and Dunsink, Dublin 11 (2.63 ha in size).

The development site is situated approximately 2 km north-west of Finglas village and 2 km east of Blanchardstown village. The site is located south of the Ballycoolin Road and immediately north of the M50, approximately midway between Junctions 5 and 6.

Dunsink Landfill and agricultural lands are situated further south of the site on the opposite side of the M50.

There are 4 no. residential dwellings adjacent to the site on Barn Lodge Grove beyond the western boundary, known as Coolbrook Cottages. Further to the south-west of the site on Barn Lodge Grove there is a cluster of residential properties, some of which border the site's south-western boundary. Agricultural lands are situated further west of the site. Ballycoolin Road is situated ca. 180 metres north of the site. A number of residential dwellings are situated along this road ca. 200 m north-west of the site.

Stadium Business Park is situated ca. 240 metres north of the site. Premier Business Park is situated ca. 270 metres to the north-east of the site.

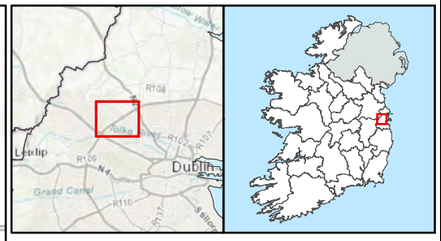
The National Orthopaedic Hospital Cappagh is located ca. 755m to the south-east of the site on the opposite side of the M50.

Various industrial land uses are located to the north-east of the site along the Cappagh Road including a MRF, operated by Starrus Eco Holdings Limited t/a Panda; Huntstown Quarry, which is operated by Roadstone; and a concrete batching plant operated by Kilsaran Concrete.

A site location map detailing the site location, context and surrounding features is found in Volume 4 of this EIAR (Drawing Reference: P21-150-0000-0002)

The location and context of the proposed development is illustrated in Figure 1-1.

Path: R:\Map Production\2021\P21-150\Workspaces\EIAR\P21-150_GIS_Fig1-1_SiteLocation_A3.mxd



Legend

Proposed Site Boundary

Junction 5 of M50

Stadium Business Park

Ballycoolin Road

Premier Business Park

Barn Lodge Grove Road

Coolbrook Cottages

Proposed Development Site

M50

Residences to the Southe - East

Dunsink Landfill

Junction 6 of M50

N
W
E
S
Meters
0
100
200
400

TITLE:	Site Location		
PROJECT:	SID Application, EIAR and IE Licence Application for Thorntons		
FIGURE NO:	1.1		
CLIENT:	Thorntons Recycling		
SCALE:	1:12500	**REVISION:**	0
DATE:	26/10/2022	**PAGE SIZE:**	A3

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1.4 Overview of the Proposed Development

Padraig Thornton Waste Disposal Ltd. T/A Thorntons Recycling intends to apply for planning permission to expand an existing Materials Recovery Facility (MRF). The existing MRF is situated at Unit 1, Cappogue Industrial Park, Ballycoolin Road, Cappogue, Dublin 11. The proposed development will involve the construction and operation of an expanded Materials Recovery Facility at a development site (3.38 ha in size) which falls across the townlands of Cappogue and Dunsink, south of the Ballycoolin Road, Dublin 11.

The proposed expanded facility will accept and process up to 300,000 tonnes per annum (tpa) of waste material, to include:

- 100,000 tpa of residual municipal solid waste (rMSW).
- 50,000 tpa food waste.
- 100,000 tpa construction and demolition (C&D) Waste.
- 50,000 tpa mixed dry recyclable (MDR) waste.

The proposed development will consist of the following:

1. Demolition of one annex of the existing building on-site (226 m2, 9.46 m in height) and the removal of an existing weighbridge.
2. Clearance of lands to the south of the existing waste facility.
3. Culverting of an existing surface water drain traversing the site.
4. Development of a new second entrance ca. 35 m south of the existing site entrance to accommodate vehicles accessing and egressing the proposed facility.
5. Upgrade and expansion of the existing building on-site, to be referred to MRF 1 (2,659 m2, to a maximum height of 12.48 m).
6. Development of a new building on-site, to be referred to as MRF 2 (1,735 m2, to a maximum height of 13.65 m).
7. Development of a new building on-site, to be referred to as MRF 3 (4,320 m2, to a maximum height of 13.85 m).
8. Development of ancillary infrastructure including:
    a. advertising signage (8 m x 2 m) on the southern and western façades of the MRF 3 building and on the southern façade of the southern façade of the MRF 1 building,
    b. internal site roads, parking and skip storage,
    c. an administration building (272 m2, to a maximum height of 6.96 m),
    d. 2 no. at-grade weighbridges and a weighbridge office (18.5 m2, 3.3 m in height),
    e. an electrical sub-station (23 m2, 2.98 m in height),
    f. a vehicle workshop (519 m2, to a maximum height of 8.44 m),
    g. a vehicle refuelling facility adjoining the vehicle workshop, with an internal 45 m3 bunded diesel storage tank,
    h. a vehicle wash (176 m2, 5.24 m in height),
    i. perimeter fencing (2.4 m in height), gate access and perimeter landscaping (ca. 6 - 8 m in height),

j. site services,

k. surface water management infrastructure, including an overground rainwater harvesting tank (with a floor area of 86.6 m2 and a capacity of 470 m3),

l. fire pumps and a fire-fighting and control system,

m. a traffic management system,

n. an odour abatement system, with a 20 m high stack.

The proposed development will also consist of the following exempted development:

- Development of rooftop photovoltaic solar panels (with a cumulative area of 2,476 m2).

2. EXISTING SITE ENVIRONMENTAL CONDITIONS

This section of the CEMP describes the existing sites environmental conditions. The information contained in this section is an abridged version of the text contained in the EIAR. The EIAR should be consulted for a more extensive description of the existing site.

2.1 Geological Conditions

The subsoils present at the proposed development site were taken from the GSI 1:50,000 Quaternary Geology of Ireland map (GSI, 2022) and comprise of 'till derived from limestones' (TLs). Other deposits in the study area include 'alluvium' (A), 'alluvium (gravelly)' (Ag), 'alluvium (sandy)' (As), 'eskers comprised of gravels of basic reaction' (BasEsk), 'embankments' 'gravels derived from chert' (GCH), 'gravels derived from limestones' (GLs), 'lacustrine sediments' (L), 'lacustrine silts' (Lsi), 'landfill', 'marine beach sands' (Mbs), 'bedrock outcrop or subcrop' (Rck), 'urban', 'windblown sands' (Ws) and 'windblown sands and dunes' (Wsd).

The GSI 1:100,000 scale bedrock geology map (GSI, 2022) shows the proposed development site is primarily underlain by the Tober Colleen Formation.

The GSI - Irish Geological Heritage Section (IGH) and NPWS (National Parks and Wildlife Service) have undertaken a programme to identify and select important geological and geomorphological sites throughout the country for designation as NHAs (Natural Heritage Areas) – the Irish Geological Heritage Programme. This is being addressed under 16 different geological themes. For each theme, a larger number of sites (from which to make the NHA selection) are being examined, to identify the most scientifically significant. The criterion of designating the minimum number of sites to exemplify the theme means that many sites of national importance are not selected as the very best examples. However, a second tier of County Geological Sites (CGS) (as per the National Heritage Plan) means that many of these can be included in County Development Plans and receive a measure of recognition and protection through inclusion in the planning system.

Further details on the geology conditions of the site are provided in Chapter 9 - Soils, Geology and Hydrogeology of Volume 2 of the EIAR.

2.2 Hydrogeological Conditions

The proposed development is located within the Dublin Groundwater Body (GWB).

The aquifer types within the Dublin GWB are classified as LI - Locally important bedrock aquifer which is moderately productive only in local zones and PI - Poor aquifer which is generally unproductive except for local zones.

The Groundwater Vulnerability classified by the GSI at the proposed development site ranges from 'extreme rock at or near surface or karst' (X) to 'high' due to thin layers (<3m) of moderate to high permeability subsoil above bedrock.

Further details on the hydrogeology conditions of the site are provided in Chapter 9 - Soils, Geology and Hydrogeology of Volume 2 of the EIAR.

2.3 Hydrological Conditions

The development site lies within the Water Framework Directive (WFD) catchment HA 09 known as the Liffey and Dublin Bay catchment. This 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 1,616km².

The development site lies within the Tolka_SC_020 WFD sub-catchment.

The Tolka_SC_020 sub-catchment drains an area that is 60.96 km2 in size covering sections of north and north west Dublin. This sub-catchment is considered to constitute the study area for the purpose of this assessment. This catchment encompasses the following sub-basins:

- TOLKA_040
- TOLKA_050
- TOLKA_060

The site lies within the TOLKA_050 sub-basin. This sub-basin contains the River Tolka and tributary streams and surface water drains, including the Scribblestown Stream and Bachelors Stream.

The drainage ditch exiting the site at its south-eastern corner is culverted beneath the M50, before rising to the surface again on the opposite side of the motorway. From that point, it flows in an eastward direction a short distance and enters the Dunsink Landfill.

Drainage from this ditch is then directed by a stormwater drain to the attenuation pond serving this landfill. This attenuation pond drains to a northern tributary of the Scribblestown stream traversing the landfill site in a north-western to south-eastern direction, which in turn drains to the Scribblestown stream south east of the landfill site. The Scribblestown stream then runs in a southerly direction before entering the River Tolka ca. 2.0 km south east of the development site. The River Tolka drains to the River Tolka Estuary ca. 8.4 km south east of the site, which in turn flows into Dublin Bay.

The WFD risk status of the TOLKA_050 sub-basin is ‘At Risk’. Water quality monitoring at the River Tolka is carried out under the Water Framework Directive Monitoring Programme by the EPA. A water quality status is assigned to surface bodies based on this monitoring. The most recent water quality status assigned to the TOLKA_050 sub-basin upstream and downstream of where the Scribblestown Stream enters the River Tolka is ‘Poor’.

Further details on the hydrology conditions of the site are provided in Chapter 10 - Hydrology and Surface Water Quality of Volume 2 of the EIAR.

2.4 Ecological Conditions

There are nine European sites within a 15km radius of the proposed development:

- South Dublin Bay and River Tolka Estuary SPA (004024);
- Rye Water Valley/ Carton SAC (001398);
- South Dublin Bay SAC (000210);

- North Bull Island SPA (004006);
- North Dublin Bay SAC (000206);
- Malahide Estuary SPA (004025);
- Malahide Estuary SAC (000205);
- Baldoyle Bay SAC (000199);
- Baldoyle Bay SPA (004016).

In 1995, Proposed Natural Heritage Areas were published on a non-statutory basis but have not since been statutorily proposed or designated but are recognised for their ecological value by planning and licencing authorities and are subject to limited protection . For the purposes of this assessment pNHA's have been considered as fully designated sites. There are no NHAs within 10km of the Study Area. There are five pNHAs within a 10km radius of the proposed development:

- Royal Canal pNHA (002103);
- Liffey Valley pNHA (000128);
- Santry Demesne pNHA (000178);
- Grand Canal pNHA (002104);
- North Dublin Bay pNHA (000206).

There are no habitats within the study area that conform to those listed under Annex I of the EU Habitats Directive. The dominant habitats within the site boundary are Improved agricultural grassland/ dry meadows & grassy verges mosaic (GA1/GS2), recolonising bare ground (ED3), scrub (WS1) buildings and artificial surfaces (BL3). Treelines (WL2), and a drainage ditch (FW4) run through the centre of the site and spoil and bare ground (ED2) form some of the boundaries of these fields within the site.

No rare or protected flora species protected under the Flora Protection Order (2022), listed in Annex II and IV of the EU Habitats Directive (92/43/ECC), or listed in the Irish Red Data were recorded during the surveys.

Butterfly-bush Buddleja davidii was recorded onsite in two locations. A row of Cherry laurel Prunus laurocerasus hedge runs offsite along the northern site boundary, with a single young rhododendron Rhododendron ponticum sapling within.

The desktop review using the National Biodiversity Data Centre's Bird Atlas 2007-2011 and Birds of Ireland datasets, highlighted that within 2km of the site a total of 30 (additional to those species recorded during the site visits) species have been recorded within the two 2km squares overlapping the proposed development site.

A total of 19 bird species were noted during the CBS transect surveys on the 12th May and 17th June 2022. No Red-listed Species were recorded. Three amber-listed species was recorded, namely greenfinch, starling and swallow. They are Amber-listed because of their unfavourable conservation status. The remaining species are Green-listed, species of favourable conservation status (Gilbert et al, 2021).

Hedgehog, hare, and red fox have been recorded within the area and could potentially be present within treelines of the site. Rabbit Oryctolagus cuniculus (medium-impact invasive species) droppings were recorded throughout the site. No other mammal sightings or signs were recorded during the survey.

The National Biodiversity Data Centre's 'Bat Landscapes' map layer indicates that the site itself is situated in an area of moderate value for bats in general. The hedgerows, treelines, woodlands, and drainage ditches within and bounding the site offer potential foraging habitat for bats.

The drainage ditch may be suitable for frog spawn deposition due to its lack of flow.

Several bumblebee bee species were observed foraging amongst the flowering species onsite during the site walkovers.

Further details on the ecological conditions of the site are provided in Chapter 8 - Biodiversity of Volume 2 of the EIAR and the Appropriate Assessment Report accompanying this planning application.

2.5 Archaeology, Architectural and Cultural Heritage Conditions

There are no Recorded Monuments within the proposed development site. There are ten Recorded Monuments within the 1 km study area of the proposed development (www.archaeology.ie). The closest Recorded Monument (RMP DU014-026) is located in Dunsink townland approximately 110m south of the proposed development location and s described in the RMP files as a ring-barrow that was identified through an examination of aerial photography).

Reference to Summary Accounts of Archaeological Excavations in Ireland (www.excavations.ie) has shown that seven archaeological fieldwork programs have been carried out in Cappogue townland and four have been carried out in Dunsink townland. Of the Cappogue excavations two of these programs involved excavations of identified archaeological sites (archaeological licence numbers 06E0228 and 08E0032), three involved preconstruction stage archaeological test trenching in advance of development works (archaeological licence numbers 19E0636, 19E0142 and 99E0724), and two comprised archaeological monitoring of construction works (archaeological licence numbers 10E0410 and 19E0069). All four of excavations in Dunsink were carried out in advance of development. Only two of these works were carried out under archaeological licence (archaeological licence numbers 94E0061 and 05E0064). A number of pits with heat fractured stone were identified during works for the Northern Cross Route Motorway (M50) (archaeological licence numbers 94E0061).

A large-scale archaeological excavation was undertaken at the site of Cappogue Castle (archaeological licence 06E0228ext) in advance of an industrial development. Cappogue Castle is a known and legally protected archaeological site (RMP DU014-027) and is 350m east of the proposed development. The excavation at Cappogue Castle identified four phases of archaeology dating from the Bronze Age to the post medieval period, and prehistoric pits, a cemetery that included at least 16 inhumation burials, evidence of a medieval settlement, and a post medieval isolated burial.

There is one known artefact from Cappogue townland recorded in the Topographical Files of the National Museum of Ireland (File No: 1969:836). This artefact has been identified as a polished stone adze head. There are two known artefacts in the townland of Dunsink, although the exact findspot of these artefacts is not recorded. One of the artefacts found in Dunsink is a copper coin identified as being Roman featuring Constantinus Magnus (NMI Reference 1930:534). Constantinus Magnus, also known as Constantine the Great was a fourth century Roman Emperor who fought in Britain in 305 AD. The second artefact from Dunsink is a glazed pottery jug rim and handle that dates to the medieval period (NMI Reference 1998:90).

Reference to cartographic sources identified that a section of the townland boundary between Cappogue and Dunsink is within the proposed development site. This townland boundary is depicted as a drainage ditch and hedgerow on the historic Ordnance Survey maps of the area. Townland boundaries can date to the early

medieval period, and can originate as historic Gaelic tribal boundaries. The historic 25" to a mile scale Ordnance Survey map of the area dates to circa 1900. This map depicts a small pond in the southwest end of the proposed development site, in Dunsink townland. The area of proposed development and the surrounding environment is generally recorded as rough pasture on all editions of the Ordnance Survey maps.

There was no evidence of any archaeological, architectural or cultural heritage features recorded on aerial photographs within the proposed development sites or the surrounding landscape.

There are no National Monuments in State Care within the proposed development site or the wider 1 km study area.

There are no sites with Preservation Orders or Temporary Preservation Orders within the proposed development site or the wider 1 km study area.

There are no World Heritage Sites or sites included in the Tentative List as consideration for nomination to the World Heritage List within the proposed development site or the wider 1 km study area.

Detailed information on the archaeological and historical background of the landscape surrounding the proposed development sites is provided in Chapter 14 - Archaeological, Architectural and Cultural Heritage of Volume 2 of this EIAR.

3. OVERVIEW OF CONSTRUCTION WORKS

An overview of the construction works that will be undertaken at the proposed development site is outlined below.

3.1 Site Layout

A Proposed Site Layout Plan depicting the layout of the proposed development is shown in a drawing which accompanies this EIAR (See Drawing Reference P21-150-0200-0001 Proposed Site Layout Plan contained in Volume 4 of this EIAR).

3.2 Construction Period

It is estimated that the construction phase of the proposed development will take 12 months to complete.

The applicant intends on continuing operations at the existing waste facility building whilst constructing the proposed MRF 3 building, and proposed site infrastructural elements at the southern sections of the site, outside the boundary of the existing waste facility site.

Once the MRF 3 building and site infrastructural elements at the southern sections of the site are constructed, existing waste facility operations will cease and the existing building will be upgraded and expanded to become MRF 1, and MRF 2 will be constructed, as proposed. Operations at MRF 3 will commence whilst MRF 1 and MRF 2 are being constructed.

Upon appointment of a contractor for the works, a more detailed programme will be developed.

3.3 Overview of the Construction Sequence

The key construction elements (listed in approximate chronological construction order) will be as follows:

- Advance Works
- Development Of Temporary Construction Site Compound
- Site Clearance
- Site Earthworks
- Installation Of Site Services And Surface Water Management Systems
- Construction Of Site Hard Stand And Granular Formation Surfaces
- Construction Of Site Buildings And Structures
- Installation Of Additional Ancillary Site Infrastructure And Elements

3.3.1 Advance Works

The following works will need to be carried out prior to construction of built elements on-site:

- Demolition and decommissioning of existing facility elements
- The existing overhead electrical powerline will need to be routed underground.
- The open surface water drainage ditch traversing the site will need to be culverted.

These works will be one of the first elements of construction to be undertaken onsite and the remaining works elements will be programmed to occur only when sign off and approval of the advance works is completed.

A description of the proposed advanced works is provided below.

Demolition and Decommissioning of Existing Facility Elements

The following demolition and decommissioning activities will be carried out at the existing facility:

- An annex situated at the western façade of the existing building on-site (226 m2 in area) will be demolished.
- Internal walls at the eastern side of MRF 1 will be removed.
- Existing processing plant and building furnishings will be removed.
- The existing facility fire pump and firewater storage tank will be decommissioned, dismantled and removed from the site.
- The existing facility weighbridge will be decommissioned, dismantled and removed from the site.

These demolition and decommissioning activities will be carried out using a combination of cranes scissor lifts, telescopic booms, excavators and dumpers. Articulated trucks will haul decommissioned plant and equipment off-site.

Re-location of Existing Overhead Electrical Powerline

The re-routing of existing overhead power lines will be carried out by the ESB and will involve the following:

- Excavation of trenches using a tracked excavator
- Temporary stockpiling of excavated material using dump / road trucks.
- laying of ducts / cables
- Backfilling of excavated material to fill trenches to the desired level.

Culverting of the Existing Open Surface Water Drainage Ditch

The culverting of the existing open surface water drainage ditch will involve the following:

- Damming of the existing drainage ditch at the point that it enters the development site.

- Pumping of water from this point to the point the drainage ditch exists the development site.
- Excavation of culvert trench using a tracked excavator.
- Laying of pre-cast culvert pipe using telehoists or cranes and connecting the culvert traversing the site with the drainage ditch at the point that the channel enters the site and exists the site.
- Backfilling of excavated material to fill excavated areas.
- Un-damming of the drainage ditch at the point it enters the development to allow the free flow of water through the laid culvert traversing the site and into the drainage ditch at the opposite end of the site.

These works will be carried out in accordance with the requirements of Inland Fisheries Ireland's Guidelines on the Protection of Fisheries during Construction in and Adjacent to Waters.

3.3.2 Development of Temporary Construction Site Compound

A temporary construction compound will be required for the duration of the construction works. It will consist of a hardcore area surrounded by secure fencing, comprising site office, canteen, temporary toilet facilities, storeroom, materials storage and staff parking areas. Fuel/oil storage areas will be bunded in accordance with best practice.

Temporary toilet facilities will consist of temporary 'portaloo' type chemical toilets located within the construction site compound and/or a dedicated welfare unit connected to temporary storage container for temporary storage and onward disposal of waste from toilets and wash facilities.

A tracked excavator will be used for formation of hard standings with truck mounted cranes used for unloading site containers and support infrastructure.

3.3.3 Site Clearance

Site clearance will comprise:

- Removal of any leftover fly tipped waste present at lands contained within the development site to the south of the existing facility.
- Removal of vegetation present on-site.
- Stripping and temporary storage of topsoil for re-use in landscaping works.

Any leftover fly tipped waste present at the development site will be cleared from the site and dispatched to an appropriately authorised waste management facility.

Vegetative and top-soil stripping will be carried out by a tracked excavator and dump trucks will be used to transport materials to stockpiles.

3.3.4 Site Earthworks

Earthworks will then be carried out on-site. Overburden soils will be excavated to the formation levels required for foundations, below ground tanks and below ground services.

Excavated material will be reutilized as backfill on-site, where feasible. Imported granular fill material will be used to augment backfill, as necessary.

Bulk earthworks will be carried out by a tracked excavator and dump trucks will be used to transport materials to stockpiles.

The materials balance for the proposed development, which is based on the planning design undertaken to date and preliminary site investigation results, is outlined in Table 3-1.

Table 3-1: Materials Balance

Material Description	Required Excavation (m^3)	Excavated Material Available for Filling (m^3)	Required Fill (m^3)	Estimated export (m^3)
Topsoil	3,960	792	-	3,160
Subsoil	10,560	3,960	-	6,600
Imported clause 6A	-	-	2,880	-
Imported clause 6F1	-	-	12,960	-
Imported clause 804	-	-	5,280	-

3.3.5 Installation of Site Services and Surface Water Management Systems

The following site services will be installed on-site:

- GNI will lay a gas connection pipeline to the existing gas mains situated 50 m north east of the site at the access road to Cappogue Industrial Park.
- Irish Water will lay water supply and wastewater connection pipelines to existing water supply and foul sewer mains situated at the access road to Cappogue Industrial Park.
- The site foul drainage network and the 'dirty water' tank will be installed by the Applicant.
- The site surface water drainage networks, attenuation tanks, interceptors and all other surface water drainage features will be installed by the Applicant.
- Cable trenches, ducting and pipework associated with other services will be installed by the Applicant

All works above will involve a combination of the following:

- Breaking of hard-standing areas using a hydraulic breaker (where necessary)
- Excavation of trenches using a tracked excavator
- Temporary stockpiling of excavated material using dump / road trucks.
- Laying of site services, using telehoists or crane, where necessary.
- Backfilling of excavated material to fill trenches to the desired level.

3.3.6 Construction of Site Hard Stand and Granular Formation Surfaces

Concrete paved areas will be poured using a concrete pump feed by imported ready mixed concrete. Concrete will arrive to site in concrete mixing trucks which will empty to the concrete pump.

Workers will direct the flow of pumped concrete as required and the concrete will be levelled in place by a suitable level machine or screed. Vibratory screeds will be used to ensure the concrete is fully compacted. Post setting of the concrete a power float device will be used to achieve the desired concrete finish.

The concrete pavement will be jointed to control cracking. The slab will bear on a layer of compacted granular fill. Services and drainage in the yard area will run underneath the slab.

The concrete slabs will be laid to falls and surface water drainage will be by means of gullies or drainage channels.

Granular fill material will be laid at the southern section of the site. This fill will be laid atop a compacted cohesive fill. This granular formation will be graded to facilitate surface and sub-surface drainage.

A combination of tracked excavators, concrete mixer trucks and dump / road trucks will be utilized for material handling and transfer when laying site surfaces.

3.3.7 Construction of Site Buildings

The following buildings will be constructed on-site as part of the proposed development.

- MRF 1
- MRF 2
- MRF 3
- Electrical Sub-station Building
- Administration Building.
- Vehicle Workshop and Refuelling Building
- Vehicle Wash Building

Broadly, these buildings will be constructed in the following manner.

- Excavation will take place using tracked excavators.
- Building foundations will be laid.
- Backfilling of excavated material and imported fill will take place.
- Floors will be constructed using steel or fibre reinforced concrete founded on a suitable depth of compacted granular fill. Concrete will be pumped into place and suitably compacted.
- Drainage channels will be constructed within concrete floors of MRF 1, MRF 2 and MRF 3, as necessary.
- Recessed cable channels will be provided within the Electrical Sub-station Building.
- Rising block walls and 'push walls' will be constructed, as necessary. These walls will be reinforced by steel bars and fixers, as necessary.
- Steel frame portals will be erected on the reinforced concrete substructure. The frame will consist of rolled steel columns and rafters typically at 5 – 7 m spacing. Cold rolled light gauge steel purlins and cladding rails will be fixed to the main columns and rafters. The frame will be cladded with corrugated coated steel cladding.
- External cladding will be affixed to the steel frame when completed.
- Suspended floors will be placed using cranes and a concrete pump will be used to place the concrete screeds.
- Building roofs and roof drainage will be installed, utilizing temporary scaffolding and cranes, as necessary.

A combination of tracked excavators, concrete mixing trucks, dump / road trucks, cranes and mobile elevated platforms will be used when constructing the proposed buildings.

3.3.8 Installation of Additional Ancillary Site Infrastructure and Elements

The following additional ancillary site infrastructure and elements will then be installed.

- The weighbridges (2 no.) and weighbridge office and associated load cells will be installed on reinforced concrete foundations.
- The Fire Pump Station and its holding container will be installed atop a reinforced concrete foundation.
- The rainwater harvesting tank will be installed atop a reinforced concrete foundation.
- Prefabricated rooftop photovoltaic panels with bespoke roof fitting fixtures will be lifted in position by cranes and affixed to the roof manually. Associated cables will be installed along building roofs and within buildings walls and will be routed to the electrical substation.
- Pre-fabricated perimeter palisade fences will be installed
- Gabion walls will be installed
- Site lighting will be installed. Site lighting will be mounted at heights between 6 m and 10 m above ground using bespoke poles or wall mounted fittings.
- Prefabricated site plant and equipment will be delivered to site via articulated trucks

- Processing line plant and equipment will be conveyed into respective buildings and placed in position using telescopic loaders, forklifts and overhead gantries. This equipment will then be connected into the power supply.
- The odour abatement system will be delivered to the site and installed. The Odour Abatement System housing will then be installed.
- An air extraction / filtering system will be installed in MRF 1 to prevent dust entering the odour abatement system
- A dust misting system will be installed in MRF3.
- Roller doors will be installed.
- EV charging units will be installed.
- Site parking, road markings, signage, and vehicle barriers will be developed / installed.
- The diesel fuel tank will be installed.
- Building furnishings and ancillary mechanical and electrical systems will be installed.
- Solar panels will be installed on-site.
- Landscaping for the site will be planted.
- Site clean-up and commissioning will be carried out.

A combination of cranes, lifting gear, telehoists, scissor lifts auger machines, concrete mixing trucks, and excavators will be utilized when carrying out the above tasks.

3.4 Construction Working Hours

Construction work will generally be carried out during daylight hours. Construction work will be confined to the following times (unless otherwise agreed with the Local Authority):

- 07:00-19:00hrs on weekdays and 08:00-14:00hrs on Saturdays with no working on Sundays or Public Holidays.

4. ENVIRONMENTAL MANAGEMENT PLAN

4.1 Introduction

This Environmental Management Plan (EMP) defines the project obligations, Environmental Management System (EMS) and environment mitigation measures relating primarily to the construction phase of the proposed development.

This EMP describes how the Contractor for the construction works will implement a site Environmental Management System (EMS) on this project to meet the specified contractual, regulatory and statutory requirements and Environmental Impact Assessment Report (EIAR) mitigation measures. This plan will be further developed and expanded following the grant of planning permission and appointment of the Contractor for the construction works. Please note that some items in this plan can only be finalised with appropriate input from the Contractor who will carry out the construction works and once the planning conditions attached to any grant of planning are known. It is the Contractor's responsibility to implement an effective environmental management system to ensure that the Applicant's environmental requirements for the construction of this project are achieved.

All site personnel will be required to be familiar with the environmental management plan's requirements as related to their role on site. The plan describes the project, sets out the environmental procedures that will be adopted on site and outlines the key performance indicators for the site.

- The EMP is a controlled document and will be reviewed and revised as necessary.
- A copy of the EMP will be located at the Contractors site office.
- All employees, suppliers and Contractors whose work activities cause/could cause impacts on the environment will be made aware of the EMP and its contents.

4.2 Project Obligations

During the construction of the proposed development several environmental management obligations must be implemented and achieved by the applicant and the Contractor. In addition to statutory obligations, there are several specific obligations set out in the EIAR. These obligations are set out below. When planning is granted, there are also likely to be planning conditions, with which the applicant must comply. The CEMP will be reviewed and updated, if required, following any grant of planning. The Contractor and all of its sub-Contractors will be made fully aware of and be contractually required to adhere to all environmental obligations.

4.2.1 EIAR Obligations

The EIAR identified mitigation measures that will be put in place to mitigate the potential environmental impacts arising from construction of the project.

4.2.2 Planning Permission Obligations

Should the proposed development be granted planning permission, the conditions of the planning grant issued will be adhered to.

4.2.3 Other Obligations

The contractor will liaise directly with the applicant, Fingal County Council and An Garda Síochána in relation to securing any necessary permits to allow the works to take place including for example (non-exhaustive list):

1. Commencement notice
2. Special Permits in relation to oversized vehicles on public roads, if required

The applicant will continue to liaise closely with the local residents, especially neighbours and landowners in the sturdy area and all reasonable steps will be taken to minimise the impact of the development.

4.3 Environmental Management System

The Environmental Management System (EMS) which will be adopted during the construction phase of the proposed development is outlined in the sections below.

4.3.1 Environmental Policy

The Contractor is responsible for preparing and maintaining an Environmental Policy for the site. The policy should be appropriate to the project, commit to continuous improvement and compliance with legal requirements and provide a framework for objectives and targets. This will be communicated to all site personnel and will be available on-site notice boards.

4.3.2 Training, Awareness and Competency

All site personnel will receive environmental awareness information as part of their initial site induction and briefing. The detail of the information should be tailored to the scope of their work on site. The Contractor for the construction works may decide to conduct the environmental awareness training at the same time as health and safety training (often referred to as Site Inductions).

This will ensure that personnel are familiar with the environmental aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The CEMP will be retained in the site management office during the project. The environmental performance at the site will be on the agenda of the monthly project management meetings for the project.

Elements of the CEMP will be discussed at these meetings including objectives and targets, the effectiveness of environmental procedures, etc. Two-way communication will be encouraged by inviting all personnel to offer their comments on environmental performance at the site.

4.3.3 Register of Environmental Aspects

The Contractor is responsible for preparing and maintaining a Register of Environmental Aspects pertaining to the site. This register will identify the environmental aspects associated with activities onsite and determine which aspects have or can have a significant impact on the environment.

4.3.4 Register of Legislation

The Contractor is responsible for preparing and maintaining a register of key environmental legislation pertaining to the site. This register will reference all current environmental legislation and will be inspected, reviewed and updated regularly to ensure compliance.

4.3.5 Objectives and Targets

Objectives and targets are required to be set to ensure that the project can be constructed and operated in full accordance with the EIAR, planning conditions and legislative requirements, with minimal impact on the environment.

Environmental objectives are the broad goals that the Contractor must set in order to improve environmental performance. Environmental targets are set performance measurements (key performance indicators or KPI's) that must be met in order to realise a given objective.

The Contractor will set objectives based on each significant environmental impact. Key objectives are likely to include the following:

- To ensure that the surface water quality is not negatively impacted by construction works;
- To ensure that humans are not negatively impacted by dust generated by construction works;
- To ensure that humans are not negatively impacted by noise generated by construction works;
- To ensure that impacts to habitats and wildlife are minimised during works;
- To ensure that a waste management plan for this site will be fully implemented;
- To ensure that the visual impact during the construction work is minimised;
- To ensure that the proposed development is constructed in compliance with the EIAR.

Performance in relation to each of these objectives will be reviewed on a regular basis by means of inspections, audits, monitoring programmes, etc.

4.3.6 Non-Conformance, Corrective and Preventative Action

Non-conformance notices will be issued where there is a situation where limits associated with activities on the project are exceeded, or there is an internal/external complaint associated with environmental performance.

Non-conformance is the situation where essential components of the EMS are absent or dysfunctional, or where there is insufficient control of the activities and processes to the extent that the functionality of the EMS in terms of the policy, objectives, and management programmes, is compromised. A non-conformance register should be controlled by the Contractor.

The EMS and all its components must conform to the EMP, objectives and targets and the requirements of the ISO 14001 management standard.

In the event of non-conformance with any of the above, the following must be undertaken:

- Investigate cause of the non-compliance;
- Develop a plan for correction of the non-compliance;
- Determine preventive measures and ensure they are effective;
- Verify the effectiveness of the correction of the non-compliance;
- Ensure that any procedures affected by the corrective action taken are revised accordingly.

Responsibility must be designated for the investigation, correction, mitigation and prevention of non-conformance.

4.3.7 EMS Documentation

The Contractor is required to keep the following documentation in relation to the environmental management of the project (as a minimum):

- Construction Environmental Management Plan for the proposed development;
- Register of Environmental Impacts;
- Register of Planning Conditions;
- Monitoring Records;
- Minutes of Meetings;
- Training Records;
- Audit and Review Records.

All of these documents and records are to be available for inspection in the site office. The documentation shall be up to date and shall be reviewed on a regular basis with revisions controlled in accordance with the site quality plan.

4.3.8 Control of Documents

The Contractor will establish, implement and maintain a procedure to control EMS documents and records so they are clearly identifiable, organised, current, easily located and revised when necessary.

4.4 Environmental Mitigation Measures

The environmental mitigation measures for Population and Human Health; Biodiversity; Soils, Geology and Hydrogeology; Hydrology and Surface Water Quality; Air Quality and Climate; Noise and Vibration;

Archaeological, Architectural and Cultural Heritage; Landscape and Visual Impacts; Waste Management Plan and Traffic Management Plan are outlined in the sections below.

4.4.1 Population and Human Health

Mitigation measures defined within the following chapters of the EIAR accompanying this planning application would be applicable in the protection of the environment and human health during the construction phase of the proposed development:

- Chapter 9 Geology and Hydrogeology Measures in relation to water management and spill control are defined within this chapter. These measures will ensure the protection of receiving groundwater bodies potentially utilized by humans for drinking water.
- Chapter 10 Hydrology and Surface Water Quality – Measures in relation to surface water management and spill control are defined within this chapter. These measures will ensure the protection of receiving surface water bodies and human users of these water bodies (e.g. anglers).
- Chapter 11 Air Quality and Climate – Measures in relation to dust mitigation are defined within this chapter. These measures will ensure the minimization of dust and the prevention of dust nuisance impacting local sensitive receptors such as dwelling or agricultural land.
- Chapter 12 Noise and Vibration – measures in relation to construction noise control/minimization are defined within this chapter. This will reduce the potential for nuisance noise affecting sensitive receptors in the locality.
- Chapter 13 Traffic and Transportation – Measures in relation to traffic management are defined within this chapter. This will reduce the risk of road traffic accidents occurring on or within the vicinity of the site.

4.4.1.1 Construction Phase Health and Safety Management

Prior to construction a site-specific Safety and Health Risk Assessment/Management Plan and a Safety Statement will be prepared for the project at the development site in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 / 2013), as amended. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. FÁS Safe Pass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required.

The contractor will be responsible for the implementation of procedures outlined in the Safety & Health Plan. Public safety will be addressed by restricting site access during construction. Appropriate warning signs will be posted, directing all visitors to the site manager.

During the construction phase, access to the site will be restricted to ensure that the public will not come into contact with the construction works.

4.4.2 Biodiversity

Details of the proposed mitigation measures are summarised in the sections below and are also outlined in Chapter 8 Biodiversity of Volume 2 the EIAR accompanying this planning application.

4.4.2.1 Habitats and Flora

No disturbance to habitats or flora outside the proposed development area will occur. All works and temporary storage of material will be restricted to the immediate footprint of the development, which will be wholly within the development site boundary. Designated access points will be established within the site and all construction traffic will be restricted to these locations.

To counteract the loss of habitat associated with the development footprint (e.g., 180m of treeline), and further enhance biodiversity at the development site, a total of 651m (linear length) of new hedgerows will be created along the sites boundary and will screen the development from the surrounding area. These hedgerows will be created using native species, of similar composition to the existing treelines onsite that will be removed. The hedgerows will be dominated by hawthorn and elder with willow and alder frequently used.

Additional species such as hazel, holly and guelder rose should be planted also to ensure a diverse mix of species that will provide food and shelter for birds, mammals, and invertebrates at different times of the year. These hedgerows will serve to provide a suitable habitat for bird species using the site for the long-term.

These hedgerows will need to be maintained in a manner that promotes biodiversity insofar as possible. Tightly cut hedgerows with flat tops provide little benefit to wildlife, taller and bulky hedgerows are recommended as this provide more shelter for wildlife. When the hedgerows are maintained, stems will be cut a little above the last cut (see Figure 8 5) as cutting back to the exact same point depletes the energy of the hedgerow, forms a build-up of scar tissue which discourages new growth. Light annual cutting of hedgerows is not good for wildlife as it limits the production of flowers and fruit. The sites hedgerows will be cut every three to four years in rotation as this will leave areas of undisturbed hedgerows. Cutting equipment used will be sharp so as not to shatter or fray the hedge. Shattering and fraying allows for disease to enter plants and can lead to decay and weaken the vigour of the hedgerow. A finger-bar cutter is recommended as the most appropriate tool to minimise fraying and smashing of branches (Heritage Council, 2017). A flail-type hedge cutter is unsuitable for hedge trimming in situations where hedgerow health is a priority.

Where practical, gaps in the hedgerow will be filled via laying which is a method of rejuvenating hedgerows. Laying involves cutting hedgerow stems partly through near ground level and bending the stem to the required position to fill a gap. New growth then is produced from the cut which thickens the hedge base and rejuvenates it.

Where gaps are too large and to enhance the diversity of the hedgerow, native whips will be planted. Hedgerow maintenance will not be carried out between the 1st of March and 31st of August as this is the nesting period for birds and any maintenance at this time will disturb breeding; this is in keeping with the Wildlife Act 1976 (as amended).

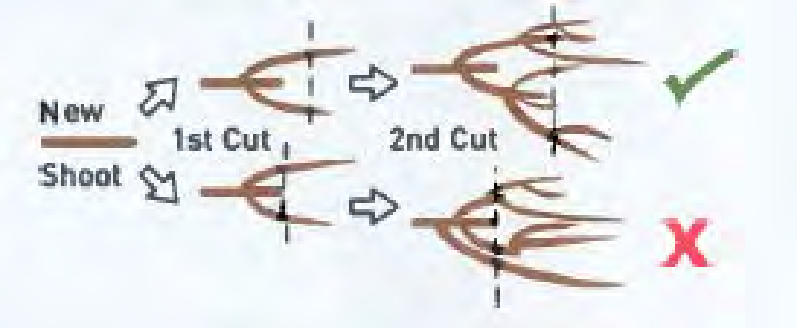

Figure 4-1: Hedgerow level of cut (Teagasc)

A site-specific Invasive Species Management Plan will also be implemented pre-construction to manage invasive species present on-site (e.g., Buddleja davidii), see Appendix 8.2 of the EIAR accompanying this planning application. An additional pre-construction invasive plant species survey will be completed in advance of construction works commencing, to ensure no additional invasive species has spread into the site since the initial ecology walkover survey.

4.4.2.2 Birds

The removal of trees and hedgerow trimming will be undertaken outside of the bird breeding season (March 1st to August 31st inclusive). This will help protect nesting birds. The proposed hedgerows along the site boundary) will serve to provide a suitable habitat for bird species using the site for the long-term.

4.4.2.3 Terrestrial Mammals

Construction operations within the proposed development site will take place during the hours of daylight where possible to minimise disturbances to faunal species at night.

The water quality mitigation measures outlined in this EIAR will ensure otter are not negatively impacted by declines in water quality.

4.4.2.4 Bats

As part of best practice construction measures a preconstruction bat survey shall be carried out within the site prior to construction to reconfirm the findings of preplanning surveys. If any new roosts are found during these surveys a relevant bat derogation licence shall be sought prior to construction works commencing and works will be carried out under the terms of the relevant derogation licence this shall include any felling works being undertaken, and works will be timed and conducted in a manner to ensure that no bats are harmed as a result of felling. Relevant guidance including the NRA (2006) guidelines for the treatment of bats during the construction of national road schemes.

Construction operations within the proposed development site will take place during the hours of daylight where possible to minimise disturbances to bat species at night. Lighting shall not be left switched on overnight within the site. The use of lighting within the site can discourage bats from utilising the site during construction.

Where overnight artificial lighting is required for security purposes, an ecologist will be consulted during the detailed lighting design. The lighting design should follow BCT and ILP 2018 best practice guidance:

- Incorporate specialist bollard or low-level downward directional luminaries;
- Where low-level downward directional luminaries are not appropriates, installation of luminaries with warm spectrum LEDs (<2700 Kelvin) to reduce blue light, with peak wavelengths higher than 550nm;
- Mounted luminaires should not tilt upward, with an upward light ration of 0% and with good optical control;
- External security lighting should be set on motion-sensors and short (1 min) timers;
- Incorporate cowls to lighting throughout the proposed development site to spill away from the site boundaries;

Maximise the separation distance between light mast locations and vegetated features, such as surrounding treelines and the adjacent green fields, where possible.

4.4.2.5 Other Taxa

A pre-construction amphibian survey of the drainage ditch within the proposed development footprint will be undertaken during late winter/early spring to reconfirm the existing environment as described in the ecological appraisal forming part of this assessment, and to check for signs of breeding frog.

If frogspawn is observed in these areas, an appropriate response will be formulated in order to prevent negative impacts to this species, in many cases it is best to attempt to retain at least part of the populations (frog and newt) on site, this obviates the uncertainties often associated with translocation.
Where the population cannot be retained on site, a suitable receptor site will be located in consultation with NPWS. A suitable receptor site will ideally:

- Be located as close as possible to the donor site (at least within the same county, and the same geology and habitat type);
- Not currently support a population of the species to be translocated;
- Not be subject to planning or other threats in the foreseeable future;
- Be subject to a pre and post-translocation management plan;
- Be subject to a pre and post-translocation monitoring programme.

4.4.3 Soils, Geology and Hydrogeology

Details of the proposed mitigation measures are summarised in the sections below and are also outlined in Chapter 9 Soils, Geology and Hydrogeology of Volume 2 of the EIAR accompanying this planning application.

4.4.3.1 Construction Design

The construction works will be designed, overseen and checked by geotechnical and/or civil engineers, suitably qualified and experienced in excavation and earthworks design and construction methodologies.

A method statement for each element of the works will be prepared by the Contractor prior to any element of the work being carried out.

Given that the works comprises a significant proportion of excavation and earthworks, suitably qualified and experienced geotechnical personnel will be required on site to supervise the works.

The Contract will require programming of the works such that earthworks are not scheduled during severe weather conditions. Where such weather is forecast, suitable measures will be taken to secure the works. The Project Manager is the person responsible for determining when works are to be stopped due to weather.

To mitigate against erosion of exposed soils, all excavations will be constructed and backfilled as quickly as possible. Excavations will stop during or prior to heavy rainfall events.

All excavations will be carried out such that they are stable or adequately supported. Unstable excavations will not be left unsupported. Where appropriate and necessary, excavations will be protected against the ingress of water or erosion.

Where necessary, material which is required to be removed from site during demolition activities and earthworks will be taken to an appropriately authorised and regulated waste management facility for recovery.

4.4.3.2 Sediment Control Measures

Control and mitigation measures for the protection of surface water from sediment laden run-off are defined in Section 4.4.4 of this CEMP. These measures will prevent the accidental discharge of sediment laden run-off generated during construction to groundwater.

4.4.3.3 Measures for Preventing Hydrocarbons Spills

Control and mitigation measures for the protection of surface water from oil and fuel spills are defined in Section 4.4.4 of this CEMP. These measures will also prevent the accidental discharge of oil or fuel used during construction to groundwater.

4.4.3.4 Measure for Preventing the Release of Cement Based Products

Control and mitigation measures for the protection of surface water from the discharge of cement-based products are defined in Section 4.4.4 of this CEMP. These measures will also prevent the accidental discharge of cement-based products to groundwater.

4.4.3.5 Measures to Protect the Surface Waters during Culverting Works

Control and mitigation measures for the protection of surface water from culverting works are defined in the Chapter 10 Hydrology and Surface Water Quality of Volume 2 of this EIAR. These measures will also prevent the accidental discharge of polluting material to groundwater during culverting works.

4.4.4 Hydrology and Surface Water Quality

Details of the proposed Surface Water Management System and mitigation measures are summarised in the sections below and are also outlined in Chapter 10 Hydrology and Surface Water Quality of Volume 2 of the EIAR accompanying this planning application.

The proposed Surface Water Management System shall be finalised in accordance with this document following the appointment of the Contractor for the main construction works.

4.4.4.1 Measures to Protect the Surface Waters during Culverting Works

The culverting of the existing open surface water drainage ditch will be carried out during advance works stage of the construction phase.

The following mitigation measures will be adopted during the proposed culverting works:

- The surface water drainage ditch will need to be temporarily dammed during culverting works (E.g. Using pea gravel bags and geosynthetic textile). This will be done progressively in sections. This will allow culverting construction works to be isolated from flowing water. A water pumping system will be used to allow for the transport of water downstream during culverting works.
- These works will only be carried out during a period of dry weather conditions to prevent the run-off of sediment from working areas to the drainage ditch.
- Culverting works will be carried out in a careful and precautionary manner, and in accordance with a defined method statement. The working areas will be kept as tidy as possible for the duration of the works. All excavated / excess material will be immediately removed from the working area on an ongoing basis as works progress.
- All personnel carrying out culverting relates works will be obliged to read and fully understand the method statement for the proposed works. A toolbox talk regarding the method statement, the carrying out of the works generally, and the need to protect the quality of water passing through the drainage ditch will be carried out immediately prior to the commencement of works.
- Temporary cut off trenches will be used to divert surface water run-off away from working areas in and around the drainage ditch during culverting works.
- Regular inspections of working areas will be undertaken to assess and confirm the implementation of the agreed control measures.
- Any machines working in or around the drainage ditch must be protected against leakage or spillage of fuels, oils, greases, and hydraulic fuels (e.g. using drip trays).
- The culvert piping itself will be pre-cast thereby substantially reducing the potential for cement based materials becoming entrained in surface water run-off.

4.4.4.2 Sediment Control Measures

The following sediment control measures are proposed to prevent becoming entrained in surface water run-off during the construction phase of the proposed development:

- The drainage ditch currently traversing the site will be culverted during the advance works stage of construction. This will prevent the release of sediment and cement-based material generated during later stages of construction on-site from discharging to this water body.
- To minimize soil disturbance and potential for sediment becoming entrained in surface water, all excavations will be constructed and backfilled as quickly as possible. Excavations will stop during or prior to heavy rainfall events.
- Temporary cut-off trenches and earthen bunds will be used to prevent entry of surface water into excavations, temporary stockpiles, and disturbed working areas, thereby preventing surface waters from being exposed to disturbed soils.
- Standing water, which could arise in excavations, has the potential to gradually become affected by an increased concentration of suspended solids because of the disturbance to soils. These waters, where they arise, will be pumped from these excavations promptly to prevent this from occurring.
- Good housekeeping will be practiced on-site to prevent discharge of polluting material to the surface water environment (i.e., post work clean down, end of day clean down, visual inspection and maintenance of the site drainage system elements).

- A temporary sediment basin/earthen weir will be established at the point of surface water discharge from the site during construction to ensure settlement of suspended solids in surface water prior to discharge. This temporary formation will be regularly inspected and maintained.

4.4.4.3 Measures for Preventing Hydrocarbons Spills

Fuel for vehicles and mobile plant will initially be stored in an existing fuel storage tank situated within the existing waste management facility building. Construction vehicles will come to this area for re-fuelling. Once the MRF 3 building and site infrastructural elements at the southern sections of the site are constructed, the existing waste management facility, including the fuel storage tank within it will be decommissioned, and the existing building will be upgraded. From this point on, fuel will be stored at the newly constructed fuel storage tank situated to the south of the site and construction phase re-fuelling will take place at this location.

Specific mitigation measures relating to the management of hydrocarbons are as follows:

- Refuelling of construction plant and machinery will be carried out at a designated refuelling location which is / will be served by an oil separator. Spill kits will be provided at these locations.
- Refuelling of plant during construction will only be carried out by trained personnel.
- A specially trained and dedicated environmental and emergency spill response team will be appointed before commencement of construction on-site.
- Appropriately sized drip trays will be utilized on-site to prevent the release of fuels or oils during refuelling operations or other work activities.
- Spill kits containing oil soakage pads and booms will be made available on-site to ensure prompt and adequate clean-up of any accidental fuel or oil spills.
- An emergency / spill response procedure will be prepared, and all construction site operatives will be briefed on the response measures required during the site inductions and routine toolbox talks.
- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. Only emergency breakdown maintenance will be carried out on site and appropriate containment facilities will be provided to ensure that any spills from breakdown maintenance vehicles are contained and removed off site. All major repair and maintenance operations will take place off-site. Vehicles entering the site will be in good working order, free from leakage of fuel or hydraulic fluid.

4.4.4.4 Measure for Preventing the Release of Cement Based Materials

The following mitigation measures are proposed to prevent the release of cement-based products to the receiving surface water environment during the construction phase of the proposed development:

- All rubble arising due to demolition will be collected and safely contained in skips / storage containers before immediate dispatch off-site.
- When cast-in-place concrete is required; all work must be done in dry conditions and must be completed isolated from any flowing water which may enter the drainage ditch to the south of site.
- No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place.
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.

- Where concrete is delivered on site, only the chute need be cleaned, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- A designated impermeable cement washout container should be provided on-site at a designated area for chute cleaning. This washout facility shall be situated away from surface water drains. This area will be effectively isolated from any flowing water which may enter the drainage ditch which travels to the southeast of the site,
- Weather forecasting will be utilized to ensure concrete pours are only undertaken during dry weather conditions.
- Concrete pour sites will be made free of standing water prior to carry out the pour. Plastic covers will be available on-site to prevent entrain of surface water in poured concrete in the case of sudden rainfall.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

4.4.5 Air Quality and Climate

Details of the proposed air quality and climate mitigation measures are summarised in the sections below and are also outlined in Chapter 11 Air Quality and Climate of Volume 2 of the EIAR accompanying this planning application.

4.4.5.1 Air Quality

Construction dust emissions are considered the primary source of air quality impacts associated with the proposed development. It has been established that there is an overall medium risk of dust related impacts as a result of the proposed development.

A detailed dust minimisation plan associated with a medium-level risk of dust impacts is outlined in Appendix 11.3 (Volume 3 of the EIAR). This plan draws on best practice mitigation measures from Ireland, the UK and the USA in order to ensure the highest level of mitigation possible.

The following specific mitigation measures will be implemented at the site during the construction phase of the proposed development:

- Prior to demolition blocks will be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Drop heights from loading shovels and other loading equipment will be minimised.
- If encountered, asbestos on site will be removed by a suitably qualified contractor prior to any demolition taking place in accordance with an Asbestos Management Plan and HSA Guidelines on the management and Disposal of Asbestos defined in their Guidance Document entitled 'Practical Guidelines on ACM Management and Abatement.'
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.

- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

4.4.5.2 Climate

Impacts to climate during the construction stage are predicted to be insignificant however, good practice measures can be incorporated to ensure potential impacts are lessened. These include:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.

4.4.6 Noise and Vibration

Details of the proposed air quality and climate mitigation measures are summarised in the sections below and are also outlined in Chapter 10 Noise and Vibration of Volume 2 the EIAR accompanying this planning application.

There is a potential adverse impact at the closest residential dwellings to the proposed development (Coolbrook Cottages) during the site clearance phase of construction. To mitigate the noise impact, it is recommended that the following noise mitigation measures will be implemented throughout the construction phase:

- Installation of temporary hoarding around the site to screen noise from the site.
- Periodic monitoring of noise at the nearest noise sensitive locations during the construction works, in particular during site clearance activities taking place in close proximity to Coolbrook Cottages.
- If the proposed limits are exceeded during the construction phase, site operations must cease and measures will be put in place to ensure a reduction in noise on-site (e.g. phasing works in a manner that reduces level of activity or plant operation at any one point in time, selecting quieter working methods and using noise barriers/enclosures to screen/enclose noisy equipment.
- Working hours at the site during the construction phase will be limited to 07:00-19:00hrs on weekdays and 08:00-14:00hrs on Saturdays (unless otherwise agreed with the Local Authority). There will be no construction works undertaken on Sundays or public holidays.
- A speed limit of 15km/h will be enforced on-site.
- Drop heights for construction materials will be minimised.

- Construction contractors will be required to comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 as amended in 1990 and 1996 (S.I. No. 320 of 1988, S.I. No. 297 of 1990 and S.I. No. 359 of 1996), and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations, 2006 (S.I. No. 371 of 2006);

The main control measures will be control of noise at source using the following methods in line with Clause 8 'Control of noise' of BS 5228-1:2009+A1:2014 throughout the construction phase:

- Operators of all mobile equipment will be instructed to avoid unnecessary revving of machinery (Clause 8.2.1 General);
- Use of appropriate plant and equipment where possible with low noise level generation where possible (Clause 8.2.2 Specification and substitution);
- All construction plant to be used on site should have effective well-maintained silencers (Clause 8.2.3 Modification of existing plant and equipment);
- Noise generating equipment will be located as far as possible away from local noise sensitive areas identified (Clause 8.2.5 Use and siting of equipment); and
- Regular and effective maintenance of site machinery including a full maintenance schedule to ensure that all pieces of equipment are in good working order. With efficient use of well-maintained mobile equipment, considerably lower noise levels than those predicted can be attained (clause 8.2.6 Maintenance).

In addition, the following best practice measures are proposed:

- Training of site staff in the proper use and maintenance of tools and equipment;
- Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment;
- Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum;
- Plant start-up will be sequential rather than all together;
- Plant known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise-sensitive locations

4.4.7 Archaeological, Architectural and Cultural Heritage

The following mitigation measure is proposed to prevent the construction phase of the proposed development having a negative impact on any previously unrecorded archaeological remains that may exist within the development footprint:

- Monitoring will be carried out under licence to the Department of Housing, Local Government and Heritage and the National Museum of Ireland. Provision will be made for the full excavation and recording of any archaeological features or deposits that may be exposed during monitoring.

4.4.8 Landscape and Visual Impacts

Apart from the typical construction hoarding which will help screen views of construction activities at ground level within the application site, there are no specific landscape and visual mitigation measures deemed necessary / proposed during the temporary construction phase.

4.4.9 Construction Waste Management Plan

The construction waste management plan is outlined in the sections below.

4.4.9.1 Assignment of Responsible Personnel

It will be the responsibility of the contractor for the construction works (when appointed) to nominate a suitable site representative such as a Project Manager, Site Manager or Site Engineer as Waste Manager who will have overall responsibility for the management of waste. The waste manager will have responsibility to instruct all site personnel including sub-contractors to comply with on-site requirements.

4.4.9.2 Waste Generated

Any waste materials generated on-site during the construction of the proposed development will be handled and managed in accordance with the requirements of the Waste Management Act 1996, as amended, and associated Regulations. All wastes generated during the construction phase of the proposed development will be segregated and stored temporarily in segregated waste containers at the temporary construction compound. Waste oil and diesel that may be generated during the construction phase will be stored in bunded, enclosed, covered locations, as necessary. All waste materials transferred off-site for disposal or recovery will be hauled by operators who hold a suitable waste collection permit and be taken only to suitably permitted/licensed waste facilities. The waste / materials likely to be generated during the construction phase are presented in Table 4.1.

Table 4-1: Potential wastes generated during construction phase

Waste / Material	Source
Soil, hardcore, stone, gravel, concrete, plaster, steel	Waste / materials generated during demolition, site clearance, site stripping, and construction
Timber	Temporary supports, concrete shuttering and product deliveries
Scrap plant	Materials generated during decommissioning of existing waste facility
Miscellaneous building materials	Leftover waste material from demolition and / or construction of the site buildings
Sanitary effluent	Portaloo toilets
Plastics and cardboard	Plastic and cardboard packaging
Lubricating oils, diesel	Unused quantities of oils and diesel at end of the construction period

4.4.9.3 Waste Prevention

The following measures will be adopted to prevent waste generation

- Reduce waste or surplus materials on site by avoiding over-estimation of purchasing requirements, minimising packaging materials and buying environmentally approved and recycled content products;
- Ensure materials are not delivered to site damaged and unusable;
- Where possible, establish a 'take back' system with suppliers;
- Limit the amount of waste going to landfill by reusing and recycling, where possible.
- The Applicant intends on maximizing waste prevention through the reuse/reutilization of material generated on-site during the construction phase of the proposed development, in accordance with circular economy principles and the Waste Hierarchy as enshrined in the Waste Framework Directive (2008/98/EC). The Applicant will aim to reutilize material within the confines of the development site as fill material, wherever possible.

4.4.9.4 Waste Recycling

- Provisions will be made for the re-use or recycling of timber, paper, cardboard, glass and other materials, where appropriate.

4.4.9.5 Waste Disposal

- All construction phase waste generated will be managed at the waste management facility which will co-join the construction site, or be removed from the site and dispatched to one of the Applicant's other waste management facilities for either recovery, recycling or disposal (least preferred method of management). Any excess soil material generated during construction will be sent for recovery at an appropriately authorized Soil / C&D waste recovery facility.

4.4.9.6 Training

Copies of the waste management plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Project Waste Management Plan and informed of the responsibilities that fall upon them as a consequence of its provisions.

It will be the responsibility of the Contractors' appointed Waste Manager to ensure that all personnel are made aware of their responsibilities under the plan via a toolbox talk or otherwise.

4.4.10 Construction Traffic Management Plan

The Construction Traffic Management Plan (CTMP) shall be finalised in accordance with this Plan following the appointment of the Contractor for the construction works.

Please note that some items in this plan can only be finalised with appropriate input from the Contractor who will actually carry out and schedule the works. Furthermore, it is appropriate that the Project Supervisor Construction Stage (PSCS), when appointed, should have an active role in the preparation/review of the Construction Traffic Management Plan.

The Contractor is required to prepare a Construction Traffic Management Plan prior to the construction works commencing.

As with any construction development project, the transport of materials onto the site will give rise to increased traffic and associated impacts. However, due to the very nature of construction these impacts will be temporary.

Public perception of the construction phase will be influenced primarily from the impact of traffic movements. The degree of traffic disturbance caused by the construction phase depends on the volume of material imported/exported, the associated civil engineering requirements and the length of the construction period.

This CTMP deals with the traffic generated during the construction of the proposed development. It concentrates on the traffic arising from each element of the works which includes the site clearance works and the building construction works.

Construction traffic will require regular access to the site at varying times throughout the construction phase.

The aim of this CTMP is to put in place procedures to manage traffic effectively on site and in the immediate vicinity of the development, to ensure the continued movement of traffic on the public roads and to minimise disturbance during transportation of materials. The correct implementation of this CTMP will ensure that appropriate procedures are in place to minimise any effects on the safety and movement of the general public.

Prior to the commencement of construction, the CTMP will be reviewed by the Contractor (and any sub-contractors) and will be updated as necessary.

The proposed development site is located on the southern side of the L3090 Ballycoolin Road and is provided with direct vehicular access from a private access road connecting directly to L3090 at a signalised junction arrangement which includes access to Stadium Business Park to the north of Ballycoolin Road. Measured along the private access road the existing development site is approximately 250m from L3090. The private access road is signed for 'Premier Business Park'. The existing private road serves a number of existing industrial units which make up Premier Business Park. All traffic generated by the existing and proposed development both for construction and for the day-to-day operation of the site is accommodated by the private access road from L3090 Ballycoolin Road.

Based upon the existing business of the Applicant the distribution of traffic arising from the proposed development is estimated to have the greatest effect upon the section of the L3090 between the Premier Business Park access junction and the Cappagh Road. The relative influence of new traffic arising will have differing degrees of effect both east and west of the existing site access road. Under the future scenario the forecast distribution to the receiving local road network of all development generated HGV traffic associated with the transport of materials to and from the proposed development will be comprised approximately of 56% of all imports and over 53% of all exported material to/from the east of the site (Cappagh Road) and the remainder from the west (Ballycoolin).

Access to the existing waste management facility is provided through Cappogue Industrial Park. The site of the proposed development is currently provided with direct vehicular access from within Cappogue Industrial Park.

4.4.10.1 Construction Staging

It is estimated that the proposed development will take 12 months to complete. It is preferable, from a construction viewpoint, that the majority of construction activities (in particular intensive construction activities) associated with the development take place during the summer months to take advantage of longer daylight hours and drier weather. However, this may be dependent on a number of factors and construction could occur over winter months. Upon appointment of a contractor for the works, a detailed construction programme will be developed. This programme shall have regard to a Construction Environmental Management Plan which adjoins this EIAR, as well as other Construction related Mitigation Measures defined within this EIAR.

Construction operations shall generally be restricted to 07:00-19:00hrs on weekdays and 08:00-14:00hrs on Saturdays with no working on Sundays or Public Holidays.

Construction commencement dates are yet to be confirmed at this stage; these will be made known to the Fingal County Council by way of a formal Commencement Notice.

4.4.10.2 Construction Plant and Vehicles

The typical construction plant and vehicles accessing the development site may include:

- Site personnel driving to the work site and site compounds (by car, van and 4x4);
- Delivery of plant (e.g. conveyors, screens, etc.), cladding materials, structural and re-enforcing steel and other construction materials by van and HGV;
- Movement of construction equipment and refuelling trucks to and around the site;
- Import of fill material and concrete.

It should be noted however that final selection of construction plant and vehicles may vary depending on suitability, availability, contractor's choice, etc.

Plant operators will be responsible for the upkeep and maintenance of construction plant and vehicles, ensuring good working order prior to use. Should emergency maintenance need to be carried out on site, this will be carried out at a designated area away from sensitive receptors and it will be ensured that a spill kit is nearby.

Provision of sufficient onsite parking to accommodate construction personnel, visitor parking and deliveries and reducing insofar as practicable potential overflow onto the local network. No contractor parking will be permitted outside the proposed development site or any public roads outside the confines of the application site.

4.4.10.3 Consultation and Notification

Traffic Management Co-ordinator

The Contractor will appoint a dedicated competent Traffic Management Coordinator for the duration of this project and this person will be the main point of contact for all matters relating to traffic management on the project.

Induction

Prior to the works commencing, the Traffic Management Coordinator will carry out an induction for the materials haulage contractor staff to inform them of the traffic requirements in relation to vehicle movements. Traffic consideration shall form part of the induction process for all site staff also.

An Garda Síochána

Following the appointment of the successful Contractor for the main construction works for this project, this CTMP shall be finalised. The Traffic Management Coordinator will liaise directly with An Garda Síochána in relation to the plan and any concerns/requirements they have will be incorporated in to the plan. The necessary permits (including approved route permits) will be applied for and obtained from An Garda Síochána, if required.

Fingal County Council

The Contractor will liaise directly with Fingal County Council Roads Department in relation to the plan and any necessary permits (including standard permits) will be applied for and obtained from the Roads Department.

4.4.10.4 Mitigation Measures

Construction phase effects will be short-term. It is proposed that construction traffic will access the site via. L3090 Ballycoolin Road and the existing access arrangements within Cappogue Industrial Park. The construction access shall be managed by signage and flagmen. A banksman and active traffic control will be employed during times when construction activity is more intense, for example as during concrete pours.

Normal site working hours are 07:00-19:00hrs on weekdays and 08:00-14:00hrs on Saturdays with no working on Sundays or Public Holidays.

Construction traffic will be scheduled to typically arrive at site prior to the traditional commuter peak hour in the morning and after the evening peak hour. It is anticipated that the generation of HGV's during the general construction period will be evenly spread throughout the day and as such will not impact significantly during the peak periods. An appropriate routing strategy for HGVs will be agreed and implemented as part of the Construction Management Plan. Construction traffic is not considered likely to give rise to reduced operational performance of the local road network.

The contractor will decide the construction programme to be implemented and will be required to finalise a Construction Management Plan with the Planning Authority. The existing road network serving the site can accommodate this type of traffic and the levels of construction activity forecast.

Impacts arising from construction traffic will be managed and mitigated through the agreement of suitable haul routes. To reduce insofar as practicable, the impact of construction generated traffic and to reduce the volume of site generated traffic during construction the following measures are proposed:

- Provision of sufficient onsite parking to accommodate construction personnel, visitor parking and deliveries and reducing insofar as practicable potential overflow onto the local network. No contractor parking will be permitted outside the proposed development site or any public roads outside the confines of the application site.

- Encourage/require the Contractor to transport construction personnel and to encourage staff to travel by public transport or to share vehicles to reduce parking demand at the site.
- Inform construction staff of the alternative modes of transport highlighting the availability of non-car modes of transport and the accessibility of the site by bus and bicycle.

The transportation of construction materials and commuting of construction staff will not have a significant impact upon the operation or capacity of the receiving public road network. Given the distance of the development site from the public road there is unlikely to be any direct impacts arising from the deposition of debris, nevertheless it is the intention of the Applicant to comply with Local Authority policy on maintaining the roads serving the site clean of dirt and debris associated with the development of the site. If further detail regarding the control of the construction project and specifically the control of construction traffic is required by the Local Authority it is suggested that a Construction Traffic Management Plan can be prepared as a condition of planning.

A detailed Traffic Management Plan incorporating the mitigation measures set out in this CEMP, will be formalised and agreed with the local authority prior to the commencement of construction. The detailed Traffic Management Plan will include mitigation measures as outlined below.

Traffic Management Coordinator - A dedicated competent Traffic Management Coordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management on the project.

Haul Routes - The plan will identify those roads that will be used to access this project and where appropriate will indicate roads not to be used by construction traffic.

Site Induction - All workers and all drivers delivering materials to site will receive a comprehensive site induction which will include, as appropriate, a section on traffic management and clear guidance on the routes to site to be used/not used.

Traffic Management and Traffic Control - All temporary traffic management will be planned and executed in accordance with best practice and by reference to Chapter 8 of the Traffic Signs Manual.

Wheel/Vehicle washing facilities - temporary wheel/vehicle washing facilities will be provided subject to agreement with the planning authority.

5. SAFETY & HEALTH MANAGEMENT PLAN

5.1 Introduction

This Safety and Health Management Plan (SHMP) defines the work practices, procedures and management responsibilities relating to the management of health and safety during the design, construction and operation of the proposed development and shall be read in conjunction with the Preliminary Safety & Health Plan prepared for the project by the Project Supervisor for the Design Process. The Safety and Health Management Plan shall be finalised in accordance with this plan following the appointment of the contractor for the construction works.

This SHMP describes how the contractor for the construction works will implement a site safety management system (SMS) on this project to meet the specified contractual, regulatory and statutory requirements, environmental impact statement mitigation measures and planning conditions. It is the contractor's responsibility to implement an effective safety management system to ensure that the developer's safety requirements for the construction of this project are met.

All site personnel will be required to be familiar with the requirements of the safety management plan as related to their role on site. The plan describes the project organisation and sets out the health and safety procedures that will be adopted on site:

- The Safety and Health Plan is a controlled document and will be reviewed and revised as necessary;
- A copy of the Safety and Health Plan will be located on/near the site H&S notice board;
- All employees, suppliers and contractors whose work activities cause/could cause impacts on the environment will be made aware of the SHMP and its contents.

5.2 Project Obligations with Respect to Health and Safety

The construction of the proposed development will impose numerous safety management obligations on the developer, designer and contractor. These obligations are set out below. The contractor for the construction works and all of its sub-contractors are to ensure that they are fully aware of and in compliance with these safety obligations.

5.2.1 Statutory Obligations

The Safety, Health and Welfare at Work Act 2005 and the Safety, Health and Welfare at Work (Construction) Regulations 2013 place a responsibility on the Developer as the "Client", the Designer, the Project Supervisors and the Contractor.

The Developer/ Employer must:

- Appoint a competent and adequately resourced Project Supervisor for the Design Phase (PSDP);
- Appoint a competent and adequately resourced Supervisor for the Construction Stage (PSCS);
- Be satisfied that each designer and contractor appointed has adequate training, knowledge, experience and resources for the work to be performed;

- Co-operate with the project supervisor and supply necessary information;
- Keep and make available the safety file for the completed structure;
- Provide a copy of the safety and health plan prepared by the PSDP to every person tendering for the project;
- Notify the Authority of the appointment of the PSDP.

Designers must:

- Identify any hazards that their design may present during construction and subsequent maintenance;
- Eliminate the hazards or reduce the risk;
- Communicate necessary control measures, design assumptions or remaining risks to the PSDP so they can be dealt with in the safety and health plan;
- Co-operate with other designers and the PSDP or PSCP;
- Take account of any existing safety and health plan or safety file;
- Comply with directions issued by the PSDP or PSCS.

The PSDP must:

- Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project;
- Where possible, eliminate the hazards or reduce the risks;
- Communicate necessary control measure, design assumptions or remaining risks to the PSCS so they can be dealt with in the safety and health plan;
- Ensure that the work of designers is coordinated to ensure safety;
- Organise co-operation between designers;
- Prepare a written safety and health plan for any project and deliver it to the client prior to tender;
- Prepare a safety file for the completed structure and give it to the client.

The PSCS must:

- Co-ordinate the identification of hazards, the elimination of the hazards or the reduction of risks during construction;
- Develop the Safety and Health Plan initially prepared by the PSDP before construction commences;
- Co-ordinate the implementation of the construction regulations by contractors;
- Organise cooperation between contractors and the provision of information;
- Co-ordinate the reporting of accidents to the Authority;
- Notify the Authority before construction commences;
- Provide information to the site safety representative;
- Co-ordinate the checking of stage working procedures;

- Co-ordinate measures to restrict entry on to the site;
- Co-ordinate the provision and maintenance of welfare facilities;
- Co-ordinate arrangements to ensure that craft, general construction workers and security workers have a Safety Awareness card, e.g. Safe Pass and a Construction Skills card where required;
- Co-ordinate the appointment of a site safety representative where there are more than 20 persons on site;
- Appoint a safety adviser where there are more than 100 on site;
- Provide all necessary safety file information to the PSDP;
- Monitor the compliance of contractors and others and take corrective action where necessary;
- Notify the Authority and the client of non-compliance with any written directions issued.

The Contractor must:

- Co-operate with the PSCS;
- Promptly provide the PSCS with information required for the safety file;
- Comply with directions of the project supervisors;
- Report accidents to the Authority and to the PSCS where an employee cannot perform their normal work for more than 3 days;
- Comply with site rules and the safety and health plan and ensure that your employees comply;
- Identify hazards, eliminate the hazards or reduce risks during construction;
- Facilitate the site safety representative;
- Ensure that relevant workers have a safety awareness card and a construction skills card where required;
- Provide workers with site specific induction;
- Appoint a safety officer where there are more than 20 on site or 30 employed;
- Consult workers with site specific induction;
- Monitor compliance and take corrective action.

Consequently, at all stages of the project there are statutory requirements for the management of safety, health and welfare of all involved in or affected by the development. As previously outlined, this CEMP and specifically the Safety and Health Management Plan addresses key construction management issues associated with the proposed development. This plan will be developed further at the construction stage, on the appointment of the Contractor for the main construction works.

5.2.2 The Preliminary Safety and Health Plan

In accordance with the requirements of the Safety, Health & Welfare at Work (Construction) Regulations 2013, a Preliminary Safety & Health Plan will be required as part of the design process.

This plan will be further developed by the PSCS on appointment and maintained as a live document during construction and commissioning of the proposed development.

The safety and health plan is required to include the following information:

- A general description of the project;
- Details of other work activities taking place on site;
- Works involving particular risks;
- The timescale for the project and the basis on which the time frame was established;
- Conclusions drawn by designers and the PSDP having taken into account the General Principles of Prevention and any relevant Safety and Health Plan or Safety File; and
- The location of electricity, water and sewage connections so as to facilitate early establishment of welfare facilities.

In accordance with the PSDP's procedures, the Preliminary Safety & Health Plan for the proposed development should include the following sections and subsections to ensure that the PSCS is aware of the health and safety issues at tender stage and enable them to price accordingly:

Preamble:

1 General Project Information:
- 1.1 Title
- 1.2 Description of Project
- 1.3 Employer
- 1.4 Designers/Other Consultants
- 1.5 Project Supervisor Design Process
- 1.6 Drawings, Specifications and Other Documents
- 1.7 Intended Contract Commencement Date
- 1.8 Intended Contract Completion Date
- 1.9 Basis for Contract Duration
- 1.10 Restrictions on Working Hours
- 1.11 Notification of Project
- 1.12 Termination of the PSCS Appointment

2 The Existing Environment:
- 2.1 Site Location
- 2.2 Relevant Adjoining Land Uses
- 2.3 Site Restrictions
- 2.4 Restrictions on Access
- 2.5 Hazardous Area Classification
- 2.6 Existing Services
- 2.7 Ground Conditions
- 2.8 Existing Hazards

2.9 Liaison with Statutory Bodies

3 Other Work Activities:

3.1 Other Contracts Which May Affect Work

3.2 Occupation of Site

3.3 Building Activities

3.4 Other Work Activities

3.5 Emergency Procedures in Place on Site

4 Particular and Residual Risks:

4.1 Works Which Puts Persons at Work at Risk

4.2 Work Which Puts Persons at Risk from Chemical or Biological Substances

4.3 Work with Ionising Radiation

4.4 Work near High Voltage Power Lines

4.5 Work Exposing Persons at Work to the Risk of Drowning

4.6 Work on Wells, Underground Earthworks and Tunnels

4.7 Work Carried Out by Divers at Work Having a System of Air Supply

4.8 Work Carried Out in a Caisson with a Compressed Air Atmosphere

4.9 Work Involving the Use of Explosives

4.10 Work Involving the Assembly or Dismantling of Heavy Prefabricated Components

4.11 Work Involving Hazardous Material

4.12 Residual Risks

5 Additional Information:

5.1 Existing Documents

5.2 Site Possession

5.3 Site Rules

5.4 Site Specific Safety Objectives

5.5 Phasing of Works

5.6 Permits/Authorisation Required

5.7 Maintenance

5.8 Continuing Liaison

5.9 Specific Recommendations

6 Information Required for Safety File:

6.1 Information Required for Safety File from PSCS

5.2.3 The Management of Health and Safety during the Construction Phase

The selection criteria for the Contractor for the works will be based on the ability to construct the works in a manner that will not endanger the safety, health and welfare of any parties and competence to fulfil the role of PSCS.

The contract will be awarded on the basis of assessment of the candidates against relevant health and safety criteria including experience of similar projects, knowledge of the construction processes involved and training of their management and staff who will be involved in carrying out the works.

5.2.4 The Construction Stage Safety and Health Plan

In accordance with the requirements of the Safety, Health & Welfare at Work (Construction) Regulations 2013, the preliminary Safety & Health Plan prepared by the PSDP will be further developed by the PSCS before the commencement of the construction work and updated on a regular basis during the construction phase of the project.

The document will include the following sections and subsections to ensure the management of health and safety during the construction phase of the project:

1. Description of Project:
    - Project description and programme details
    - Details of client, PSDP and PSCS, designers
    - Contractor and other consultants
    - Extent and location of existing records and plans
    - Arrangements for communicating with contractors, PSDP and others as appropriate
2. Communication and Management of the Work:
    - Management structure and responsibilities
    - Safety and health goals for the project and arrangements for monitoring and review of safety and health performance
    - Arrangements for:
        - Regular liaison between parties on site
        - Consultation with the workforce
        - The exchange of design information between the Client, Designers, Project Supervisor for the Design Process, Project Supervisor Construction Stage and Contractors on site
        - Handling design changes during the project
        - The selection and control of contractors
        - The exchange of safety and health information between contractors
        - Security, site induction, and on-site training
        - Welfare facilities and first aid
        - The production and approval of risk assessments and method statements
        - The reporting and investigation of accidents and other incidents (including near misses)
    - Site rules
    - Fire and emergency procedures
3. Arrangements for Controlling Significant Site Risks:
    - Safety risks:
        - Services, including temporary electrical installations

- Preventing falls
- Work with or near fragile materials
- Control of lifting operations
- Dealing with services (water, electricity and gas)
- The maintenance of plant and equipment
- Poor ground conditions
- Traffic routes and segregation of vehicles and pedestrians
- Storage of hazardous materials
- Dealing with existing unstable structures
- Accommodating adjacent land use
- Other significant safety risks

- Health risks:
  - Dealing with contaminated land
  - Manual handling
  - Use of hazardous substances
  - Reducing noise and vibration
  - Other significant health risks

The construction stage safety and health plan will be maintained on site by the PSCS and will be communicated to all relevant parties on an ongoing basis through inductions, site safety meetings and tool box talks etc. as required.

6. EMERGENCY RESPONSE PLAN

6.1 Introduction

This chapter of the CEMP presents an Emergency Response Plan for the proposed development. The Emergency Response Plan shall be finalised in accordance with this outline plan following the appointment of the contractor for the construction works and following detailed design development.

This Emergency Response Plan contains predetermined guidelines and procedures to ensure the safety, health and welfare of everybody involved in the project and to protect the environment during the construction phase of the proposed development. This plan outlines the immediate response to an emergency or disaster situation and will be developed by the construction works contractor and PSCS as part of their construction stage Safety and Health Plan.

An emergency is any disruptive or harmful event that endangers people, environment, property or assets. Emergencies can be small, as in a fire contained by employees using firefighting equipment or large, as in a disaster resulting from a storm.

In the context of the proposed development, examples of Emergency Response Plan emergency events are:

- Medical emergency;
- Overheated equipment;
- Chemical and fuel spill;
- Fire;
- Loss of power;
- Vehicle incidents.

Example sources of emergency or disaster events are:

- Unstable/inappropriate stockpiles on site;
- Faulty or incorrect use of equipment;
- Falls from height;
- Smoking;
- Storm/adverse weather;
- Power failure;
- Fuel spill;
- Road failure;
- Serious vehicle collisions or overturning.

6.2 Emergency Response Plan

An emergency response plan deals with the immediate physical effects of a disaster and outlines the initial response.

6.2.1 Emergency Response Liaison

The contractor/PSCS will designate an individual to serve as the Emergency Response Liaison for this project. The emergency response liaison will coordinate the emergency response for the duration of any emergency at or nearby the project site.

Fingal County Council, An Garda Síochána and the HSE Ambulance Co-ordinator will be provided with the construction programme and the onsite contact information from the Emergency Response Liaison prior to construction.

The Emergency Response Liaison will be immediately reachable at all times during project construction. The Liaison will coordinate with the above agencies to establish emergency procedures for access to and within the site in the event of an emergency.

6.2.2 Reporting Emergencies

In the event of fire, storm, flood, serious injury or other emergency, contact:

ALL ON SITE EMERGENCIES DIAL 112 or 999

6.2.3 Designated Responder

A map depicting the location with the emergency meeting point will be furnished to Fingal County Council Fire Department and HSE ambulance co-ordinators.

Upon arrival on the scene, the senior EMS Officer will set up the incident command structure. The Emergency Response Liaison and all contractor's personnel will cooperate with directions of the incident commander and assist as directed.

The nearest emergency services, ambulance and Accident & Emergency (A&E) facilities are:

Service:	Contact Details:	
Accident & Emergency (A&E)	Connolly Hospital Blanchardstown	(01) 646 5000
Ambulance Service	Dial 112 or 999	
Fire Services	Dial 112 or 999	
Garda Station	Blanchardstown Garda Station	(01) 666 7000

Each member of the contractor's site team who are First-Aid and Cardiopulmonary Resuscitation (CPR) trained personnel will be identifiable with a hard hat sticker indicating their training.

6.2.4 Emergency Alarm

The emergency alarm will be raised on site as soon as an emergency situation is detected, the alarm will be identified (contractor to check those that apply):

Air Horn		**Radio**		**Voice**		**Hand Signals**		**Siren**	

6.2.5 Emergency Reporting

In the event of an emergency the nearest supervisor with radio equipment/mobile phone will be notified. The degree of emergency will be reported to the Emergency Response Liaison who will contact the Emergency Services and request the appropriate emergency service.

6.2.6 Medical Protocol

In the event of a major medical emergency, the emergency centre (999) will be notified, and an ambulance and emergency medical team will respond to the scene. All major medical cases require professional (ambulance) transportation. In the event of a minor medical case, the affected employee can be transported via company vehicle in the escort of a foreman or site engineer (with first aid training).

6.2.7 Emergency Response

Upon notification, the Emergency Response Liaison will respond to the emergency scene and manage emergency operations:

1. Assess hazards and make the area safe – If you cannot enter the area without risking your safety, don't do it, call the Emergency Services immediately and wait for them. If you think you can safely enter the area, look around the emergency scene for anything that can be dangerous or hazardous to you, the casualty, or anyone else at the scene. Bystanders can help with making the area safe. First aid kits will be available on site. Operators that have been first aid/CPR/AED trained will be listed on site and easily identifiable by a hard hat sticker.

2. Take charge of the situation – if you are the first-aid provider on the scene act fast. If someone is already in charge, briefly introduce yourself and see if that person needs any help. If there is any chance the casualty could have a head or spinal injury, tell them not to move.

3. Get Consent – always identify yourself as a first-aid provider and offer to help. Always ask for consent before touching a conscious adult casualty and always ask for consent from a parent or guardian before touching an unconscious or conscious child or infant. With an unconscious adult casualty consent is implied as it is generally accepted that most people want to live. Remember to protect yourself first by wearing gloves and eye protection.

4. Assess Responsiveness – is the casualty conscious or unconscious? Note their response while you are asking them for their consent. If they respond, continue with the primary survey, and if they don't respond, be aware that an unconscious casualty is or has the potential of being a breathing emergency.

5. Call out for help – this will attract bystanders. Help is always useful in an emergency situation. Someone can be called over the phone for medical help. Others can bring blankets if needed, get water, etc. A bystander can help with any of the following:

- Make the area safe;
- Find all the casualties;
- Find the first aid kit, or any useful medical supplies;
- Control the crowd;
- Call for medical help;
- Help give first aid, under your direction;
- Gather and protect the casualty's belongings;
- Take notes, gather information, be a witness;
- Reassure the casualty's relatives;
- Lead the ambulance attendants to the scene of the emergency;
- Notify Emergency Services as soon as you can. Either send a bystander or call yourself.

In the event of a major medical emergency, the Emergency Response Liaison, as the person-in-charge of the emergency scene, will dispatch someone to the site access point nearest the emergency scene to direct and lead arriving outside responders to the emergency scene. The designated meeting point will be agreed prior to the commencement of construction. Emergency personnel will be met at this meeting point which has been communicated by management during the 999 call. The emergency personnel escort will use the hazard lights on their vehicle so they are easily identified.

6.2.8 Escape and Evacuation Procedure

Dependent upon the degree of the emergency and if safe to do so, employees will evacuate to the designated assembly area where the designated wardens shall account for all employees and determine if anyone still remains within the emergency scene.

6.2.9 Prevention of Illness/Injury due to Weather/Elements

1. All employees will have access to shelter and heat in the event of inclement weather.
2. Employees will have access to at least a litre of water at all times.
3. Weather forecast will be discussed every morning with the crews. Weather conditions and forecast will be monitored regularly by management.
4. No Employee will work alone. A buddy system will be used so employees can contact a supervisor in case of an emergency.

6.2.10 Environmental Emergency Procedure

An emergency preparedness and response procedure is required to prevent environmental pollution incidents. Emergency Silt Control and Spillage Response Procedures will be contained in this ERP.

Suitable spill kits and absorbent material for dealing with oil spills will be maintained on site. In the event of pollution or potential risk of pollution, the Local Authority should be informed immediately.

6.2.11 Emergency Response Plan – Haul Routes

Emergency Response Procedure relating to transportation of plant, equipment and materials to the site will be developed by the contractor during the construction phase of the development.

FEHILY TIMONEY

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CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 6.1

Sample of Stakeholder Consultation Letter

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Department of Environment, Climate and Communications
29-31, Adelaide Road
Saint Kevin's
Dublin, D02 X285

Minister.Ryan@decc.gov.ie

Our Ref: P21-150/Lett/EOC/MG

24th March 2022

Re: Proposed Development of a Material Recovery Facility (MRF), Cappogue, Co. Dublin

Dear Minister,

Padraig Thornton Waste Disposal Ltd t/a Thorntons Recycling intends to apply to An Bord Pleanála for permission to develop a Materials Recovery Facility (MRF) at Unit 1 Cappogue Industrial Park, Ballycoolin Road, Cappogue, Dublin 11, and lands to the immediate south of this address. Thorntons Recycling has appointed Fehily Timoney and Company to prepare an Environmental Impact Assessment Report (EIAR) for the proposed development.

Thorntons Recycling operates an existing construction and demolition waste recovery facility at Unit 1, Cappogue Industrial Park, Ballycoolin Road, Cappogue, Dublin 11. Thorntons Recycling is in the process of acquiring a site situated directly south of this existing facility of ca. 3.2 ha. The site can be accessed via a single carriage access road within Cappogue Industrial Park from the Ballycoolin Road.

The location of the proposed development is illustrated in the attached Figure 1 - Site Location. The site encompasses Thorntons Recycling's existing waste facility at Cappogue as well as lands to the south of this facility. The M50 motorway is located immediately south of the proposed development site. A number of residential dwellings are located west of the proposed facility. Premier Business Park is situated to the northeast and Rosemount Business Park to the north of the proposed development site. Panda's Material Recovery facility, Roadstone's Huntstown Quarry and Kilsaran Concrete's Concrete Manufacturing facility are located to the northwest of the site along the Cappagh Road. The area is zoned General Employment (GE) as set out in the Fingal County Development Plan 2017 – 2023.

An aerial photo showing the site location and surrounding area and a site layout plan showing the layout of the proposed development on-site are attached to this letter.

Cont'd…

Dublin: J5 Plaza, North Park Business Park, North Road, Dublin 11, D11 PXT0, Ireland
T: +353 1 658 3500
E: info@ftco.ie
www.fehilytimoney.ie

FEHILY TIMONEY

At this stage of the design process, it is envisaged the proposed development will consist of:

1. The modification and expansion of the existing waste processing building on-site, to include:

a) The retrofitting of the existing building area to facilitate the processing of municipal solid waste, food waste and mixed dry recyclables.

b) The expansion of the waste processing building to facilitate additional waste reception, the carrying out new construction and demolition waste processing and recovery operations, and additional internal waste storage.

2. The acceptance, segregation, processing and onward transfer of 300,000 tonnes of waste material for recovery and recycling, namely:

- 100,000 tpa of Residual Municipal Solid Waste (rMSW)
- 100,000 tpa Construction & Demolition (C&D) Skip Waste
- 50,000 tpa Mixed Dry Recyclables (MDR)
- 50,000 tpa Food Waste (Brown Bin)

3. The development of an extended hard-standing area on-site to accommodate vehicle movement, parking, storage and other site activities.

4. The development of various supporting infrastructure including:

- Administration building
- Site maintenance shed
- Leachate collection system and storage tank
- Vehicle wash bay and refuelling area
- Stormwater drainage and attenuation system
- Odour abatement system
- Incoming and outgoing weighbridges
- Landscape boundary treatment
- EV charging facilities
- ESB Sub-station
- Roof-mounted solar panels

Thorntons Recycling will also apply to the Environmental Protection Agency for an Industrial Emission Licence that will allow them to accept and process a maximum of 300,000 tonnes per annum of waste material on-site. Facility operations will take place in accordance with the conditions and terms of this authorization. Environmental and emission control measures will be in place at the facility to control potential environmental impacts.

Cont'd…

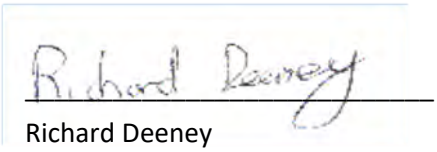
This letter is being issued to you as part of the scoping process for the EIAR. The EIAR will accompany the planning application which will be made with respect to this proposed development and will address potential environmental aspects and impacts associated with the proposed development.

As part of the consultation process, we would be interested in receiving any comments you may have on the proposed development, relevant to your area of expertise, within four weeks of the date of this letter 22 April 2022.

If you have no comments to make, we would be grateful if you would please acknowledge receipt of this letter.

Comments or acknowledgements can be sent via email to thorntonscappogue@ftco.ie.

Yours sincerely,



Richard Deeney
for and on behalf of **Fehily Timoney and Company**

Encls.

- Site Location Map
- Concept Layout (P21-150-INFO-0005 Rev B)

Path: R:\Map Production\2021\P21-150\Workspaces\INFO\P21150_GIS_Fig1_SiteLocation_A3.mxd

Legend

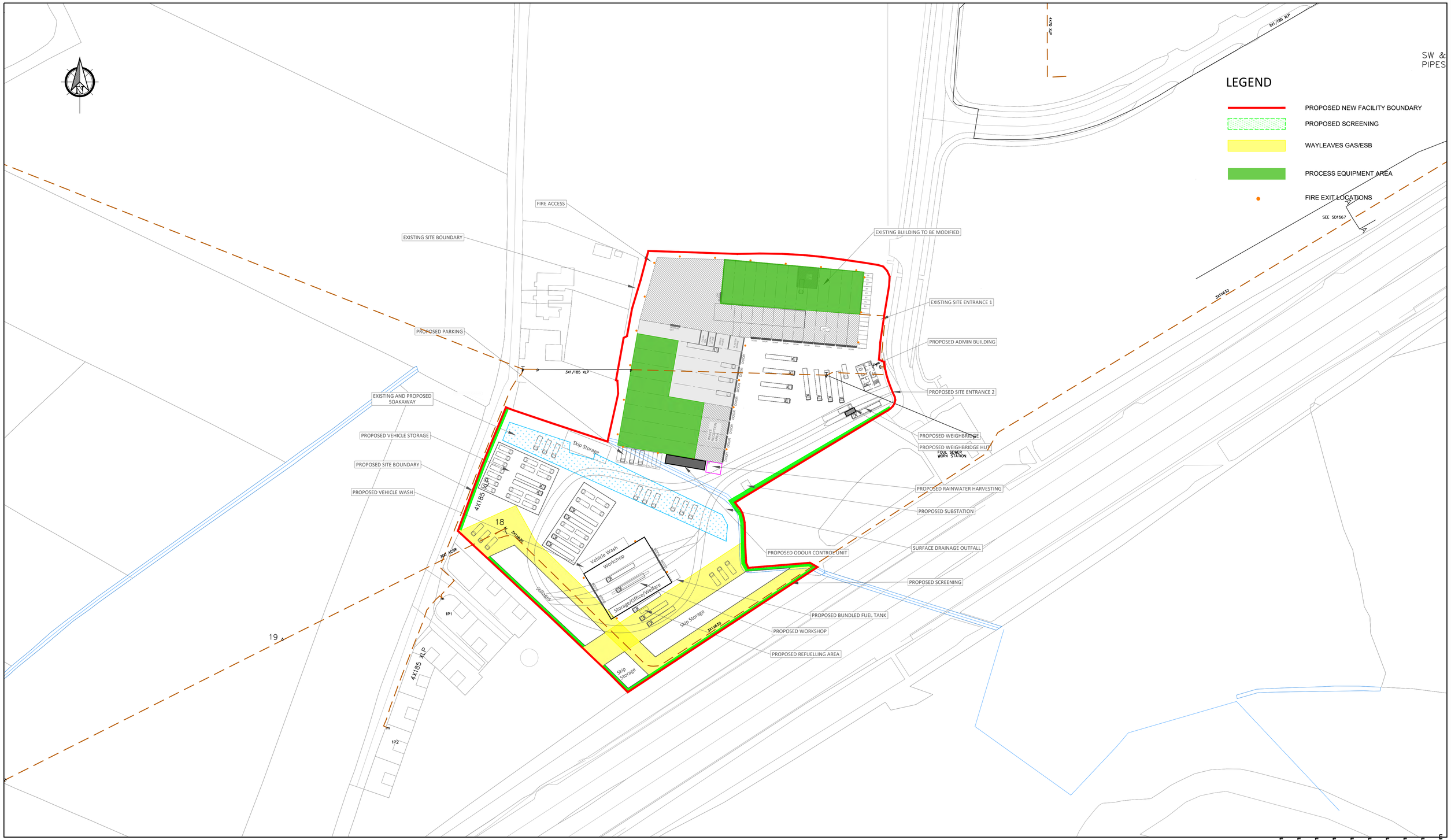
Proposed Site Boundary

N W E S

0 50 100 200 Meters

TITLE:	Site Location		
PROJECT:	Expansion of a Waste Facility Cappogue, Dublin 11		
FIGURE NO:	1		
CLIENT:	Thorntons Recycling		
SCALE:	1:3000	**REVISION:**	0
DATE:	31/01/2022	**PAGE SIZE:**	A3

FEHILY TIMONEY
Cork | Dublin | Carlow
www.fehilytimoney.ie



SITE LAYOUT

Scale 1:1000

FEHILY TIMONEY
Cork | Dublin | Carlow
www.fehilytimoney.ie

Rev.	Description	App By	Date
A	For Information	TR	31.01.22
B	For Information	CC	31.01.22

PROJECT	OUTLINE DESIGN OPTIONS FOR THORNTONS CAPPAGH
CLIENT	THORNTONS RECYCLING
SHEET	CONCEPT LAYOUT
Date	31.01.22
Project number	P21-150
Scale (@ A1-)	1:1000
Drawn by	CS
Checked by	RD
Drawing Number	P21-150-INFO-0005
Rev	B

O:\ACAD\2021\P21-150\P21-150-INFO-0005

01 February 2022

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 6.2

Stakeholder Consultation Responses

Eoin O'Connor

From: Housing Manager DAU <Manager.DAU@housing.gov.ie>
Sent: Friday 22 April 2022 11:24
To: Thorntons Cappogue
Subject: Scoping for Environmental Impact Assessment (EIA) of a Material Recovery Facility (MRF), Cappoge, County Dublin
Attachments: G Pre000672022.pdf

A Chara,

Attached please find Nature Conservation observations/recommendations of the Department in relation to the aforementioned Preplanning Consultation.

Can you please confirm receipt of same?

Kind Regards,
Sinéad

—
Sinéad O' Brien
Executive Officer
—
Aonad na nIarratas ar Fhorbairt
Development Applications Unit
Oifigí an Rialtais
Government Offices
Bóthar an Bhaile Nua, Loch Garman, Contae Loch Garman Y35 AP90
Newtown Road, Wexford, County Wexford Y35 AP90
—

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Your Ref: P21-150/Lett/EOC/MG
Our Ref: G Pre00067/2022
(Please quote in all related correspondence)

22 April 2022

Richard Deeney
Fehily Timoney and Company
35 Plaza
North Park Business Park
North Road
Dublin 11
D11 PXT0

Via email: thorntonscappogue@ftco.ie

Re: Scoping for Environmental Impact Assessment (EIA) of a Material Recovery Facility (MRF), Cappoge, County Dublin which is to be the subject of a Strategic Infrastructural Development (SID) planning application.

A chara

I refer to correspondence received in connection with the above.

Outlined below are Nature Conservation observations/recommendations of the Department.

Nature Conservation

It is noted that the location of the proposed development is within the catchment of the River Tolka River, which supports populations of various fish species, including the salmonid species brown trout and salmon. The kingfisher, listed in Annex I of the Birds Directive (79/409/EEC), and otter, included in Annex IV of the Habitats Directive (92/43/EEC) are also present on this watercourse. The Tolka discharges into the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA) within Dublin Bay. The site is therefore potentially indirectly hydrologically linked to this SPA and Natura 2000 sites in Dublin Bay, including the North Dublin Bay Special Area of Conservation (SAC), the North Bull Island SPA and the South Dublin Bay SAC. Environmental Impact Assessment (EIA) of the development proposed should consider the potential of leachate from the development entering surface water runoff, reaching the Tolka and possibly detrimentally affecting its biota, especially the species referred to above. Appropriate Assessment (AA) screening of the proposed development should similarly consider the possibility of potential detrimental effects on the downstream European sites in and around Dublin Bay.

It is noted also that a short stretch of hedgerow traverses the area to the south of the site presently owned by your client Padraig Thornton Waste Disposal Ltd. at Cappoge and which is to be acquired to be incorporated into the site of the proposed MRF. This hedgerow, which runs in a roughly North West to South East direction, forms part of the boundary between the townlands of Cappoge and Dunsink, but it appears from the diagram of the layout of the proposed development submitted with your request for comments that it is to be entirely removed to accommodate the development's planned layout. Townland boundaries usually date from at least the Later Middle Ages and because of their antiquity the hedgerows which have developed on such boundaries normally exhibit a higher biodiversity than other hedgerows. It is consequently recommended that, in order to conserve biodiversity and if feasible, the layout of the proposed development should be modified to retain as much of this townland boundary hedgerow section as possible.

To complete a thorough assessment of the biodiversity of the development site for the EIA of the proposed development, it should be surveyed for evidence of its use by badgers, the presence of bat roosts and the occurrence of breeding birds. In addition an arboriculturist should survey the trees and shrubs on the development site. Amongst the measures which should be adopted to mitigate the impact of the proposed development is that any removal of such woody vegetation from the site shall only occur outside the main bird nesting season from March to August inclusive.

The above observations/recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations that the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority/ies, in his role as statutory consultee under the Planning and Development Act, 2000, as amended.

You are requested to send any further communications to this Department's Development Applications Unit (DAU) at manager.dau@housing.gov.ie, or to the following address:

The Manager
Development Applications Unit (DAU)
Government Offices
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

Sinéad O' Brien

Sinéad O' Brien
Development Applications Unit
Administration

Eoin O'Connor

From: Donncha O'Sullivan <Donncha.OSullivan@gasnetworks.ie>
Sent: Friday 25 March 2022 14:16
To: Thorntons Cappogue
Cc: Chris Dillon (C); Georgina Kelleher; Michael O'Connell; Pat Morgan; Wayne Mullins
Subject: RE: P21-150 - SID Application, EIAR and IE Licence Application for Thorntons
Attachments: GNI-DLE-7007.pdf; GNI Code of Practice for Working in Vicinity of Tx Network 2021.pdf; A5 Safety Adcice Booklet .pdf

Marie,

You recently contacted Gas Networks Ireland and requested information on its infrastructure in the vicinity of your forthcoming works. The Gas Transmission Pipelines in the general area of interest to you are shown, in RED, on the drawing attached. Please treat all Gas Networks Ireland Drawings as 'indicative' only.

To verify the *in situ* position of the Gas Transmission Pipelines please contact Chris Dillon, 087-927 9284, chris.dillon@gasnetworks.ie. All work in the vicinity of a Gas Transmission Pipeline must be completed in compliance with the further downloaded 'Code of Practice 2021'.

The Gas Transmission Pipelines exist within Gas Networks Ireland Wayleaves. Such Wayleaves are normally 14m wide. No excavation may take place within any such Wayleave unless consent, in the form of a valid Excavation Permit, has been granted by Gas Networks Ireland. For further advice in regard to such Wayleaves please contact our Pat Morgan, Pat.Morgan@gasnetworks.ie.

The Gas Distribution Network in the vicinity is shown, in GREEN and/or in BLUE on the drawing attached. Please refer to the attached *Safety Advice Booklet* for guidance on working in the vicinity of this infrastructure.

Regards,

Donncha

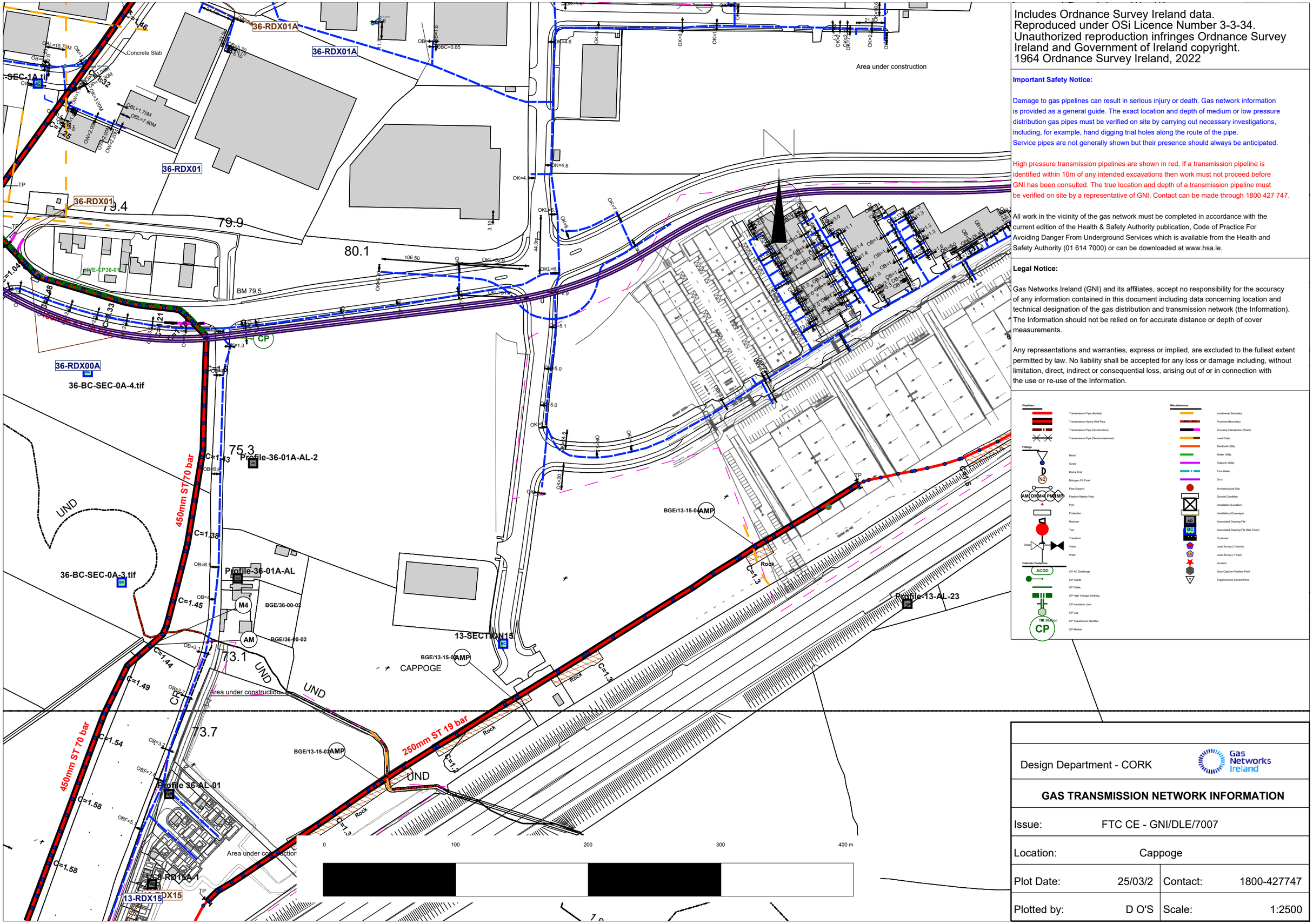
Donncha Ó Sullivan BE CEng MIEI MIGEM
Development Liaison Engineer

Gas Networks Ireland
P.O. Box 51,Gasworks Road, Cork, Ireland

T +353 21 453 4613 | **M** +353 87 982 2437
E donncha.osullivan@gasnetworks.ie

gasnetworks.ie | Find us on Twitter

You are reminded that all work in the vicinity of Gas Networks Ireland Pipelines and Installations must be completed to comply fully with the relevant guidelines to be found in the current editions of the Health & Safety Authority publications, 'Code Of Practice For Avoiding Danger From Underground Services' and 'Guide To Safety In Excavations'. Both documents are available free of charge from The Health And Safety Authority. www.hsa.ie, 1890-28 93 89.



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Important Safety Notice:

Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe.
Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1800 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (01 614 7000) or can be downloaded at www.hsa.ie.

Legal Notice:

Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

Design Department - CORK

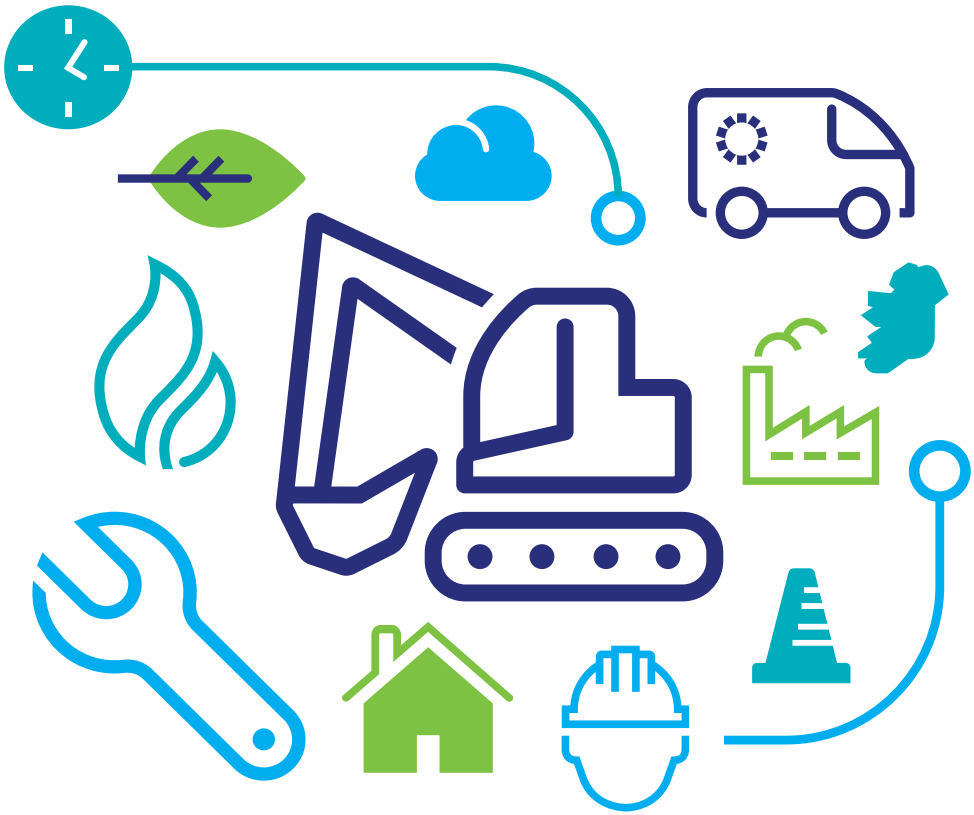
Gas Networks Ireland

GAS TRANSMISSION NETWORK INFORMATION

Issue:	FTC CE - GNI/DLE/7007		
Location:	Cappoge		
Plot Date:	25/03/2	Contact:	1800-427747
Plotted by:	D O'S	Scale:	1:2500

Gas Networks Ireland

Safety advice
for working in the vicinity of natural gas pipelines



Important safety information

When planning any excavation works dial

1800 42 77 47

to obtain up to date gas network maps.

Monday to Friday 9am – 5.30pm

Or you can sign up to DBYD online at

gasnetworks.ie/dbyd

and have access to maps 24 hours, 7 days a week

You can also contact us on

dig@gasnetworks.ie

If you have damaged a gas pipe call

1800 20 50 50

immediately, even if you do not suspect that gas is leaking

24 hours, 7 days a week

If you smell gas call

1800 20 50 50

24hr emergency service

Contents

This booklet contains important safety advice. Please read the following before you start work:

Natural gas characteristics and behaviour 4

Risks of damaging a gas pipe 5

Risks from a damaged gas pipe 6

Gas Networks Ireland transmission network 7

Gas Networks Ireland construction methods 11

Gas Networks Ireland construction – depth of cover 12

Requesting Gas Networks Ireland maps 13

Reading Gas Networks Ireland maps 14

Gas services 16

Safe systems of work 17

What to do if a gas pipe is damaged 20

Gas Networks Ireland contacts 21

Other useful publications 22

Natural gas **characteristics and behaviour**

Characteristics

Natural gas is:

- a highly flammable gas;
- lighter than air and will rise when released;
- non-toxic (but can suffocate in enclosed or confined spaces); and
- made up mostly of methane and has a smell added for safety purposes.

Behaviour

During an uncontrolled escape, natural gas will behave in the following ways:

- In open excavations, where there is a clear path to the atmosphere, natural gas will rise, dilute and disperse into the air.
- If the path to the atmosphere is blocked, the gas will travel through soil, ducts, drains, sewers and voids. It can also follow the line of other buried utility services. This can lead to gas entering a building or other confined spaces, and may lead to a fire or explosion.

Note: Never cover a damaged gas pipe; or attempt to carry out a repair. Call 1800 20 50 50 immediately.

Risks of **damaging a gas pipe**

The risks of damaging a gas pipe can be classified as:

Highest Risk

Mechanical excavators pose the highest risk and "should not be used within 500 mm of a gas distribution pipe."

(HSA Code of Practice)

Mechanical excavators must not be used within 3 metres of a Transmission pipeline.

(Refer to Code of Practice for Working in the Vicinity of the Transmission Network - AO/PR/127)

High Risk

Hand held power tools should not be used directly over the line of a gas pipe, unless the gas pipe has been positively located by hand and a safe working distance has been established.

Use of handheld power tools is not permitted within 1.5 m of a Transmission pipeline.

(Refer to Code of Practice for Working in the Vicinity of the Transmission Network - AO/PR/127)

Damage to gas pipes from power tools presents a high risk to the operatives involved in the work.

Low Risk

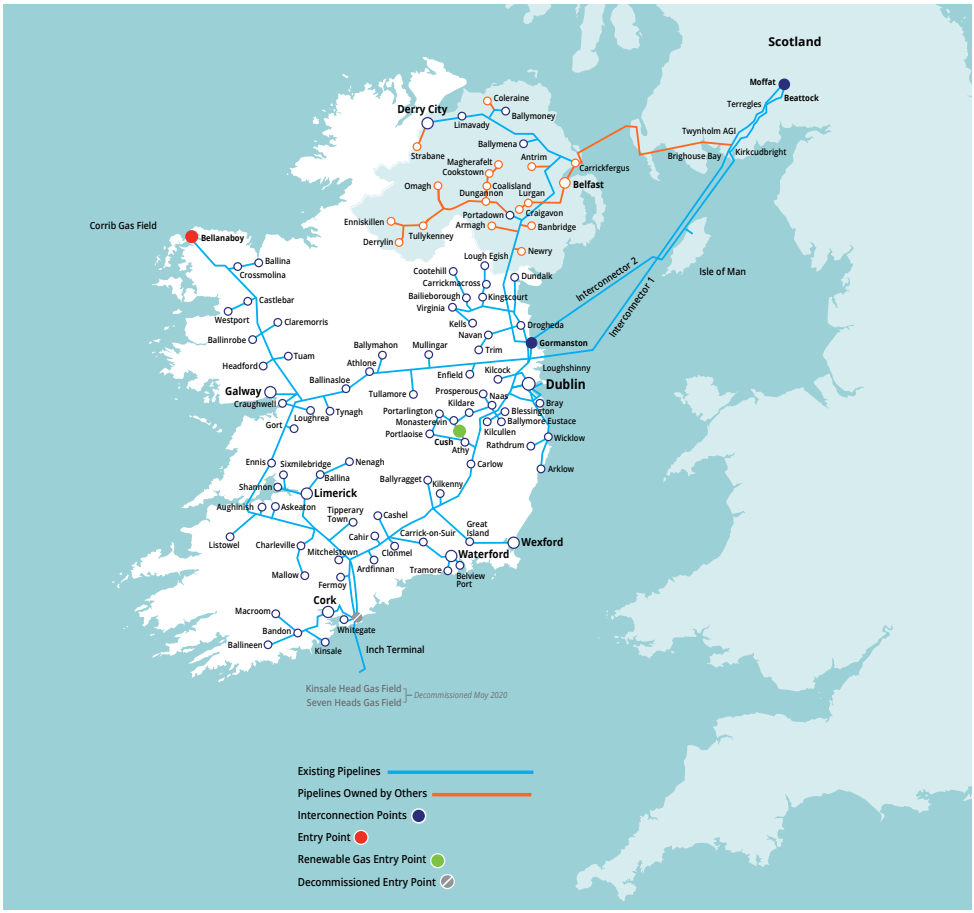
Hand digging using shovels and spades presents the lowest risk of damaging a gas pipe.

This is the method that should be used where the presence of gas pipes is suspected or close to a known gas pipe.

Risks from a **damaged gas pipe**

- Remember when gas escapes, or is released in an uncontrolled way; it can fuel a fire, give rise to an explosive atmosphere or cause asphyxiation.
- If you suspect there is a gas leak, immediately call Gas Networks Ireland's 24hr Emergency Service on **1800 20 50 50**.
- Gas can quickly fill underground cavities and travel into buildings through soil, or following the line of other buried utilities.
- Gas can only burn if exposed to an ignition source:
  - Do not turn electrical switches on or off
  - Do not operate any plant or equipment
  - Do not use naked flames, smoke or vape
  - Do not use mobile phones in the vicinity.
- Move people away from, and upwind of, the affected area.
- If gas has entered a confined space or building:
  - Open doors and windows
  - Turn off the gas supply at the meter
  - Do not expose to an ignition source.

Gas Networks Ireland **transmission network**



Gas Networks Ireland transports gas in Ireland through a network of steel and polyethylene (PE) pipes. The network operates at pressures between 20 mbar and 85 bar and is split between Transmission and Distribution pipelines.

The **Transmission** system is made up of steel pipes and operates from 7 bar to 85 bar.

The **Distribution** system is made up mostly of polyethylene pipes and operates from 20 mbar to 7 bar.

The **network**

The network is made up of three elements:

- Transmission pipes
- Distribution pipes
- Pressure Regulating Installations

Transmission pipes

These are high pressure pipelines that transfer gas across the country. They are constructed from steel, with a black, white, cream, yellow or concrete coating, and may have marker posts at intervals along their length, particularly at field boundaries and road crossings.

If a transmission pipeline is identified near intended excavations then work must not proceed until Gas Networks Ireland Transmission has been consulted on 1800 42 77 47.

Distribution pipes

These are medium or low pressure pipelines within urban areas. They are mainly constructed from Polyethylene (PE) and are predominantly yellow in colour, but may have brown or black stripes. There are two types – Mains and Services.

Mains gas pipes usually run parallel to property in the footpath, grass verge or road and range in size from 63 mm to 400 mm diameter.

Service gas pipes are connected to mains and run to a meter position at the property, and range in size from 20 mm to 63 mm diameter.

Note: There is a limited use of steel pipes in areas like bridges or where only shallow depths can be achieved.

There are still a small number of ductile and cast iron gas mains in use, ranging in size from 3 inch (75 mm) to 24 inch (600 mm) in diameter (these mains are similar in appearance to metal water mains). Steel and PE gas services are run from these metal mains to the meter location at each building.

These ductile and cast iron mains and services have been largely replaced with PE pipes. In urban areas a large number of redundant ductile or cast iron pipes are utilised as carrier pipes for new PE pipelines.

Some Distribution pipelines have been classified as strategic mains due to their pressure, diameter and/ or location and the elevated consequences if they are damaged.

If a Distribution strategic main is identified near an intended excavation then work must not proceed until Gas Networks Ireland has been consulted on 1800 42 77 47.

District Regulating Installation (DRI)

Pressure Regulating Installations

There are two types: Above Ground and Under Ground

Above Ground Installations (AGI) / District Regulating Installations (DRI)

An AGI/DRI is a fenced area containing a visible arrangement of pipework and ancillary equipment and will be clearly marked with Gas Networks Ireland signage. Some DRI's can be housed in a steel unit with no fencing surround.

Under Ground Installations (UGI /DRIug)

Gas Networks Ireland also have underground pressure regulating installations which have metal or concrete cover plates. There will be no visible arrangement of pipework etc, as this will be contained within the chamber.

If an AGI/DRI or UGI/DRIug is identified near intended works, then work must not proceed until Gas Networks Ireland has been consulted on 1800 42 77 47.

Gas Networks Ireland **construction methods**

Gas Networks Ireland use three main construction methods:

'Dig' Technique

Open Cut – installing pipe using standard trenching techniques. Pipe is laid with a sand or pea gravel surround and gas marker tape is laid above the sand.

'No-Dig' Techniques

Insertion – utilising existing metal gas mains / services as a carrier for new PE pipes. Inserted PE may be a close or loose fit. The carrier pipe is broken out at connection points, i.e. at pipe joints or where a gas service pipe is connected.

Moling/Directional Drilling – installing mains/ services where a 'moling' machine drills from one location to another pulling the pipe behind it using "no-dig" technology.

Note: Where pipe has been installed using "no-dig" techniques, the gas pipe will not have sand surround or marker tape.

Gas Networks Ireland construction – **depth of cover**

Typical service arrangement

Service Connection

Purge Point

New Mains – Normally 750 mm in roads and 600 mm in footpaths. (1.1 m in open fields)

New Services – 450 mm rising to 375 mm within 1.5 m of the building line. In some cases these depths are not achievable.

Note:

Older mains and services may have reduced cover.

Services and other connections are taken from the top of the main and will therefore have a reduced depth of cover.

Alteration since original installation – roads, footpaths and grass verges may have been altered since the gas main or service was laid and reduced the depth of cover.

Purge Points and Test Caps – Mains are laid with "purge points" and/or test caps at the ends. These may also rise above the top of the main.

Gas Valve Covers –Gas valves are a key safety component part of the gas network.

Some gas mains and services have valves installed below ground with valve covers marked "GAS".

Do not cover over or remove gas valve covers.

The risk of a gas valve cover being removed or covered over is particularly high during resurfacing or reinstatement works.

Even shallow excavation techniques such as road planing can damage gas pipelines with reduced cover.

Requesting **Gas Networks Ireland maps**

Gas Networks Ireland operates a **Dial Before You Dig** service to enable those involved in excavations to obtain natural gas network maps prior to starting work.

This service operates from 9am to 5.30pm, Monday to Friday.

Or you can sign up to DBYD online at **gasnetworks.ie/dbyd** and have access to maps 24 hours, 7 days a week.

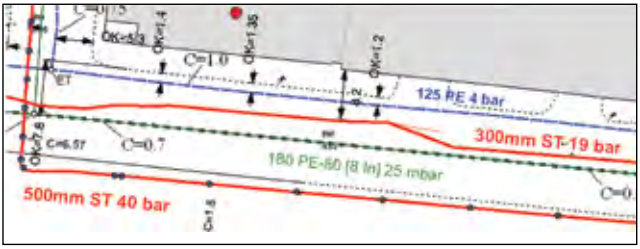
You can also email your enquiry to: **dig@gasnetworks.ie**

Maps will be sent out by post or by email where appropriate. When you contact Gas Networks Ireland to request a map, ensure you give the precise location of the intended works. You may be required to give some information regarding the nature of the planned work, i.e. start date, any high risk activity, etc.

Ensure you have allowed enough time for the maps to be obtained and to organise for the pipe location to be marked out if transmission pipelines are involved.

Note: Typical turnaround for maps is five working days when contact is made through phone or email, however using the online system will allow you instant access to up-to-date maps.

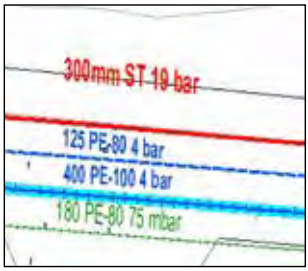
Organisers or planners of any work should ensure that the map is made available to personnel on-site.



Excerpt from a Gas Networks Ireland map.

Reading **Gas Networks Ireland maps**

Note: Natural Gas Network maps will only show mains and not services.
See page 16 for more information on service pipe locations.



The colour coding is as follows:

Red **= Transmission Main***
= 7 to 85 bar.

Blue **= Distribution Medium Pressure**
= 100 mbar to 7 bar.

Blue Buffer **=Distribution strategic main***
= 100 mbar to 7 bar.

Green **= Distribution Low Pressure**
= up to 100 mbar.

Typical AGI

Pressure regulating installations are marked as:

DRI – District Regulating Installation (Above Ground).

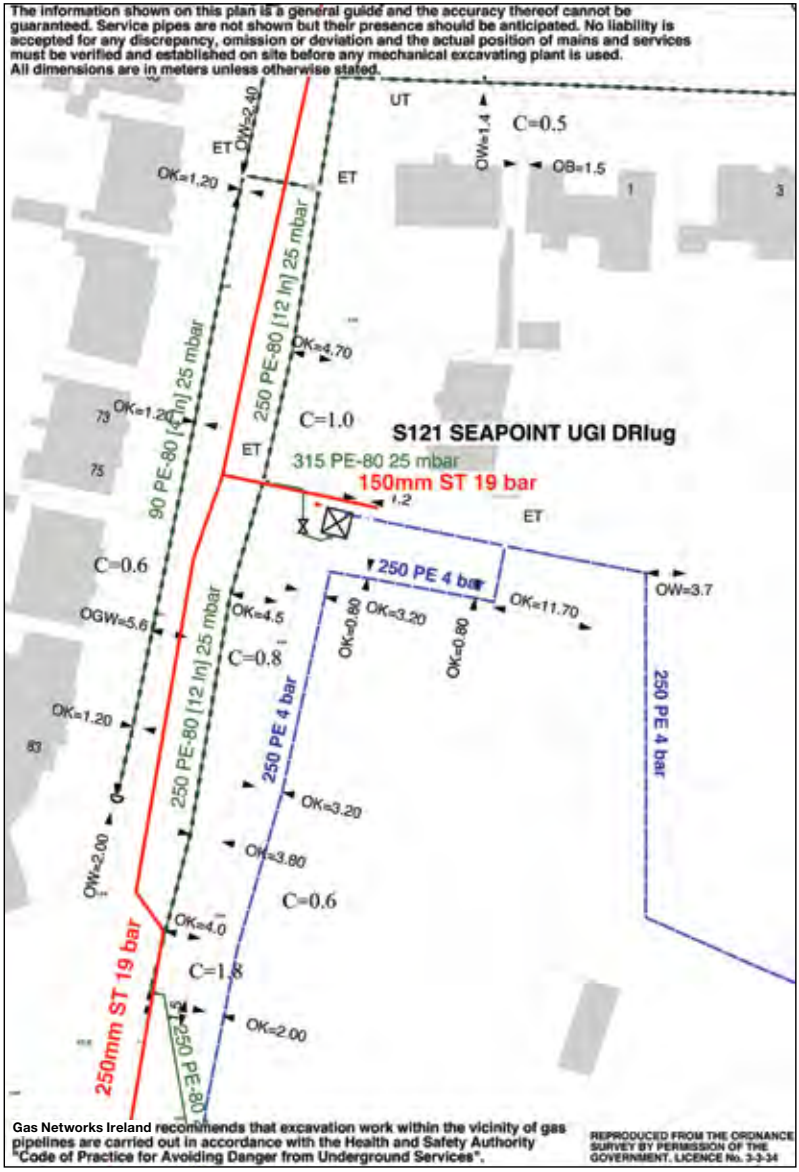
DRIug - District Regulating Installation (Under Ground).

UGI – Under Ground Installation.

AGI – Above Ground Installation.

** If you obtain a natural gas network map that shows a **red** Transmission main in the area of the proposed works or a distribution strategic main with a blue buffer, a consultation with Gas Networks Ireland **must** take place **before** starting works. Gas Networks Ireland will advise you on the safety measures required and will arrange for the location of the pipe to be marked out on site.*

Reading **Gas Networks Ireland maps**



Example of a Gas Networks Ireland map

Abbreviations

OK = Kerb, Curb
ORE = Road Edge
ORB = Rail Base
OB = Building
OW = Wall
OF = Fence
ODW = Dividing Wall
OGW = Garden Wall
RD = Road
BR = Branch
RED = Reducer
C = Cover to top of pipe
LH = Left Hand
RH= Right Hand
SWP = Sweep
CNR = Corner
S = South
N = North
E = East
W = West
No. = Number
Ctr = Centre
CL = Centre Line
Trans = Transition
DIV = Dividing
PK = Park
Conn = Connection
Opp = Opposite
Cplg = Coupling
ST = Steel
PE = Polyethylene

Gas **services**

Typical service arrangement

Service riser cover

Natural gas services are not normally identified on network maps, but their presence should be assumed. Services will normally, but not always, run at right angles from the main to the meter point.

To assist in determining the approximate position of gas services ensure you:

- Obtain a natural gas network map to identify the position of the gas main.
- Complete a site survey looking for gas meter boxes/cabinets, house entry points, service risers and gas valve covers.
- Older buildings may have no visible signs of a service, as the service may run directly into the building underground, with the meter fitted internally. In these cases a check should be made inside the building to identify the meter position.

Note: Ensure you utilise safe digging practices to locate the exact position of gas services.

Domestic meter box

Six meter cabinet

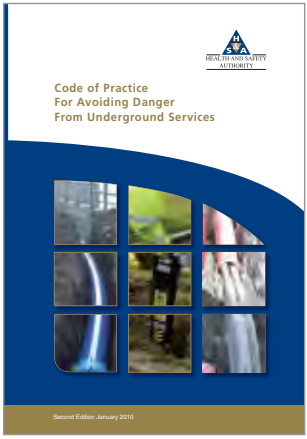
Purpose built multi-meter house (apartment complex).

Safe systems of work

Safe systems of work, as recommended by the Health and Safety Authority (HSA) should be employed on all projects.

Guidance on this can be found in the:

HSA: Code of Practice for Avoiding Danger from Underground Services.



Available from HSA website: **www.hsa.ie**

A safe system of work will include the following elements:

- Planning.
- Obtaining and using utility maps.
- Identifying pipes/services.
- Safe digging practices.
- Explosives must not be used within 30 m of any gas pipe (400 m for Transmission Pipelines), without prior consultation with Gas Networks Ireland.
- Piling, directional drilling or boring must not take place within 15 m of a gas pipe unless Gas Networks Ireland has been consulted.
- Extra care should be exercised when performing 'hot work' (such as welding) where a gaseous atmosphere could exist. If this potential exists Gas Networks Ireland must be consulted.
- Extra care should also be taken when using welding equipment, burners, torches or other heat generating equipment near pipelines (even if there is no potential for a gaseous atmosphere to exist) to ensure that the heat or sparks generated do not lead to the melting of polyethylene pipes or damage to pipeline coatings.

Contact Gas Networks Ireland for general enquiries on: 1800 464 464.

Safe systems of work

Planning

- Early contact should be made with Gas Networks Ireland to obtain a Natural Gas Network map.
  Dial Before You Dig 1800 42 77 47
  or visit **gasnetworks.ie/dbyd**
- Work involving piling, demolition, directional drilling, use of explosives or 'hot works' should be mentioned, as this may necessitate a site visit from Gas Networks Ireland personnel.
- Ensure you have allowed enough time to obtain the maps.

Maps

- Gas Networks Ireland will issue maps as outlined in this booklet. It is imperative that these maps are available for the operatives on-site for the duration of any works.
  The responsible person should ensure that operatives on-site understand the maps.

Identifying Pipes

- Steel, cast iron and ductile iron gas pipes can usually be traced using a conventional pipe/cable locating device set to "R" (Radio) mode.
- Polyethylene mains and services cannot be traced using conventional devices, so it is essential that maps are used and site surveys for meter boxes, valve covers, service risers, reinstatement scarring and other signs are completed.
- During the progress of works ensure no gas valve covers or markers are covered over.
- The position of gas mains and services should be marked out as they are located.

Note: Transmission pipelines pipelines and Distribution strategic mains must be marked out by a Gas Networks Ireland inspector.

Safe systems of work

Safe Digging Practices:

- As per the HSA Code of Practice, gas mains and services should be located by digging trial holes by hand. Mechanical excavators should not be used within 500 mm of any gas main.
  Mechanical excavators MUST NOT be used within 3 m of a Transmission pipeline.
  (Refer to Code of Practice for Working in the Vicinity of the Transmission Network - AO/PR/127)
- Never use hand held power tools directly over gas pipes unless precautions to prevent damage have been made and the pipe has been positively located.
  Use of handheld power tools is not permitted within 1.5 m of a Transmission pipeline.
  (Refer to Code of Practice for Working in the Vicinity of the Transmission Network - AO/PR/127)
- Do not leave a polyethylene gas pipe exposed.
- Provide adequate support for any gas pipe uncovered during the work.
- Report any damage, no matter how minor it may appear, to **1800 20 50 50.**
- If you have any concerns regarding safety around gas pipes contact Gas Networks Ireland for advice on **1800 464 464**.

What to do if a gas pipeline is damaged

(or if you smell gas in the area)

- Do not turn any electrical switches on or off, e.g. ignition switches.
- Do not operate any plant or equipment.
- Move people away from, and upwind of, the affected area. Restrict employee and public access to the affected area.
- Prevent smoking, vaping, the use of naked flames, the use of mobile phones and other ignition sources in the vicinity of the leak.
- Report the leak/damage immediately to: **Gas Networks Ireland 24hr Emergency Service on 1800 20 50 50.**
- Provide accurate information on your location and the nature of the incident.
- Do not attempt to repair the damage.
- Do not cover up a damaged main or service, this may lead to the gas travelling through soil, ducts, sewers, chambers or voids and potentially building up inside a premises or confined space.
- Do not turn off any gas valves in the road or footpath (you may be causing further problems by doing so).
- Assist Gas Networks Ireland emergency personnel as required.
- Remember any damage to gas pipes, even if the pipe does not appear to be leaking, must be reported to Gas Networks Ireland.

If you smell gas call

1800 20 50 50

24hr emergency service

Gas Networks Ireland contacts

The main contact numbers for Gas Networks Ireland are

24hr Emergency Service

1800 20 50 50

24 hours, 7 days a week

Dial Before You Dig

1800 42 77 47

Monday to Friday 9am – 5.30pm

or sign up to DBYD online

gasnetworks.ie/dbyd

General Enquiries

1800 464 464

Monday to Friday 8am – 8pm
Saturday 9am – 5.30pm

gasnetworks.ie

For "Dial Before You Dig" posters or stickers for your workplace call: **1800 464 464**

Other useful publications

HSA: Code of Practice for Avoiding Danger from Underground Services

HSA: Guide to Safety in Excavations

both are available free of charge from:
Health and Safety Authority on **01 614 7000**
www.hsa.ie

ESB Networks: How you can avoid hitting electrical cables when digging and drilling

available free of charge from:
ESB Networks on **1800 372 757**
esb.ie/esbnetworks

Gas Networks Ireland

The main contact details for
Gas Networks Ireland are:

General Enquiries
1800 464 464

Dial Before You Dig
1800 42 77 47

24hr Emergency Service
1800 20 50 50

networksinfo@gasnetworks.ie

gasnetworks.ie

Guideline No: HSQE/GU/016 Rev 2 Date: November 2020

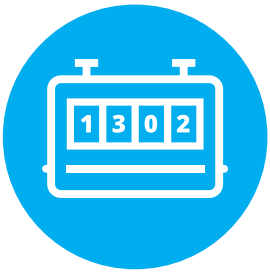
gasnetworks.ie

Gas Networks Ireland

Code of Practice for

Working in the Vicinity of the Transmission Network

Procedure No: AO/PR/127 Rev 3 Date: May 2021




Contents

1	**Safety Procedure in the Case of Damage to the Transmission Network**	**6**
2	**Definitions**	**7**
3	**Scope**	**8**
4	**Purpose**	**8**
5	**Formal Consent**	**9**
6	**Indemnity**	**9**
7	**Role of GNI Inspector**	**10**
8	**Design Consideration for Proposed Works**	**11**
8.1	Services Crossing Transmission Pipelines and Distribution Strategic Mains	11
8.2	Services Parallel to Transmission Pipelines and Distribution Strategic Mains	11
8.3	Cathodic Protection	11
8.4	Installation of Electrical Equipment	12
8.5	Slabbing and other Protective Measures	12
8.6	Changes to Depth of Cover	12
9	**General Consideration for Proposed Works**	**13**
9.1	GNI Protective Measures	13
9.2	Gaseous Atmospheres	13
9.3	Inductions	13
9.4	Method Statements	13
9.5	Identification of Transmission Pipeline and Distribution Strategic Mains Routes	13
9.6	Handheld Power Assisted Tools	13
9.7	Hot Work	14
9.8	Induced Voltage	14
9.9	Construction Traffic	14
9.10	Lifting	14
9.11	Storing Materials	15
9.12	Fires	15

10	**Preliminary Works**	**15**
	10.1 Demarcation	15
	10.2 Surface Stripping	15
11	**Excavations**	**16**
	11.1 Plant/Equipment Limitations	16
	11.2 Exposed Pipeline Protection	17
	11.3 Pipeline Support	17
12	**Backfilling**	**18**
13	**Above Ground Installations**	**18**
	13.1 PPE Requirements	18
	13.2 Above Ground Pipework With Ancillary Connections	18
	13.3 Above Ground Pipework Without Ancillary Connections	19
	13.4 Vehicles, Plant and Machinery	19
	13.5 General	19
14	**Specific Activities**	**20**
	14.1 Trenchless Techniques	20
	14.2 Piling	20
	14.3 Surface Mineral Extraction	21
	14.4 Land Filling	21
	14.5 Demolition	21
	14.6 Blasting	22
	14.7 Pressure Testing	22
	14.8 Seismic Surveys	22
	14.9 Wind Farm Development	22
	14.10 Solar Farm and Battery Storage Facilities	22
15	**Referenced External Documents**	**23**
16	**Referenced Gas Networks Ireland Documents**	**23**
17	**Safety Information**	**23**

When carrying out work in the vicinity of the tranmsission network follow the following process

IMPORTANT:

Flowchart should be used in conjunction with this Code of Practice and not in isolation. If at any time during the works the transmission network is damaged, even slightly, then observe the precautions in Section 1 of this document.

DESIGN & PLANNING
Consider the requirements of this document and the impact on proposed works
(Sections 8 & 9)

↓

CONTACT GAS NETWORKS IRELAND
Contact Gas Networks Ireland to obtain formal consent
(Section 5)

↓

NOTICE TO COMMENCE
Having received formal consent, a minimum of 5 working days notice prior to commencement of the work is required

↓

REQUEST MARKING OUT OF TRANSMISSION PIPELINE ROUTE
A minimum of 3 working days notice is required by GNI to mark out the transmission pipeline route

↓

OBSERVE RESTRICTIONS
Observe GNI restrictions on the allowed proximity of mechanical excavators and other power tools and the measures to protect the transmission pipeline and associated installations during any works *(Sections 10, 11, 12 & 13)*
NOTE: GNI may wish to oversee the work. Such instances will be identified in the formal consent

↓

BACKFILLING
Contact GNI prior to any backfilling over, alongside or under the transmission pipeline and obtain GNI's agreement to proceed. GNI require 2 working days notice prior to backfilling
(Section 12)

SPECIFIC ACTIVITIES
If work involves any of the following activities:
Trenchless Techniques, Piling,
Surface Mineral Extraction, Land Filling, Demolition,
Blasting, Pressure Testing, Seismic Surveys, Wind Farms
Comply with the requirements in Section 14

If in doubt contact Gas Networks Ireland

Foreword

Compliance with this Code of Practice does NOT confer immunity from prosecution for breach of statutory or other legal obligations.

This code of practice does **not** cover emergency work or normal agricultural work (as defined below), but it is recommended that in such cases the requirements of the code should be observed as far as possible.

Any damage to a transmission pipeline or its coating can affect its integrity and can result in failure of the transmission pipeline with potentially serious hazardous consequences for individuals located in the vicinity of the transmission pipeline. It is therefore essential that the procedures outlined in this document are complied with when working near the transmission network.

Failure to apply for consent and/or to comply fully with this Code of Practice to the satisfaction of GNI may result in the commencement of legal proceedings by Gas Networks Ireland to stop such works.

Activities associated with working in the vicinity of the transmission network may impact on the safety of the general public, site workers, GNI staff and contractors, and may affect the local environment. All Third Parties working close to the transmission network shall carry out suitable and adequate risk assessments prior to the commencement of work to ensure that all such issues are properly considered and risks mitigated.

Contractors and other users external to GNI should direct their requests for further copies of GNI engineering documents to Gas Networks Ireland.

1 Safety Procedure in the Case of Damage to the Transmission Network

If the GNI transmission network is damaged or leaking, the following precautionary measures shall be taken immediately:

- In the event of gas leakage do **not** switch any machinery on or off in the vicinity of the leak.
- Advise GNI or its representative if there are any safety features on the machine such as engine idling automatic shutoff facilities.
- Prohibit smoking, the use of naked flames, the use of electrical switches, the use of mobile phones and the use of all other ignition sources in the vicinity of the leak/damage.
- Evacuate all personnel away from and upwind of the affected area.
- Ensure that no one approaches the affected area without the consent of Gas Networks Ireland.
- Once clear of the area, report all damage or leakage, however minor it may appear, to the Gas Networks Ireland **24hr Emergency Service on 1800 205050**
- Do **not** attempt to repair the damage or stop the leak.

Note: Any damage to the coating of a GNI transmission pipeline, no matter how apparently insignificant, shall be brought to the attention of GNI in order to carry out repairs. Minor damage to pipe coating and/or ancillary connections brought to the attention of GNI will be repaired *free of charge*.

If you smell gas call

1800 20 50 50

24hr emergency service

2 Definitions

For the purpose of this Code of Practice the following definitions shall apply:

GNI: Gas Networks Ireland.

GNI Inspector: The person appointed from time to time by GNI, to act as the GNI Representative on site, to ensure compliance with this Code of Practice.

Third Party: The promoter of New Works, the person or persons, firm, company or authority for whom new services or other works are being provided, including their servants, agents and contractors.

Wayleave: A strip of land, upon and over which GNI has, under the terms of Gas Act (1976 as amended), acquired the rights to lay, construct, inspect, maintain, protect, use, replace, remove or render unusable a main or pipe for the transmission or storage of gas or other materials connected with the exercise and performance of the functions of GNI and all necessary apparatus ancillary thereto. The wayleave can extend up to 9 metres either side of the transmission pipeline.

A GNI wayleave is a legal burden on the title of the property within which it exists and is noted as such on the relevant Land Registry Folio.

Normal Agricultural Works: For the purpose of this Code of Practice, 'Normal Agriculture Works' are such works which do **not** involve the use of

a) Excavators (tracked or wheeled) irrespective of the proposed excavation depth, or

b) Other mechanical soil penetrating machines such as fence post augers.

Installation: GNI transmission installations are primarily above ground (AGI) with a number below ground (UGI) comprising some or all of the following: Main stream pipework, control pipework, telemetry, instrumentation, boiler houses, analyser kiosks, generators and services.

Hot Works: Hot works is any tool, equipment and/or activity, which produces sparks, fire or has the potential to cause fires or explosions including, but not limited to, electric/battery powered tools, welding, cutting, brazing, soldering, grinding, etc.

Distribution Strategic Mains: Due to an increased gas safety risk the following Dx mains shall be designated as strategic:

- Single feeder mains to with in excess of 5000 customers
- PE400 mains.

3 Scope

This Code of Practice sets out the requirements and considerations for the design, construction and maintenance of services and/or structures and other works in the vicinity of existing Gas Networks Ireland (GNI) Gas transmission pipelines and associated Installations located in both Wayleaves and public roadways.

4 Purpose

The purpose of this Code of Practice is to:

- Set out considerations for the design, planning and execution of works.
- Advise on the GNI procedures associated with works.
- Identify the measures to be taken to ensure the integrity of the gas network, and
- Assist in ensuring the safety of persons involved in the works.

5 Formal Consent

Work shall not be undertaken within a wayleave, installation, or within 3 meters either side of a transmission pipeline or distribution strategic mains in a public roadway without the prior Formal Consent of Gas Networks Ireland.

- GNI shall be consulted if work is to be undertaken within 10 meters either side of a transmission pipeline or distribution strategic mains in a public roadway.
- Formal Consent may be issued by GNI following receipt of the following items.
- Written agreement to implement the terms and conditions of this Code of Practice and any site specific requirements as advised by GNI.
- A method statement detailing the work which will be undertaken and the means of ensuring the integrity of the gas network.
- An indemnity as outlined in Section 5.
- Evidence of insurance cover to the level required by GNI.
- Formal Consent may, in its simplest form, consist of a valid GNI Permit or a more comprehensive list of conditions.
- Where Formal Consent has been issued, the Third Party shall notify GNI, 5 working days in advance of commencing the works.

6 Indemnity

It is an essential part of the granting of Formal Consent in the terms of this document that the Third Party shall indemnify GNI, its servants, agents and contractors against all loss, damage, expense, claims and actions incurred by or brought against GNI, its servants, agents and contractors in consequence of the provision of the new service and any works and activities associated therewith, or ancillary thereto.

7 Role of GNI Inspector

The primary role of the GNI inspector is to ensure the integrity of the gas network.

The GNI Inspector has the right to stop any work where in his/her opinion, the actions of the Third Party may adversely affect the integrity of the gas network.

The GNI Inspector shall inform the person in charge on site of his/her reason for stopping work and afford them the opportunity to address the issue to the satisfaction of the GNI Inspector.

A 'Corrective Action' shall be issued and recorded against the Third Party if the reason for stopping work is for non-conformance to any, some or all of the following:

- This Document,
- Conditions of the Formal Consent,
- Conditions of GNI Permits.

The GNI Inspector reserves the right to inspect any plant or equipment and/or any or all documentation/certification associated with plant, equipment and/or personnel associated with the work and not permit the use of any such plant, equipment and/or personnel in the works if found to be non-compliant.

8 Design Consideration for Proposed Works

8.1 Services Crossing Transmission Pipelines and Distribution Strategic Mains

Where a new service is to cross over the transmission pipeline or distribution strategic mains a clearance distance of 0.6 meters between the crown of the pipeline and underside of the service shall be maintained. If this cannot be achieved the service shall cross under the transmission pipeline with a minimum clearance distance of 0.6 meters.

8.2 Services Parallel to Transmission Pipelines and Distribution Strategic Mains

Pipelines within a wayleave

No new service shall be laid parallel to the transmission pipeline within a wayleave.

Pipelines within a roadway

- Any new service running parallel to a transmission pipeline in a roadway may, in consultation with GNI, be laid with a minimum horizontal clearance of 1m (5m for High Tension Cables) to the side of the pipeline and may not be above or below a transmission pipeline within that distance.
- Under certain circumstances consideration may be given to the relaxation of the above conditions on a case by case basis following prior consultation with GNI Asset Integrity, where the methods and safeguards to be employed have been considered and specified under a Safe System of Work Plan and where the work is supervised by GNI on site.

8.3 Cathodic Protection

Cathodic Protection is applied to GNI's transmission network and is a method of protecting pipelines from corrosion by maintaining an electrical potential difference between the pipeline and anodes placed at strategic points along the pipeline.

Where a new service is to be laid and is to be similarly protected, GNI will need to carry out interaction tests to determine whether its own system is adversely affected. The cost of any mutually agreed remedial action shall be borne by the Third Party.

Should any cathodic protection posts or associated apparatus need moving to facilitate construction operations, reasonable notice shall be given to GNI.

8 Design Consideration for Proposed Works *(continued)*

8.4 Installation of Electrical Equipment

Where electrical equipment is being installed close to the transmission network, the effects of a rise of earth potential under fault conditions shall be considered by the third party and a risk assessment shall be submitted to GNI for its approval as part of the Formal Consent process.

8.5 Slabbing and Other Protective Measures

Protective measures including the installation of concretes slab protection shall **not** be installed over or near to the transmission pipeline without the prior written consent of GNI.

Where consent has been given, a GNI Inspector must be present for the entire installation.

The material, composition, dimensions and method of installation of the proposed protective measure shall be agreed with GNI and shall form part of the submission for Formal Consent.

8.6 Changes to Depth of Cover

Any works, which will result in an increase or decrease in the cover of an existing Transmission Pipeline or distribution strategic mains on completion of those works, shall be agreed with GNI in advance.

9 General Consideration for Proposed Works

9.1 GNI Protective Measures

Where protective measures are required by GNI, work shall **not** commence until such time as the GNI Inspector is satisfied that those measures meet the requirements of GNI.

9.2 Gaseous Atmospheres

Third Parties shall be mindful of potentially gaseous atmospheres and the generation of sparks, particularly indoors or when a change in wind conditions/direction occurs.

9.3 Inductions

Personnel involved in the works may be required to attend a GNI induction. Such a requirement shall, if required, be identified in the Formal Consent.

9.4 Method Statements

Method statements, where required, shall include risk assessments and be submitted to GNI for review no fewer than 10 working days in advance of commencing works associated with that method statement.

9.5 Identification of Transmission Pipeline and Strategic Mains Routes

Before any work is carried out in the vicinity of existing transmission pipelines or distribution strategic mains, GNI shall, with 3 working days notice, mark/peg out the transmission pipeline route.

The Third Party shall confirm the position of the pipeline before work commences.

A GNI Inspector shall be in attendance for the duration of the excavation of any trial holes necessary to confirm the position of the pipe.

9.6 Handheld Power Assisted Tools

Where the use of handheld power assisted tools is required in the vicinity of the live network, alternatives to electrically/battery powered tools should, in the first instance, be considered. These tools, as with others, by virtue of their makeup generate a spark when activated/run and as such are in themselves subject to 'Hot Work' permits and associated procedures.

9 General Consideration for Proposed Works *(continued)*

9.7 Hot Work

Hot works shall **not** take place within an installation, wayleave or within 3 metres either side of a transmission pipeline in a public roadway without the prior written consent of Gas Networks Ireland.

9.8 Induced Voltage

Where high voltage power lines run parallel to a transmission pipeline, there is potential to induce high voltages on the pipeline. To prevent injury, people working on exposed pipe in this area must have suitable protection against electric shock. GNI can provide advice in relation to suitable protection measures and a GNI Inspector must be present when any such work is being performed.

9.9 Construction Traffic

Construction traffic shall not be sited over or moved along or across a transmission pipeline without the prior written approval of GNI.

Construction traffic shall only cross a transmission pipeline at previously agreed and clearly marked crossing lanes.

All crossing lanes shall be fenced on both sides over a width to be specified by GNI. These fences shall be returned along the wayleave on both sides for a distance of 6m away from the crossing.

The crossing lane shall be protected by laying approved sleeper rafts or by protection made from other GNI approved materials, unless otherwise agreed in writing with GNI.

Construction traffic shall be operated at “dead slow” when using crossing lanes.

Suitable warning notices, drawing attention to the danger of not using the crossing, shall be erected and maintained in a clearly legible condition.

9.10 Lifting

Any plant and/or equipment involved in lifting shall be certified fit for purpose.

Slewing across an exposed pipe shall not be permitted. However, under certain circumstances consideration may be given to the relaxation of this rule on a case by case basis provided that the lifting methods and safeguards to be employed have been formally **risk assessed and the work is approved and**

9 General Considerations for Proposed Works *(continued)*

supervised by GNI or its representative on site. Reference can be made to the **GNI Lifting Procedure AO/PR/174.**

9.11 Storing Materials

Materials, including those excavated or stripped shall not be stored within a wayleave or Installation without the prior written approval of GNI.

Materials, including those excavated or stripped shall not be stored over a transmission pipeline.

9.12 Fires

Fires shall **not** be permitted within a wayleave or in the vicinity of an installation.

10 Preliminary Works

10.1 Demarcation

Where work is being carried out parallel to a transmission pipeline within or immediately adjoining a wayleave, a demarcation line shall be erected, to the satisfaction of GNI, so as to clearly delineate the boundary between the works site and the wayleave/pipeline.

10.2 Surface Stripping

Cultivated/Unmade Ground

- Where trial holes have established that sufficient depth of cover exists, light tracked vehicles may strip top soil to a depth of 0.25 metres using a toothless bucket.

Metalled Surfaces

- Bituminous or concrete surface layers may be stripped to a depth of 0.3 metres by mechanical means.
- Where the bituminous or concrete layer extends below 0.3m, only the use of handheld power assisted tools is permitted, and only in the presence of GNI.

11 Excavations

11.1 Plant/Equipment Limitations

The following limitations shall be observed when working in the vicinity of a transmission pipeline or distribution strategic mains.

- Hand dig within 1.5 meters of the pipeline.
- Handheld power assisted tools permitted beyond 1.5 meters of the pipeline.
- Mechanical excavators permitted beyond 3 meters of the pipeline.
- The use of 'chain trenchers' is not permitted within 3 meters of the pipeline.
- A mechanical excavator may **not** reach across a pipeline while working, i.e. cab at one side of pipeline with bucket (rock breaker, etc.) on opposite side of pipeline.
- A mechanical excavator shall **not** 'pull' towards the pipeline.

Under certain circumstances consideration may be given to the relaxation of the above conditions on a case by case basis provided that the excavation methods and safeguards to be employed have been considered and specified under a Safe System of Work Plan and the work is approved and supervised by GNI on site.

Factors that should be considered in this determination include, but are not limited to:

- Pipeline size, pressure, wall thickness and location.
- Excavator size (weight)
- Operator competency and experience
- Type and width of bucket/attachment
- Type and width of bucket/attachment (e.g. toothless)
- Ground conditions (e.g. rock, soft ground etc.)
- Weather conditions
- Visibility, particularly of the machine operator
- Machine orientation (e.g. working along the axis of the pipe)
- Supervision arrangements

Note: Mechanical excavators must never be permitted to work closer than 0.5 meters from the pipeline.

11.2 Exposed Pipeline Protection

Once a pipeline has been exposed, it shall be immediately protected with timber or nylon batons at least 50mm wide and 25mm thick secured to each other with webbing at a distance of no greater than 10mm over the entire exposed area of the pipeline. The method of securing the webbing to batons should be such that any impact would not cause damage to the pipeline coating or other methods approved by GNI.

Where heavy gauge trench sheets are used in addition to batons to protect a pipeline, care should be taken while placing the trench sheets that buried stones, debris, etc. are not dislodged against the pipeline.

Depending on the type of work being carried out, ground conditions, etc., GNI may require additional measures.

11.3 Pipeline Support

Where it is necessary to excavate below a transmission pipeline, the pipeline shall, during stages of the operation, and for the duration of the works, be supported to the satisfaction of GNI, by means of ratchet straps secured to a steel beam (or GNI approved equivalent) across the pit/trench. On completion, permanent supports shall, if necessary, be constructed to avoid future settlement.

12 Backfilling

The Third Party shall give GNI at least 2 working days' notice of their intention to backfill below, above or adjacent to an existing transmission pipeline.

The Third Party shall afford GNI the opportunity and facility to inspect the coating on the pipeline and/or ancillary connections to the pipeline prior to backfilling.

A GNI Inspector shall be in attendance to monitor backfill around the pipeline during the whole of the backfilling operations.

Note: Any damage to the coating of a GNI transmission pipeline, no matter how apparently insignificant, shall be brought to the attention of GNI in order to carry out repairs. Minor damage to pipe coating and/or ancillary connections brought to the attention of GNI will be repaired *free of charge*.

13 Above Ground Installations

13.1 PPE Requirements

GNIs minimum PPE requirements for working in a live installation are hard hat, safety glasses, safety shoes/boots, gloves and Hi-Viz Jacket/vest. All clothing shall be anti-static and flame retardant. Contact GNI Safety Department for information on compliance of PPE.

13.2 Above Ground Pipework With Ancillary Connections

Where construction plant and machinery are used in an AGI, all above ground pipework with ancillary control pipework, telemetry and/or instrumentation adjacent to the work, shall be protected on all sides by timber/metal hoarding, secured in place, a minimum of 2 meters from any extremity and extending vertically to the uppermost point of any pipe/equipment. A suitable point of access shall be provided in the hoarding. Where this 2 meter separation distance cannot be physically achieved due to the layout and size an installation, the works may be allowed to proceed but only where suitable precautions have been agreed and implemented to protect all relevant pipework and personnel.

The risks and associated mitigating measures shall be identified on the relevant risk assessment and method statement for the proposed works. The relevant details supporting any relaxation of this code of practice shall be recorded on the relevant general works permit or excavation permit by the permit issuer.

Heras type fencing may be used where a distance of 6m from any extremity can be achieved.

13.3 Above Ground Pipework Without Ancillary Connections

Where construction plant and machinery are used in an AGI, all above ground pipework which does **not** have ancillary connections adjacent to the work, shall be protected on all sides by heras type fencing a minimum of 2 meters from any extremity. A suitable point of access shall be provided in the fencing. Where this 2 meter separation distance cannot be physically achieved due to the layout and size an installation, the works may be allowed to proceed but only where suitable precautions have been agreed and implemented to protect all relevant pipework and personnel. The risks and associated mitigating measures shall be identified on the relevant risk assessment and method statement for the proposed works. The relevant details supporting any relaxation of this code of practice shall be recorded on the relevant general works permit or excavation permit by the permit issuer.

13.4 Vehicles, Plant and Machinery

Only diesel powered vehicles are permitted within the confines of an AGI. Petrol, Electric or compressed natural gas CNG vehicles are not permitted.

All plant and machinery used within an AGI shall be diesel powered.

Petrol or electrically powered equipment may be used under hot works permit system if a diesel alternative is not available. Any hot works permit for petrol powered equipment are issued at the discretion of GNI and to be supervised by GNI or its representatives.

13.5 General

This code of practice shall apply to all work carried out within an AGI.

14 Specific Activities

This section details the precautions that need to be taken when carrying out certain prescribed activities in the vicinity of the transmission network. Consult GNI if you are intending to undertake one of the listed prescribed activities and/or you require further advice on whether the work that you are intending to undertake has the potential to affect the transmission network.

The table below shows, for some specific activities, the prescribed distances within which GNI shall be consulted.

Activity	Distance within which GNI shall be consulted
Any Excavation Actions	10 m
Piling	15 m
Surface Mineral Extraction	100 m
Land filling	100 m
Demolition	150 m
Blasting	400 m
Wind Farm	2 times the turbine mast height from the nearest edge of a transmission pipeline
Trenchless Techniques	10 m
Pressure Testing	8 m

14.1 Trenchless Techniques

Trenchless techniques must **not** take place within 10m of the GNI Transmission Network without prior consultation with GNI.

14.2 Piling

Piling shall **not** be permitted within 15 metres of the transmission network without an assessment of the vibration levels at the pipeline. Contact GNI with regard to peak particle velocity criteria and other precautionary measures.

Where ground conditions are of submerged granular deposits of silt and sand, an assessment of the effect of vibration on settlement and liquefaction at the transmission pipeline shall be made.

14.3 Surface Mineral Extraction

An assessment shall be carried out on the effect of surface mineral extraction activity within 100 meters of the transmission network.

Where the mineral extraction extends up to the transmission pipeline wayleave, a stable slope angle and stand-off distance between the transmission pipeline and slope crest shall be determined by GNI. The wayleave strip should be clearly marked by a suitable permanent boundary such as a post and wire fence, and where appropriate, slope indicator markers shall be erected to facilitate the verification of the recommended slope angle as the slope is formed, by the Third Party. The wayleave and slope needs to be inspected periodically to identify any signs of developing instability. This may include any change of slope profile including bulging, the development of tension cracks on the slope or wayleave, or any changes in drainage around the slope. The results of each inspection should be recorded.

Where surface mineral extraction activities are planned within 100 meters of the transmission pipeline but do not extend up to the pipeline wayleave boundary, an assessment, by GNI may be made on whether the planned activity could promote instability in the vicinity of the pipeline. This may occur where the transmission pipeline is routed across a natural slope or the excavation is deep. A significant cause of this problem is where the groundwater profile is affected by changes in drainage or the development of lagoons.

Where the extraction technique involves explosives the provisions of section 14.6 apply.

14.4 Land Filling

The creation of slopes outside of the wayleave may promote instability within the vicinity of the transmission pipeline. An assessment should therefore be carried out on the effect of any land filling activity within 100 meters of a transmission pipeline. The assessment is particularly important if land filling operations are taking place on a slope in which the pipeline is routed.

14.5 Demolition

Demolition shall **not** be permitted within 150 meters of a transmission network without an assessment of the vibration levels at the pipeline. Contact GNI with regard to peak particle velocity criteria and other precautionary measures.

Where ground conditions are submerged granular deposits of silt or sand, an assessment of the effect of vibration on settlement and liquefaction at the transmission pipeline shall be made.

14 Specific Activities *(continued)*

14.6 Blasting

Blasting shall **not** be permitted within 400 meters of a transmission network without consulting GNI and making an assessment of the vibration levels at the pipeline. Contact GNI on **1800 42 77 47** with regard to peak particle velocity criteria and other precautionary measures.

Where ground conditions are of submerged granular deposits of silt or sand, an assessment of the effect of vibration on settlement and liquefaction at the transmission pipeline shall be made.

14.7 Pressure Testing

Hydraulic or pneumatic testing shall **not** be permitted within 8m of the transmission network unless precautions have been taken against the effects of a possible burst. These precautions may include the use of pre installation tested pipe, sleeving, barriers, etc., as agreed with GNI.

14.8 Seismic Surveys

GNI shall be advised of any seismic surveying work in the vicinity of a transmission pipeline. Contact GNI with regard to peak particle velocity criteria and other precautionary measures.

14.9 Wind Farm Development

GNI should be consulted if wind turbines are to be sited any closer than 2 times the proposed height of the turbine mast away from the nearest edge of a transmission pipeline or associated installation.

14.10 Solar Farm and Battery Storage Facilities

GNI shall be consulted if Solar Farm or Battery Storage Facilities are to be sited in the vicinity of a transmission pipeline or associated installation.

15 Referenced External Documents

IS328: Code of Practice for Gas Transmission Pipelines & Pipeline Installations.

HSA Code of Practice for Avoiding Danger from Underground Services

HSA Guide to Safety in Excavations

Both are available free of charge from:
Health and Safety Authority on **1890 289 389/ www.hsa.ie**

16 Referenced Gas Networks Ireland Documents

Categorizing & Processing of Dial Before You Dig Queries	**AM/WI/072**
Guide to Dealing with DBYD Online Queries	**HSQE/GU/033**
Dial Before You Dig Process (Map)	**HSQE/BP/042**
Safety Advice for Working in Vicinity of Natural Gas Pipelines	**HSQE/GU/016**
GNI Lifting Procedure	**AO/PR/174**

17 Safety Information

The online version of this code of practice is available at
https://www.gasnetworks.ie/home/safety/dial-before-you-dig/

Before starting any excavation work, it is essential to check for the location of gas pipes by calling **1800 42 77 47** or emailing **dig@gasnetworks.ie**

In an Emergency dial **1800 20 50 50**

If you smell gas call
1800 20 50 50
24hr emergency service

Gas Networks Ireland

The main contact details for Gas Networks Ireland are:

General Enquiries
1800 464 464

Dial Before You Dig
1800 42 77 47

24hr Emergency Service
1800 20 50 50

networksinfo@gasnetworks.ie

@GasNetIRL

gasnetworks.ie

Eoin O'Connor

From: GSI Planning <GSIPlanning@GSI.ie>
Sent: Monday 11 April 2022 10:09
To: Thorntons Cappogue
Cc: Clare Glanville; GSI Planning
Subject: RE: EIS 22/103 - Proposed Development of a Material Recovery Facility (MRF), Cappogue, Co Dublin
Attachments: 22_103 Proposed Development of a MRF Cappogue Co Dublin.pdf; GSI datasets relevant to EIA & SEA_20210421.pdf

Dear Sir/Madam,

With reference to your letter received on the 24 March 2022, concerning the Proposed Development of a Material Recovery Facility (MRF), Cappogue, Co. Dublin, please find attached response and dataset sheet from Geological Survey Ireland.
If you have any further queries or if we can be of further assistance, please do not hesitate to contact me Trish Smullen, or my colleague Clare Glanville at GSIPlanning@gsi.ie.

Yours sincerely,

Trish Smullen
Geological Survey Ireland

From: GSI Planning
Sent: 28 March 2022 08:56
To: Clare Glanville; Sophie O'Connor; Brian McConnell; Monica Lee; Taly Hunter Williams; Sean Cullen; Charise McKeon; Jim Hodgson; Eoin McGrath; Trish Smullen
Cc: GSI Planning
Subject: EIS 22/103 - Proposed Development of a Material Recovery Facility (MRF), Cappogue, Co Dublin

EIS 22/103

Proposed Development of a Material Recovery Facility (MRF), Cappogue, Co Dublin. Request for observations by Fehily Timoney by 18 April 2022. Letter with site plan is enclosed.

Regards,

John

From: Clare Glanville
Sent: 25 March 2022 09:06
To: GSI Planning
Subject: FW: P21-150 - SID Application, EIAR and IE Licence Application for Thorntons

John / Erin, please can you log this one and circulate.
Clare

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Geological Survey Ireland's Publicly Available Datasets Relevant to Planning, EIA and SEA processes

following European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018
(S.I. No. 296 of 2018)

Geological Survey Ireland Programme	Dataset	Relevant EIA Topic	Coverage	Description / Notes / Limitations	Link to Geological Survey Ireland map viewer
Geohazards	Landslide: National landslide database and landslide susceptibility map	Land & Soil/Climate/Landscape	National	Associated guidance documentation relating to the National Landslide Susceptibility Map is also available.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b68cf1e4a9044a5981f950e9b9c5625c
Geohazards	Groundwater Flooding (Historic)	Water	Regional	Provide information of historic flooding, both surface water and groundwater. [A lack of flooding presented in any specific location of the map only indicates that a flood has not been detected. It does not indicate that a flood cannot occur in that location at present or in the future]	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b808652f9c735b1cc
Geohazards	Groundwater Flooding (Predictive)	Water	Regional	Provides information on the probability of future karst groundwater flooding (where available). [The maps do not, and are not intended to, constitute advice. Professional or specialist advice should be sought before taking, or refraining from, any action on the basis of the flood maps]	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b808652f9c735b1cc
Geohazards	Radon Map	Land & Soils/Air	National		http://www.epa.ie/radiation/radonmap/
Geoheritage	County Geological Sites as adopted by National Heritage Plan and listed in County Development Pla	Land & Soils/Landscape	Regional	All geological heritage sites identified by Geological Survey Ireland are categorised as CGS pending any further NHA designation by NPWS.	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228
Geological Mapping	Bedrock geology:	Land & Soils	National	1:100,000 scale and associated memoirs.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Bedrock geology:	Land & Soils	Regional	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Quaternary geology: Sediments	Land & Soils	National	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Quaternary geology: Geomorphology	Land & Soils	National	1:50,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0
Geological Mapping	Physiographic units:	Land & Soils	National	Broad-scale physical landscape units mapped at 1:100,000 scale in order to be represented as a cartographic digital map at 1:250,000 scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=afa76a420fc54877843aca1bc075c62b
Geological Mapping	GeoUrban: Spatial geological data for the greater Dublin and Cork areas	Land & Soils	Regional	includes 3D models	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=9768f4818b79416093b6b2212a850ce6&scale=0
Geological Mapping	Geotechnical database	Land & Soils	National	Digitised geotechnical and Site Investigation Reports and boreholes which can be accessed through online downloads	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=a2718be1873d47a585a3f0415b4a724c
Goldmine	Historical data sets including geological memoirs and 6" to 1 mile geological mapping records	land & Soils/Water	National	available online	https://secure.dccae.gov.ie/goldmine/index.html
Groundwater & Geothermal	Groundwater resources (aquifers)	Water	National	Data limited to 1:100,000 scale; sites should be investigated at local scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater recharge.	Water	National	Data limited to 1:40,000 scale; sites should be investigated at local scale; long term annual average recharge	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater vulnerability.	Water	National	Data limited to 1:40,000 scale; sites should be investigated at local scale	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Group scheme and public supply source protection areas.	Water	National	Not all PWS / GWS have SPZ / ZOC. Check with IW / coco / NFGWS for private supplies.	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater Protection Schemes	Water	National	Data is limited to scale of 1:40,000. Data does not include all of the source protections areas	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Catchment and WFD management units.	Water	National		https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	karst specific data layers	water	National	For areas underlain by limestone, includes karst features, tracer test database; turlough water levels (gwlevel.ie).	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Wells and Springs	Water	National	Not comprehensive, there may be unrecorded wells and springs	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef
Groundwater & Geothermal	Groundwater body Descriptions	Water	National	Not exhaustive; only those in designated SACs; could be other GWDTEs; for more information contact NPWS / EPA / site investigations	https://www.gsi.ie/en-ie/programmes-and-projects/groundwater-and-geothermal-unit/activities/understanding-ireland-groundwater/Pages/Groundwater-bodies.aspx
Groundwater & Geothermal	Geothermal Suitability maps	land & Soils/Water	National	Also, Roadmap for a Policy and Regulatory Framework for Geothermal Energy, November 2020	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=9ee46bee08de41278b90a991d60c0b9e
Marine & Coastal Unit	INFOMAR - Ireland's national marine mapping programme; providing key baseline data for Ireland's	Water	National		https://secure.dccae.gov.ie/GSI/INFOMAR_VIEWER/
Marine & Coastal Unit	CHERISH - Coastal change project (Climate, Heritage and Environments of Reefs, Islands, and Headla	Water	Regional		http://www.cherishproject.eu/en/
Marine & Coastal Unit	Coastal Vulnerability Index (CVI).	water /Land & Soils	Regional	Currently the project is being carried out on the east coast and will be rolled out nationally	https://www.gsi.ie/en-ie/programmes-and-projects/marine-and-coastal-unit/projects/Pages/Coastal-Vulnerability-Index.aspx
Minerals	Aggregate potential	Land & Soils/Material Assets	National	Consideration of mineral resources and potential resources as a material asset which should be explicitly recognised within the environmental assessment process	https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=ee8c4c285a49413aa6f1344416dc9956
Minerals	Active quarries	Land & Soils	National		https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=ee8c4c285a49413aa6f1344416dc9956
Minerals	Historic mines	Land & Soils/Cultural Heritage	National	Inventory and Risk Classification 2009. Environmental Protection Agency, Economic Minerals Division and Geological Survey Ireland (DECC).	https://gis.epa.ie/EPAMaps/default?easting=?&northing=?&lid=EPA:LEMA_Facilties_Extractive_Facilities https://www.epa.ie/enforcement/mines/
Tellus	Geochemical data: multi-element data for shallow soil, stream sediment and stream water	Land & Soils	Regional	A national mapping programme	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733498b99642707ff72f754
Tellus	Airborne geophysical data including radiometrics, electromagnetics and magnetics	Land & Soils	Regional	A national mapping programme	https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733498b99642707ff72f754
Tellus	urban geochemistry mapping (Dublin SURGE project),	Land & Soils	Regional		https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=6304e122b733498b99642707ff72f754

Notes:

1. The maps and data listed above are available on the Geological Survey Ireland map viewer https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx

2. Please read all disclaimers carefully when using Geological Survey Ireland data

3. Geological Survey Ireland and Irish Concrete Federation published guidelines for the treatment of geological heritage in the extractive industry in 2008.

An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Richard Deeney
Fehily Timoney and Company
J5 Plaza
North City Business Park,
Dublin 11, D11 PXT0

11 April 2022

Re: Proposed Development of a Material Recovery Facility (MRF), Cappogue, Co. Dublin

Your Ref: 21-150/Lett/EOC/MG
Our Ref: 22/103

Dear Richard,

Geological Survey Ireland is the national earth science agency and is a division of the Department of the Environment, Climate and Communications. We provide independent geological information and advice and gather various data for that purpose. Please see our website for data availability. We recommend using these various data sets, when conducting the EIAR, SEA, planning and scoping processes. Use of our data or maps should be attributed correctly to 'Geological Survey Ireland'.

With reference to your letter received on the 24 March 2022, concerning the Proposed Development of a Material Recovery Facility (MRF), Cappogue, Co. Dublin, Geological Survey Ireland would encourage use of and reference to our datasets. Please find attached a list of our publicly available datasets that may be useful to the environmental assessment and planning process. We recommend that you review this list and refer to any datasets you consider relevant to your assessment. The remainder of this letter and following sections provide more detail on some of these datasets.

Geoheritage

Geological Survey Ireland is in partnership with the National Parks and Wildlife Service (NPWS, Department of Housing, Local Government and Heritage), to identify and select important geological and geomorphological sites throughout the country for designation as geological NHAs (Natural Heritage Areas). This is addressed by the Geoheritage Programme of Geological Survey Ireland, under 16 different geological themes, in which the minimum number of scientifically significant sites that best represent the theme are rigorously selected by a panel of theme experts.

County Geological Sites (CGSs), as adopted under the National Heritage Plan, include additional sites that may also be of national importance, but which were not selected as the very best examples for NHA designation. All geological heritage sites identified by Geological Survey Ireland are categorised as CGS pending any further NHA designation by NPWS. CGSs are now routinely included in County Development Plans and in the GIS of planning departments, to ensure the recognition and appropriate protection of geological heritage within the planning system. CGSs can be viewed online under the Geological Heritage tab on the online Map Viewer.

The County Geological Heritage Audit for Fingal was completed out in 2007. The full report details can be found here. **Our records show that there is a CGS close to the proposed material waste recovery facility**

> **Huntstown Quarry**, Fingal (GR 310840, 241255), under IGH theme: IGH 8 Lower Carboniferous. Link to site report DF022. Carboniferous limestone quarry exposing the base of the Tober Colleen Formation where it directly overlies the Waulsortian.

With the current plan, there are no envisaged impacts on the integrity of current CGSs by the proposed development. However, if the proposed development plan is altered, please contact Clare Glanville (Clare.Glanville@gsi.ie) for further information and possible mitigation measures if applicable.

Groundwater

Geological Survey Ireland's Groundwater and Geothermal Unit, provides advice, data and maps relating to groundwater distribution, quality and use, which is especially relevant for safe and secure drinking water supplies and healthy ecosystems.

Proposed developments need to consider any potential impact on specific groundwater abstractions and on groundwater resources in general. We recommend using the groundwater maps on our Map viewer which should include: wells; drinking water source protection areas; the national map suite - aquifer, groundwater vulnerability, groundwater recharge and subsoil permeability maps. For areas underlain by limestone, please refer to the karst specific data layers (karst features, tracer test database; turlough water levels (gwlevel.ie). Background information is also provided in the Groundwater Body Descriptions. Please read all disclaimers carefully when using Geological Survey Ireland data.

The Groundwater Data Viewer indicates a 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones', underlies the proposed Material Recovery Facility.

The Groundwater Vulnerability map indicates the range of groundwater vulnerabilities within the area covered is variable. We would therefore recommend use of the Groundwater Viewer to identify areas of High to Extreme Vulnerability and 'Rock at or near surface' in your assessments, as any groundwater-surface water interactions that might occur would be greatest in these areas.

GWClimate is a groundwater monitoring and modelling project that aims to investigate the impact of climate change on groundwater in Ireland. This is a follow on from a previous project (GWFlood) and the data may be useful in relation to Flood Risk Assessment (FRA) and management plans. Maps and data are available on the Map viewer.

Geological Survey Ireland has completed Groundwater Protection Schemes (GWPSs) in partnership with Local Authorities, and there is now national coverage of GWPS mapping. A Groundwater Protection Scheme provides guidelines for the planning and licensing authorities in carrying out their functions, and a framework to assist in decision-making on the location, nature and control of developments and activities in order to protect groundwater. **The Groundwater Protection Response overview and link to the main reports is here: https://www.gsi.ie/en-ie/programmes-and-projects/groundwater/projects/protecting-drinking-water/what-is-drinking-water-protection/county-groundwater-protection-schemes/Pages/default.aspx.**

Geological Mapping

Geological Survey Ireland maintains online datasets of bedrock and subsoils geological mapping that are reliable and accessible. We would encourage you to use these data which can be found here, in your future assessments.

Our 3D models can help stakeholders visualize, understand and characterise geology, for deposit and resource mapping, for flooding and for urban geology applications including basement impact assessment, Sustainable Drainage Systems (SuDS), and subsurface management. Our 3D models offer a key element of geotechnical risk management by identifying areas requiring further site investigation.

Further information on the bedrock and Quaternary 3D models of Dublin is available here.

Geotechnical Database Resources

Geological Survey Ireland continues to populate and develop our national geotechnical database and viewer with site investigation data submitted voluntarily by industry. The current database holding is over 7500 reports with 134,000 boreholes; 31,000 of which are digitised which can be accessed through downloads from our Geotechnical Map Viewer. We would encourage the use of this database as part of any baseline geological assessment of the proposed development as it can provide invaluable baseline data for the region or vicinity of proposed development areas. This information may be beneficial and cost saving for any site-specific investigations that may be designed as part of the project.

Natural Resources (Minerals/Aggregates)

Geological Survey Ireland provides data, maps, interpretations and advice on matters related to minerals, their use and their development in our Minerals section of the website. The Active Quarries, Mineral Localities and the Aggregate Potential maps are available on our Map Viewer.

We would recommend use of the Aggregate Potential Mapping viewer to identify areas of High to Very High source aggregate potential within the area. In keeping with a sustainable approach we would recommend use of our data and mapping viewers to identify and ensure that natural resources used in the proposed material recovery facility are sustainably sourced from properly recognised and licensed facilities, and that consideration of future resource sterilization is considered.

Geochemistry of soils, surface waters and sediments

Geological Survey Ireland provides baseline geochemistry data for Ireland as part of the Tellus programme. Baseline geochemistry data can be used to assess the chemical status of soil and water at a regional scale and to support the assessment of existing or potential impacts of human activity on environmental chemical quality. Tellus is a national-scale mapping programme which provides multi-element data for shallow soil, stream sediment and stream water in Ireland. At present, mapping consists of the border, western and midland regions. Data is available at https://www.gsi.ie/en-ie/data-and-maps/Pages/Geochemistry.aspx. This page also hosts urban geochemistry mapping (Dublin SURGE project), Geochemical Mapping of Agricultural and Grazing Land Soil of Europe (GEMAS) and lithogeochemistry (rock geochemistry) from southeast Ireland datasets. Geological Survey Ireland and partners are undertaking applied geochemistry projects to provide data for agriculture (Terra Soil), waste soil characterisation (Geochemically Appropriate Levels for Soil Recovery Facilities) and mineral exploration (Mineral Prospectivity Mapping).

Other Comments

Should development go ahead, all other factors considered, Geological Survey Ireland would much appreciate a copy of reports detailing any site investigations carried out. The data would be added to Geological Survey Ireland's national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to the Geological Mapping Unit, at mailto:GeologicalMappingInfo@gsi.ie, 01-678 2795.

I hope that these comments are of assistance, and if we can be of any further help, please do not hesitate to contact me Clare Glanville, or my colleague Trish Smullen at GSIPlanning@gsi.ie.

Yours sincerely,

Clare Glanville
Senior Geologist
Geological Survey Ireland

Enc: Table - Geological Survey Ireland's Publicly Available Datasets Relevant to Planning, EIA and SEA processes.

Eoin O'Connor

From: Roisin O'Callaghan <Roisin.O'Callaghan@fisheriesireland.ie>
Sent: Friday 8 April 2022 11:49
To: Thorntons Cappogue
Subject: EIAR for Material Recovery Facility (MRF), Cappogue, Co. Dublin
Attachments: Scoping of EIAR for Material Recovery Facility (MRF), Cappogue, .pdf

To whom it may concern

Attached are the comments of IFI in relation to the MRF. Please contact me if you wish to discuss further.

Kind Regards,

Roisin

Roisin O' Callaghan

Fisheries Environmental Officer
Iascach Intíre Éireann
Inland Fisheries Ireland

Tel +353 (1) 8842651
Email Roisin.ocallaghan@fisheriesireland.ie
Web www.fisheriesireland.ie

3044 Lake Drive, Citywest Business Campus, Dublin 24, D24CK66, Ireland

Iascach Intíre Éireann
Inland Fisheries Ireland

08/04/2021

RE: Scoping for the EIAR for Material Recovery Facility (MRF), Cappogue, Co. Dublin

Dear Mr Deeney

The following observations and comments are of necessity of a general nature, while they apply to the proposed development in general, IFI request you have particular regard to the following in the proposed development:

The proposed development is located in the catchment of the Tolka River. This is a recognised salmonid system, under significant ecological pressure as a result of its largely urban situation. The Tolka River supports Atlantic salmon, Lamprey and Brown trout populations in addition to other fish species and provides a particularly important nursery function for salmonid species throughout.

The EIAR should address the potentially highly polluting nature of the wastewaters generated at this facility and highlight the need for implementation of comprehensive leachate and surface water management measures in order to safeguard the ecological integrity of local surface and ground waters. Any final discharge options must be fully compliant with national and international regulations which include the Water Framework Directive (2000), European Communities (Surface Water) Regulations 2009 and the European Communities (Groundwater) Regulations 2010.

The accumulative effects from the development along with other planned development in the catchment should also be examined and discussed in the EIAR.

An Invasive Species and Biosecurity Plan should be included to treat and manage identified invasive species onsite.

Best practice should be implemented at all times in relation to any activities that may impact on surface water. Any discharges to surface streams present on the site must not impact negatively on the salmonid status of the system. Comprehensive surface water management measures must be implemented at the construction and operational stage to prevent any pollution entering local waterways. The storage and removal / disposal of excavated material must be considered and planned such that risk of pollution from these activities is minimised. As specific details of the construction works at this site are as yet unknown, IFI are not in a position to comment further on potential impacts. IFI's policy is to maintain watercourses in their open natural state in order to prevent habitat loss preserve and enhance biological diversity and aid in pollution detection.

IIE Baile Átha Cliath, 3044 Céide an Locha, Campas Gnó Larthar Na Cathrach, Baile Átha Cliath 24, D24 Y265
IFI Dublin, 3044 Lake Drive, Citywest Business Campus, Dublin 24, D24 Y265
+353(0)1 8842 600 - dublin@fisheriesireland.ie - www.fisheriesireland.ie

Iascach Intíre Éireann
Inland Fisheries Ireland

Please refer to our published guidelines for construction works near waterways in the EIAR. "Guidelines on protection of fisheries during construction works in and adjacent to waters" (2016).

I trust you will take our observations on board when compiling the EIAR.

Kind regards,

Roisin O' Callaghan

Roisin O' Callaghan
Fisheries Environmental Officer
Inland Fisheries Ireland - Dublin
Iascach Intíre Eireann
Inland Fisheries Ireland

Telephone: +353 (01) 8842651
Email: roisin.ocallaghan@fisheriesireland.ie

Eoin O'Connor

From: Info
Sent: Monday 4 April 2022 11:00
To: Thorntons Cappogue
Subject: FW: SID Application, EIAR and IE Licence Application for Thorntons
Attachments: Thorntons Recycling.pdf

Hi

Please see email below, Matt from Fisheries Ireland was having issues sending the email directly to the inbox and it kept bouncing back.

Regards
Anna

From: Matthew Carroll <Matthew.Carroll@fisheriesireland.ie>
Sent: Monday 4 April 2022 10:54
To: Info <info@ftco.ie>
Subject: SID Application, EIAR and IE Licence Application for Thorntons

Dear sir/Madam

Please see attached, IFI's commentary on Thornton Recycling's proposed MRF at Cappogue, Co. Dublin.

Matthew Carroll
Fisheries Environmental Officer

Inland Fisheries Ireland- Dublin

Iascach Intíre Éireann
Inland Fisheries Ireland

Tel +353 (0)1 8842693

Email matthew.carroll@fisheriesireland.ie

Web www.fisheriesireland.ie

Iascach Intíre Éireann
Inland Fisheries Ireland

04/04/2022

Re: Proposed Development of a Material Recovery Facility (MRF), Thorntons Recycling, Cappogue, Co. Dublin for the acceptance, segregation, processing and onward transfer of 300,000 tonnes of waste material for recovery and recycling, namely: • 100,000 of Residual Municipal Solid Waste (MSW) • 100,000 Construction & Demolition (C&D) Skip Waste • 50,000 Mixed Dry Recyclables (MDR) • 50,000 Food Waste (Brown Bin)

Dear Sir/Madam,

In relation to the above-mentioned application please note IFI's observations as follows:

- The proposed development is located in the River Tolka catchment which represents a significant salmonid system. The Tolka River supports Atlantic salmon, Lamprey (Annex II of EU Habitats Directive) and Brown trout populations in addition to other fish species and provides a particularly important nursery function for salmonid species throughout.

- It would appear the stormwater from the site may eventually discharge into the River Tolka system. The nature of the activity and the proposed categories of waste that are to be accepted will result in leachate which if not contained and treated properly poses an extremely high risk to fish populations should it reach the aquatic environment. Extreme care and consideration should be given to the design, containment and management of any potential discharges of contaminated water or leachates from the site.

- Best practice should be always implemented in relation to any activities that may impact on surface water (stream and river) or riparian habitats. S.I. No. 378 of 2006 European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2006 provides the regulatory framework which should be followed in managing this site. Only clean, uncontaminated water should leave the site and discharge to any surface water in this area.

- The "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites" (http://www.fishingireland.net/environment/constructionanddevelopment.htm) should be consulted when undertaking any works on this site, particularly in the vicinity of surface water features.

IIE Baile Átha Cliath, 3044 Céide an Locha, Campas Gnó Larthar Na Cathrach, Baile Átha Cliath 24, D24 Y265
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+353(0)1 8842 600 - dublin@fisheriesireland.ie - www.fisheriesireland.ie

Iascach Intíre Éireann
Inland Fisheries Ireland

Regards,

Matthew Carroll

Fisheries Environmental Officer
Inland Fisheries Ireland - Dublin
Iascach Intire Eireann
Inland Fisheries Ireland

Telephone: +353 (0) 1 8842651
EMail: roisin.ocallaghan@fisheriesireland.ie
Address: 3044 Lake Drive, City West, Dublin 24, IRELAND.

Iascach Intíre Éireann
Inland Fisheries Ireland

FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 6.3

Virtual Public Consultation Newspaper Notices

Planning Application Notices

email:

planning@dublinpeople.com

Standard Planning Notice From €93.45 plus VAT

Deadline for submission Friday at 12pm

Dublin People GROUP OF NEWSPAPERS

PLANNING DUBLIN

Fingal County Council
Site Notice
We Gerry McBride and Sarah McBride intend to apply for planning permission for a development on the site 19 Mount Symon Park, Clonsilla, Dublin 15, D15 WFW4. The development consists of a new hip roof with built up gable wall, with new opaque window to facilitate a 25sqm attic room. To the rear of the existing dwelling a dormer roof with a single window. The Planning Application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority during its public opening hours and a submission or observation may be made to the Planning Authority in writing on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the authority of the application.

PLANNING DUBLIN

Fingal County Council
We, Vikrant Dhamija and Preeti Bajaj, are applying for permission at 27 Barnwell Grove, Hansfield, Dublin 15, D15C7HH for conversion of attic space to bedroom and en-suite to include 4 roof windows to the front and construction of a 28.8m extension to the rear of existing dwelling. The Planning Application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority during its public opening hours and a submission or observation may be made to the Planning Authority in writing on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the authority of the application.

PLANNING DUBLIN

Dublin City Council
Retention Planning Permission is sought by Christopher and Anne Cox for the construction of a single storey extension to the side of existing house at 9 St. Pappins Green, Glasnevin, Dublin 9. The planning application may be inspected, or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of Dublin City Council during its public opening hours and a submission or observation in relation to the application may be made to the authority in writing on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the authority of the application. The planning application may be inspected, or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of Dublin City Council during its public opening hours and a submission or observation in relation to the application may be made to the authority in writing on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the authority of the application.

PLANNING DUBLIN

Dublin City Council
Aine & Gerry Flynn are seeking planning permission for the erection of 2 No. two storey 3 bedroom semi-detached dwelling houses (106.4m2 gross floor area each), with raised balcony/terrace at rear, & associated site works, on site (220m2 area approx) in existing side garden at Side of No1 St Joseph's Cottages, Blackhorse Avenue, Dublin 7, D07 V02C Ireland The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of Dublin City Council, Planning Department, Block 4, Ground Floor, Civic Offices, Wood Quay, Dublin 8 during its public opening hours (9.00a.m.- 4.30p.m.). A submission or observation in relation to the application may be made in writing to the planning authority on payment of the prescribed fee (€20.00) within the period of 5 weeks beginning on the date of receipt by the authority of the application, and such submissions or observations will be considered by the planning authority in making a decision on the application. The planning authority may grant permission subject to or without conditions, or may refuse to grant permission.

Public Information Notice

Expansion of an existing Material Recovery Facility by Padraig Thornton Waste Disposal Ltd (Thorntons Recycling)
Public Consultation
Padraig Thornton Waste Disposal Ltd (Thorntons Recycling) proposes expanding an existing Materials Recovery Facility (MRF) situated at Unit 1 Cappogue Industrial Park, Ballycoolin Road, Dublin 11. The proposed development will involve the construction and operation of an expanded MRF and ancillary infrastructure at a development site (3.4 hectares) encompassing the existing site as well as lands directly south of the existing site. An Bord Pleanála have determined that the development constitutes Strategic Infrastructure Development (SID) under the Planning and Development Act 2000 (as amended). Thorntons Recycling will apply for consent to carry out this proposed development under Section 37B of the Planning and Development Act 2000 (as amended). An Environmental Impact Assessment Report (EIAR), and an Appropriate Assessment Screening Report (AASR) / Natura Impact Statement (NIS) are in the process of being prepared for the proposed development. Thorntons Recycling wishes to provide the wider community with an understanding of what the proposed development will involve. Thorntons Recycling also wishes to provide members of the public with an opportunity to submit their views on the proposed development. Interested parties are therefore invited to log in to a Virtual Public Consultation event for the proposed development at the following website: www.innovision.ie/thorntons. This event will take place between the 4th of August 2022 and the 18th of August 2022.

DUBLIN GAZETTE PLANNING

DÚN LAOGHAIRE RATHDOWN

PLANNING NOTICE

DÚN LAOGHAIRE RATHDOWN COUNTY COUNCIL

I, Paola Macari, intend to apply for planning permission for a development at 14 Drummartin Terrace, Goatstown, Dublin D14 X582. The development will consist of the demolition of a single storey extension to the rear and side of a dwellinghouse and for the construction of a 1 ½ storey extension to the rear and side of the dwellinghouse, for a single storey porch to the front of the dwellinghouse and for associated siteworks. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority, County Hall, Dún Laoghaire during its public opening hours. A submission or observation may be made on payment of € 20 within a period of 5 weeks from the date the application is received by the planning authority and such submissions or observations will be considered by the Planning Authority in making a decision on the application. The Planning Authority may grant permission subject to or without conditions, or may refuse to grant permission. Signed: Seán Kerr, Building Surveyor & Assigned Certifier, A1 Design Services 086 227 3425.

1560

PLANNING NOTICE

DÚN LAOGHAIRE RATHDOWN COUNTY COUNCIL

Planning Permission is sought for changes to the design of the existing front entrance door (south facing) and removal of external kitchen door (south facing). Removal of front window (south facing) and replacing it with double doors. Removal of the roof of the existing extension (west facing) and replacement with a higher roof structure. Alterations to the window configurations on the west facing elevation at San Antonio, 4A Ardbrugh Road, Dalkey, Co. Dublin, A96 DX20 by Peter Murphy. Ciara Mulvey. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority, County Hall, Dún Laoghaire during its public opening hours. A submission /observation may be made on payment of €20 within a period of 5 weeks from the date the application is received by the planning authority.

1561

PLANNING NOTICE

DÚN LAOGHAIRE RATHDOWN COUNTY COUNCIL

We, Emma Melletti & Hazel O'Sullivan, intend to seek planning permission to retain the following variations to previously approved (D16B/0355) works: a) A ground floor, flat-roofed WC extension behind the front porch (2sq.m.) and a flat-roofed extension to the rear utility (2sq m). b) Coloured render (off-white) to the external wall insulation throughout the original and extended dwelling, in lieu of the original and previously (D16B/0355) proposed finishes at 35, Corrig Road, Dalkey, County Dublin. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority, County Hall, Dun Laoghaire during its public opening hours. A submission/observation in relation to the application may be made on payment of the prescribed fee (€20) within the period of 5 weeks from the date the application is received by the Planning Authority

1569

PLANNING NOTICE

DÚN LAOGHAIRE RATHDOWN COUNTY COUNCIL

Permission is sought for the construction of ground and first floor bay windows with apex roof to the front elevation facing West, an extension for an additional bedroom over the garage, the extending of the garage forward in line with the bay windows and a canopy over the garage across the front door and linking into the bay window. External insulation and the fitting of solar panels to the roof, the widening of the entrance gates to 3400mm. To the rear elevation facing East, a new kitchen extension is proposed, a new window to bedroom 4, a bay 2-sided window off the main rear bedroom 1 at first floor level facing only onto the property at 14 Leopardstown Park, Stillorgan Co. Dublin, A94PN27 by Lesley O'Connor, and Stewart Kennedy. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority, County Hall, Dun Laoghaire during its public opening hours. A submission /observation may be made on payment of €20.00 within a period of 5 weeks from the date the application is received by the planning authority.

1562

PLANNING NOTICE

DÚN LAOGHAIRE RATHDOWN COUNTY COUNCIL

Permission is sought for an extension consisting of (a) Two storey hipped roof extension to side of dwelling (b) Conversion of existing attic space with pitched dormer to rear (c) single storey mono-pitch roof extension to rear along with a single storey flat roof extension to front to include porch and bay window (d) A single storey detached flat roof garden office to the rear of the site (d) All associated site works to include widening of site entrance, low profile bike and bin store to front garden, at 23 Abbey Park, Monkstown, Co. Dublin by Daniel Hart. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority, County Hall, Dún Laoghaire during its public opening hours. A submission/observation may be made on payment of €20 within a period of 5 weeks from the date the application is received by the planning authority.

1563

PLANNING NOTICE

DÚN LAOGHAIRE RATHDOWN COUNTY COUNCIL

Planning Permission sought for the construction of new dormer roof extension to rear, velux roof windows to front together with internal alterations / renovations to previously constructed attic conversion at 50 Whitebarn Road, Churchtown, Dublin 14 for Deirdre & Gerry O'Brien This Planning application may be inspected or purchased at a fee not exceeding the cost of making a copy at the offices of Dun Laoghaire Rathdown County Council, Planning Department, County Hall, Marine Road, Dun Laoghaire, during its public opening hours between 10.00am & 4.00pm, Monday to Friday. A submission or observation in relation to the application may be made in writing to Dun Laoghaire Rathdown County Council on payment of the prescribed fee of €20 within 5 weeks of receipt of the application by the Planning Authority.

1564

SDCC

PLANNING NOTICE

SOUTH DUBLIN COUNTY COUNCIL

Corina Ceru is applying for RETENTION Planning Permission for a flat roof single storey Garden Room/Shed to rear, & associated works at 71 St. Peter's Road, Walkinstown, Dublin 12, D12Y1R8 This application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of South Dublin County Council during its public opening hours of 9am - 4pm, Mon-Fri, and a submission or observation may be made to South Dublin County Council in writing and on payment of the prescribed fee (€20.00) within the period of 5 weeks beginning on the date of receipt by South Dublin County Council of the application

1570

PLANNING NOTICE

SOUTH DUBLIN COUNTY COUNCIL

Margaret Carrigan is applying for Permission for single storey side extension comprising a one bedroom family apartment and location of new effluent treatment plant to north west side of existing dwelling at Hazelhatch Road, Newcastle D22 HD34. This application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of South Dublin County Council during its public opening hours of 9am – 4pm, Mon-Fri, and a submission or observation may be made to South Dublin County Council in writing and on payment of the prescribed fee (€20.00) within the period of 5 weeks beginning on the date of receipt by South Dublin County Council of the application.

1559

FINGAL CC

PLANNING NOTICE

FINGAL

Public Information Notice

Expansion of an existing Material Recovery Facility by Padraig Thornton Waste Disposal Ltd (Thorntons Recycling)

Public Consultation

Padraig Thornton Waste Disposal Ltd (Thorntons Recycling) proposes expanding an existing Materials Recovery Facility (MRF) situated at Unit 1 Cappogue Industrial Park, Ballycoolin Road, Dublin 11. The proposed development will involve the construction and operation of an expanded MRF and ancillary infrastructure at a development site (3.4 hectares) encompassing the existing site as well as lands directly south of the existing site. An Bord Pleanála have determined that the development constitutes Strategic Infrastructure Development (SID) under the Planning and Development Act 2000 (as amended). Thorntons Recycling will apply for consent to carry out this proposed development under Section 37B of the Planning and Development Act 2000 (as amended). An Environmental Impact Assessment Report (EIAR), and an Appropriate Assessment Screening Report (AASR) / Natura Impact Statement (NIS) are in the process of being prepared for the proposed development. Thorntons Recycling wishes to provide the wider community with an understanding of what the proposed development will involve. Thorntons Recycling also wishes to provide members of the public with an opportunity to submit their views on the proposed development. Interested parties are therefore invited to log in to a Virtual Public Consultation event for the proposed development at the following website: www.imovision.ie/thorntons. This event will take place between the 4th of August 2022 and the 18th of August 2022.

1576

PLANNING NOTICE

FINGAL COUNTY COUNCIL

George Tudor is applying for planning permission for (a) Change of use from glass works industrial unit to a veterinary clinic with surgery rooms, kennels, and a small retail shop. (b)New signage and shop front to include 1 no. acrylic lettering and logo sign above front door, and plywood shopfront with selected finish. (c) Internal alterations and associated works, at the Former Fingal Glass Building, The Green, Rathbeale Road, Swords, Co. Dublin. The Planning Application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority during its public opening hours and a submission or observation may be made to the Planning Authority in writing on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the authority of the application.

1558

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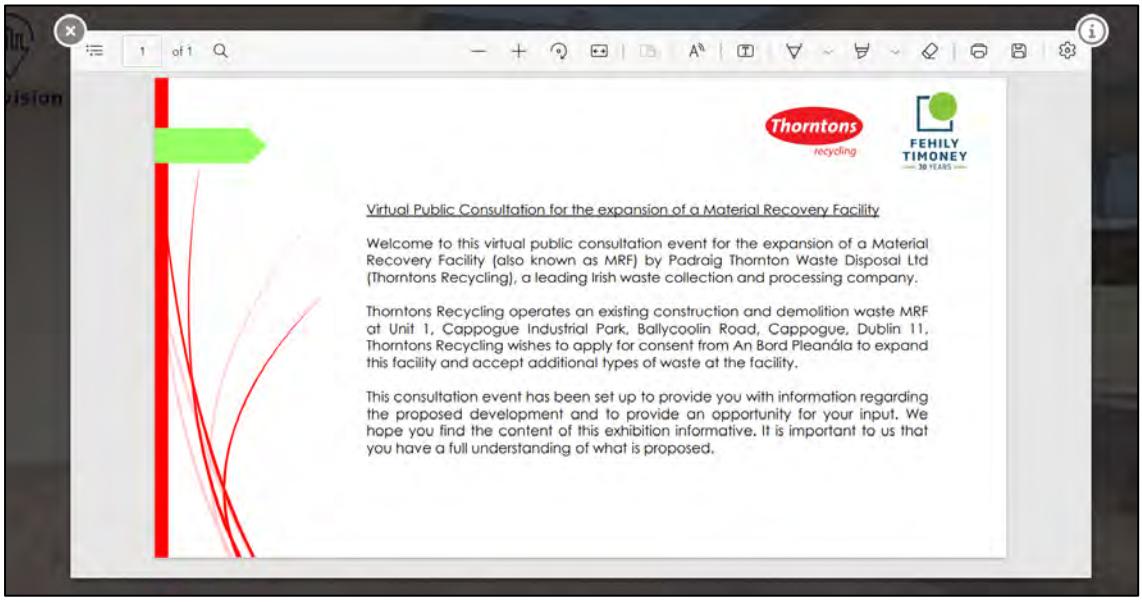
APPENDIX 6.4

Virtual Public Consultation Exhibition Display

Virtual Public Consultation for the Proposed Development (04/08/2022 – 22/08/2022)

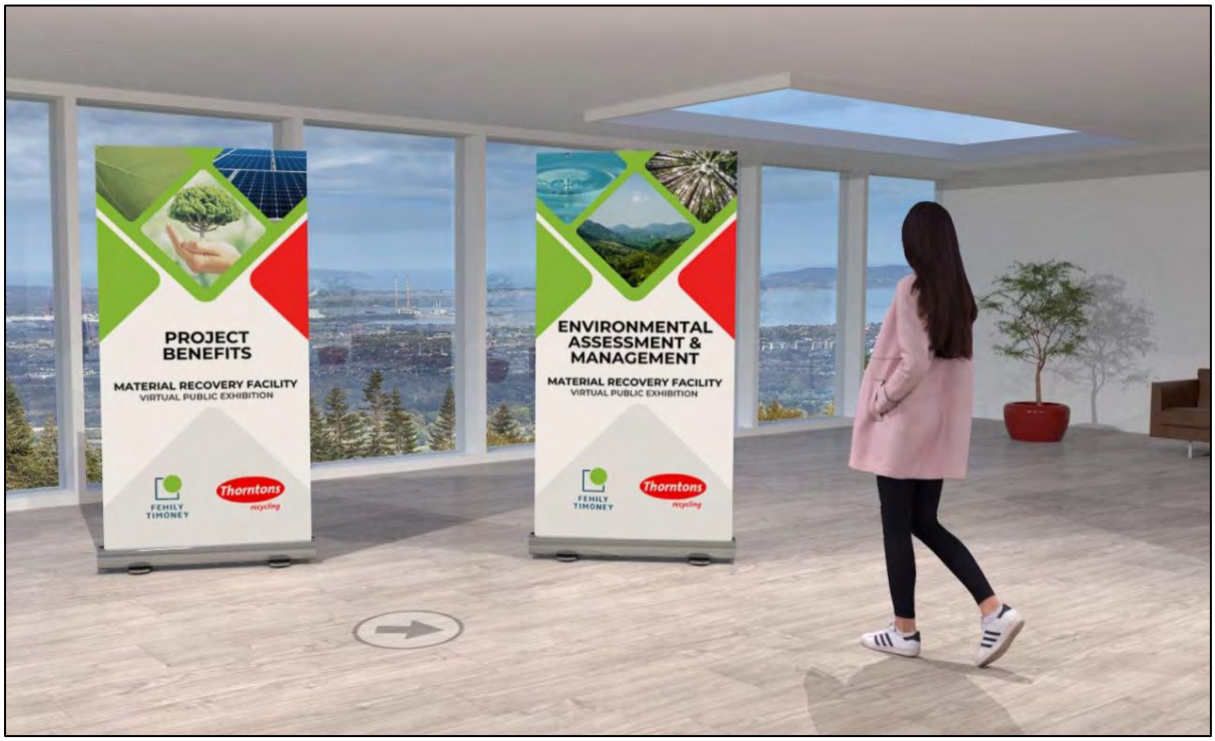
Banners for 'Introduction to the Project' & 'The Proposed Development'

'Introduction to the Project'

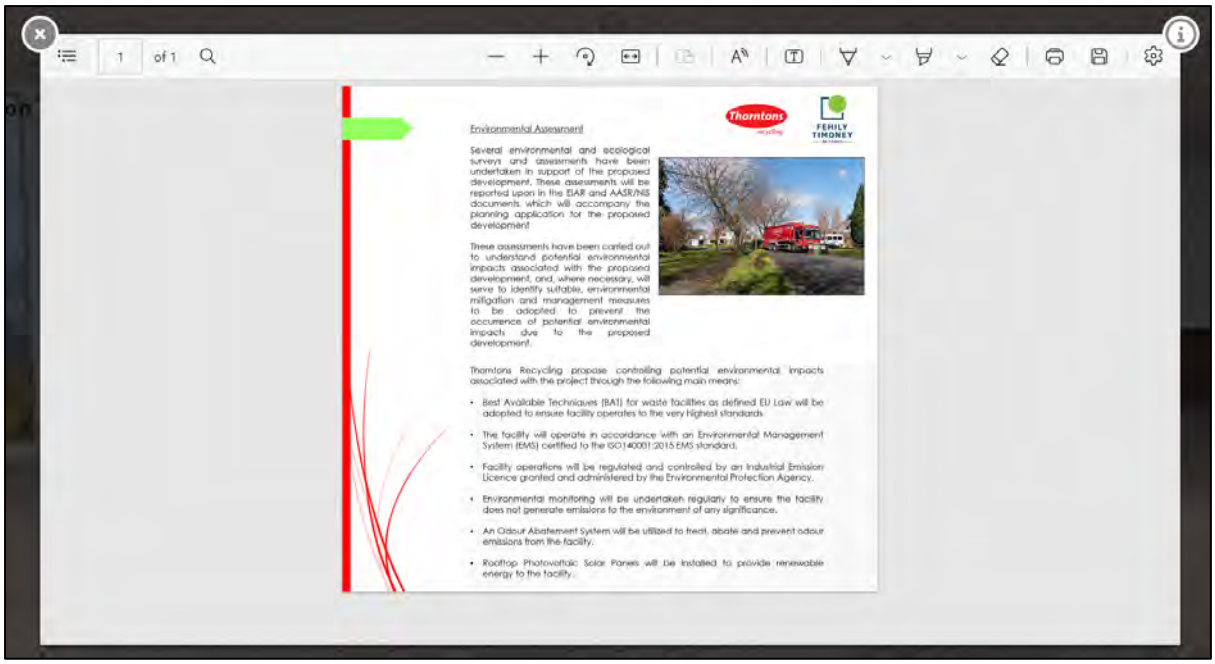


Easels showing the Site Location Map and Site Layout Plan.

Banners for 'Project Benefits' and 'Environmental Assessment and Management'



‘Environmental Assessment and Management’ Content



Environmental Assessment

Several environmental and ecological surveys and assessments have been undertaken in support of the proposed development. These assessments will be reported upon in the EIAR and AASR/NIS documents, which will accompany the planning application for the proposed development.

These assessments have been carried out to understand potential environmental impacts associated with the proposed development, and, where necessary, will serve to identify suitable, environmental mitigation and management measures to be adopted to prevent the occurrence of potential environmental impacts due to the proposed development.

Thorntons Recycling propose controlling potential environmental impacts associated with the project through the following main means:

- Best Available Techniques (BAT) for waste facilities as defined EU Law will be adopted to ensure facility operates to the very highest standards.
- The facility will operate in accordance with an Environmental Management System (EMS) certified to the ISO14001:2015 EMS standard.
- Facility operations will be regulated and controlled by an Industrial Emission Licence granted and administered by the Environmental Protection Agency.
- Environmental monitoring will be undertaken regularly to ensure the facility does not generate emissions to the environment of any significance.
- An Odour Abatement System will be utilized to treat, abate and prevent odour emissions from the facility.
- Rooftop Photovoltaic Solar Panels will be installed to provide renewable energy to the facility.

‘Community Engagement’ Banner

‘Community Engagement’ Content

Community Engagement

Community Engagement is a key component of this development project. Thorntons Recycling wishes to provide the wider community with an understanding of what this project will involve. Thorntons Recycling wishes to provide members of the public with an opportunity to submit the views on the project.

Thorntons Recycling invites members of the public to make a submission in relation to the proposed development.

Submissions or observations regarding the proposed development can made via the following email address:

- thorntonscappogue@ftco.ie

Please provide any comments or observation by the 18th August 2022.

All submissions received will be recorded and considered when designing the proposed development.

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APPENDIX 8.1

Evaluation Criteria (NRA 2009 and CIEEM 2018)

NRA (2009)	CIEEM (2018)	Criteria
International Importance	International and European	'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. Proposed Special Protection Area (pSPA). Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). Features essential to maintaining the coherence of the Natura 2000 Network.[1] Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. Resident or regularly occurring populations (assessed to be important at the national level)[2] of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). Biosphere Reserve (UNESCO Man & The Biosphere Programme). Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).

[1] See Articles 3 and 10 of the Habitats Directive

[2] It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

NRA (2009)	CIEEM (2018)	Criteria
		Biogenetic Reserve under the Council of Europe. European Diploma Site under the Council of Europe. Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).[3]
National Importance	National	Site designated or proposed as a Natural Heritage Area (NHA). Statutory Nature Reserve. Refuge for Fauna and Flora protected under the Wildlife Acts. National Park. Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. Resident or regularly occurring populations (assessed to be important at the national level)[4] of the following: Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list. Site containing 'viable areas'[5] of the habitat types listed in Annex I of the Habitats Directive.
County Importance	County (or other local authority-wide area)	Area of Special Amenity.[6] Area subject to a Tree Preservation Order. Area of High Amenity, or equivalent, designated under the County Development Plan.

[3] Note that such waters are designated based on these waters' capabilities of supporting salmon (Salmo salar), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

[4] It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[5] A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

[6] It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

NRA (2009)	CIEEM (2018)	Criteria
		Resident or regularly occurring populations (assessed to be important at the County level)[7] of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list. Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP[8], if this has been prepared. Sites containing semi-natural habitat types with high biodiversity in a county con-text and a high degree of naturalness, or populations of species that are uncommon within the county. Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
N/A	River Basin District	Hydrological Catchment Area Connectivity to downstream waterbodies
N/A	Estuarine system/Coastal cell	Estuary of river system or shoreline
Locally Important (higher level)	Local	Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; Resident or regularly occurring populations (assessed to be important at the Local level)[9] of the following:

[7] It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[8] BAP: Biodiversity Action Plan

[9] It is suggested that, in general, 1% of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

NRA (2009)	CIEEM (2018)	Criteria
		Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list. Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value
Locally Important (lower level)	Site	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that are of some importance in maintaining habitat links.

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APPENDIX 8.2

Invasive Species Management Plan

FEHILY TIMONEY

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ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE EXPANSION OF A MATERIALS RECOVERY FACILITY AT CAPPOGUE AND DUNSINK, BALLYCOOLIN ROAD, DUBLIN 11.

Invasive Species Management Plan

Prepared for: Padraig Thornton Waste Disposal Ltd. T/A Thorntons Recycling

Date: September 2022

Core House, Pouladuff Road, Cork, T12 D773, Ireland

T: +353 21 4964 133 | E: info@ftco.ie

CORK | DUBLIN | CARLOW

www.fehilytimoney.ie

TABLE OF CONTENTS

1. INTRODUCTION 1
1.1 Introduction 1
1.2 Legislation 1
1.3 Non-Native Invasive Species 1
2. METHODOLOGY 3
2.1 Relevant Guidance 3
2.2 Desktop Study 3
2.3 Mapping and Evaluation of Invasive Species 3
3. EXISTING ENVIRONMENT 4
3.1 Desktop Records 4
3.2 Results of Field Survey and Mapping 6
4. INVASIVE/NON-NATIVE SPECIES ACCOUNTS 8
4.1 Rhododendron (Rhododendron ponticum) 8
4.1.1 Species Ecology 8
4.1.2 Timeframe 9
4.2 Cherry Laurel (Prunus laurocerus) 9
4.2.1 Species Ecology 9
4.2.2 Timeframe 10
4.3 Butterfly Bush (*Buddleia davidii*) 10
4.3.1 Species Ecology 10
4.3.2 Timeframe 10
5. PROPOSED MEASURES FOR THE MANAGEMENT OF INVASIVE SPECIES WITHIN AND ADJACENT TO THE PROPOSED DEVELOPMENT 11
5.1 General Measures 11
5.1.1 Prevention 11
5.1.2 Containment 12
5.1.3 Prevent Spread: 13
5.2 Species-Specific Measures 13
5.2.1 Rhododendron 13
Option 1 – Physical control 13
Option 2 – Chemical control 13

5.2.2 Cherry Laurel 14
Option 1 – Cut to stump and dig out stump; bury onsite 14
Option 2 – Cut to stump and treat stump with herbicide 14
Option 3 – Cut to main stem and inject stem with herbicide 15
Option 4 - Cut back to stump and spray regrowth with herbicide 15
5.2.3 Butterfly Bush 15
6. MANAGEMENT PLAN 17
6.1 Containment 17
6.2 Schedule 17
6.3 Mapping, Evaluating and Record Keeping 18
6.4 Appropriate Disposal 19
6.4.1 Storage 19
6.4.2 Disposal 19
Deep Burial (onsite) 19
7. CONCLUSION 20
8. REFERENCES 21

LIST OF FIGURES

Page

Figure 3-1: Invasive Species Recorded within development 7
Figure 5-1: Optimum time for the treatment of Cherry Laurel (ISI, 2008). 15

LIST OF TABLES

Table 3-1: Historical invasive species records within 10km and 2km grid squares overlapping proposed development 4
Table 3-2: Non-native species and relevant project elements (Third Schedule listed species shown in bold) 6
Table 6-1: Schedule of measures to eradicate and prevent spread of invasive species at the proposed development 18

LIST OF PLATES

Plate 4-1: *Rhododendron ponticum*. Source: www.invasivespeciesireland.ie (August 2021) 9
Plate 4-2: Cherry Laurel. Source: Kingcounty.gov (August 2021) 9
Plate 4-3: Butterfly Bush (*Buddleia daviddii*) Source: wildflowers of Ireland (Dec 2022) 10

1. INTRODUCTION

1.1 Introduction

The information in this Invasive Species Management Plan has been compiled by Fehily Timoney & Company (FTCO), on behalf of the applicant. It provides information on the control of invasive species during construction works and maintenance associated with the proposed development as described in Chapters 1 and 4 of Volume 2 of this EIAR.

1.2 Legislation

In Ireland, it is an offence to spread and propagate species listed in the third schedule of S.I. No. 477/2011 European Communities (Birds and Natural Habitats) Regulations 2011 to 2021. Under Regulation 49 paragraph (2) "*Save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence*".

Additionally, Article 52(7) of the Wildlife Act, 1976 (as amended) states that '*Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, ['refers only to exotic ISMP species thereof']][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence.'*

In keeping with these pieces of legislation, the overall aim of this management plan is to put in place systems to control the spread of invasive species during construction and operation of the proposed development.

This document provides background information on the non-native invasive species present, mapping of their location, and their extent within the proposed development. It provides a legal context, sources of information including policy and guidelines to which cognisance has been paid, and the means of controlling the species safely using prevention, containment, treatment, monitoring, follow up treatment, record keeping, and appropriate disposal as might be necessary.

1.3 Non-Native Invasive Species

The National Biodiversity Data Centre (Invasive Alien Species in Ireland) has published a Catalogue of Ireland's Non-native Species (CINS)[1] which provides species profiles, species distribution, identification keys, ecology, pathways of introduction, and risk assessment score. This Catalogue includes the 66 regulated Invasive Alien Species of Union concern identified in '*Regulation on the prevention and management of the introduction and spread of invasive alien species [1143/2014]*', as well as the 48 non-native High Impact[2] species and 78 Medium Impact[3] species in Ireland as identified in the national Prioritisation Risk Assessment carried out in 2013. Also included are the Watch List[4] species which are species with potential to become invasive (at a high-risk level) if introduced to Ireland.

[1] https://species.biodiversityireland.ie/?keyword=Catalogue%2520of%2520Irelands%2520Non-native%2520Species

[2] https://www.biodiversityireland.ie/wordpress/wp-content/uploads/Invasives_taggedlist_HighImpact_2013RA-1.pdf

[3] https://www.biodiversityireland.ie/wordpress/wp-content/uploads/Invasives_taggedMediumImpact_2013RA-2.pdf

[4] https://www.biodiversityireland.ie/wordpress/wp-content/uploads/Invasives_tagged_PotentialHighmpact_2013RA-1.pdf

In 2014 a second detailed assessment of the risks and uncertainties surrounding a particular species, group of species or pathway of concern was carried out, called the '*Non-native species Application based Risk Analysis (NAPRA)*'. Not all non-native species present in Ireland were included in the risk assessment. The list of species for which the risk assessments were conducted are available online at http://nonnativespecies.ie/species-list/.

For clarity, the non-native invasive species considered for inclusion in this management plan are those listed in Ireland's Catalogue of Non-native Species and those subject to risk assessment in 2014.

2. METHODOLOGY

2.1 Relevant Guidance

This management plan has been devised in consideration of the following relevant guidance:

- Ireland's Invasive Species Website: https://invasives.ie/
- NRA, (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads. Revision 1, December 2010. National Roads Authority
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2.2 Desktop Study

A desktop study was carried out to identify existing records of invasive flora species both within and adjacent to the proposed development. The suitability of the habitats within the proposed development footprint were also considered in determining the potential for invasive species, having regard to the species profiles and ecology set out in the Catalogue of Ireland's Non-native Species. The following sources of information were used:

- OSI Aerial photography and 1:50000 mapping;
- National Parks and Wildlife Service (NPWS) mapping;
- National Biodiversity Data Centre (NBDC) mapping and datasets;
- Note there are no botanical records available from the Botanical Society of Britain and Ireland 2km Grid square 013E, which encompasses the proposed development.

2.3 Mapping and Evaluation of Invasive Species

An invasive species survey of the proposed development site was undertaken on 12th May by a FT ecologist. The location and extent of the invasive species were recorded using a handheld GPS.

The extent of invasive species recorded within the proposed development is presented in Figure 3-1.

3. EXISTING ENVIRONMENT

3.1 Desktop Records

Historical records of invasive species from the relevant national datasets were assessed through the National Biodiversity Data Centre on the 31st August 2022. A total of six invasive species were identified within 2 km grid squares encompassing the proposed development (listed in Table 3-1 below):

Table 3-1: Historical invasive species records within 10km and 2km grid squares overlapping proposed development

Species	2km	10km	Invasive Impact	Legal Status	Recorded in study area
Water Fern	-	013	Medium	None	No
American Skunk-cabbage	-	013	Medium	Third Schedule	No
Brazilian Giant-rhubarb	-	013	Medium	None	No
Canadian Fleabane	-	013	Medium	None	No
Canadian Waterweed	-	013	High	None	No
Cherry Laurel	0O3Z	003	High	None	Along northern site boundary, outside site
Common Broomrape	-	013	Medium	Third Schedule	No
Curly Waterweed	-	013	High	Third Schedule	No
Evergreen Oak	-	013	Medium	None	No
Bohemian knotweed	-	013	High	Third Schedule	No
False-acacia	-	013	Medium	None	No
Giant Hogweed	013E, 0O3Z	0O3, 013	High	Third Schedule	No

Species	2km	10km	Invasive Impact	Legal Status	Recorded in study area
Giant Knotweed	-	013	High	Third Schedule	No
Giant-rhubarb	-	013	High	Third Schedule	No
Himalayan Honeysuckle	0O3Z	0O3, 013	Medium	None	No
Indian Balsam	-	013	High	Third Schedule	No
Japanese Knotweed	O04V	0O4, 013	High	Third Schedule	No
Japanese Rose	-	013	Medium	None	No
Least Duckweed	-	013	Medium	None	No
Narrow-leaved Ragwort	-	013	Medium	None	No
New Zealand Pigmyweed	-	013	High	Third Schedule	No
Nuttall's Waterweed	-	013	High	Third Schedule	No
Pampas-grass	-	013	Medium	None	No
Parrot's-feather	-	013	High	Third Schedule	No
Sea-buckthorn	-	013	Medium	None	No
Spanish Bluebell	-	013	High	Third Schedule	No
Sycamore	0O3Z	0O3, 013	Medium	None	No
Three-cornered Garlic	0O3Z	O03, 013	Medium	None	No

Species	2km	10km	Invasive Impact	Legal Status	Recorded in study area
Traveller's-joy	-	013	Medium	None	No
Tree-of-heaven	-	013	Medium	None	No
Turkey Oak	-	013	Medium	None	No
Wild Parsnip	-	013	Medium	None	No

3.2 Results of Field Survey and Mapping

The field survey detected three non-native invasive species within the vicinity of the proposed development. One of the species recorded is Third Schedule listed (Rhododendron).

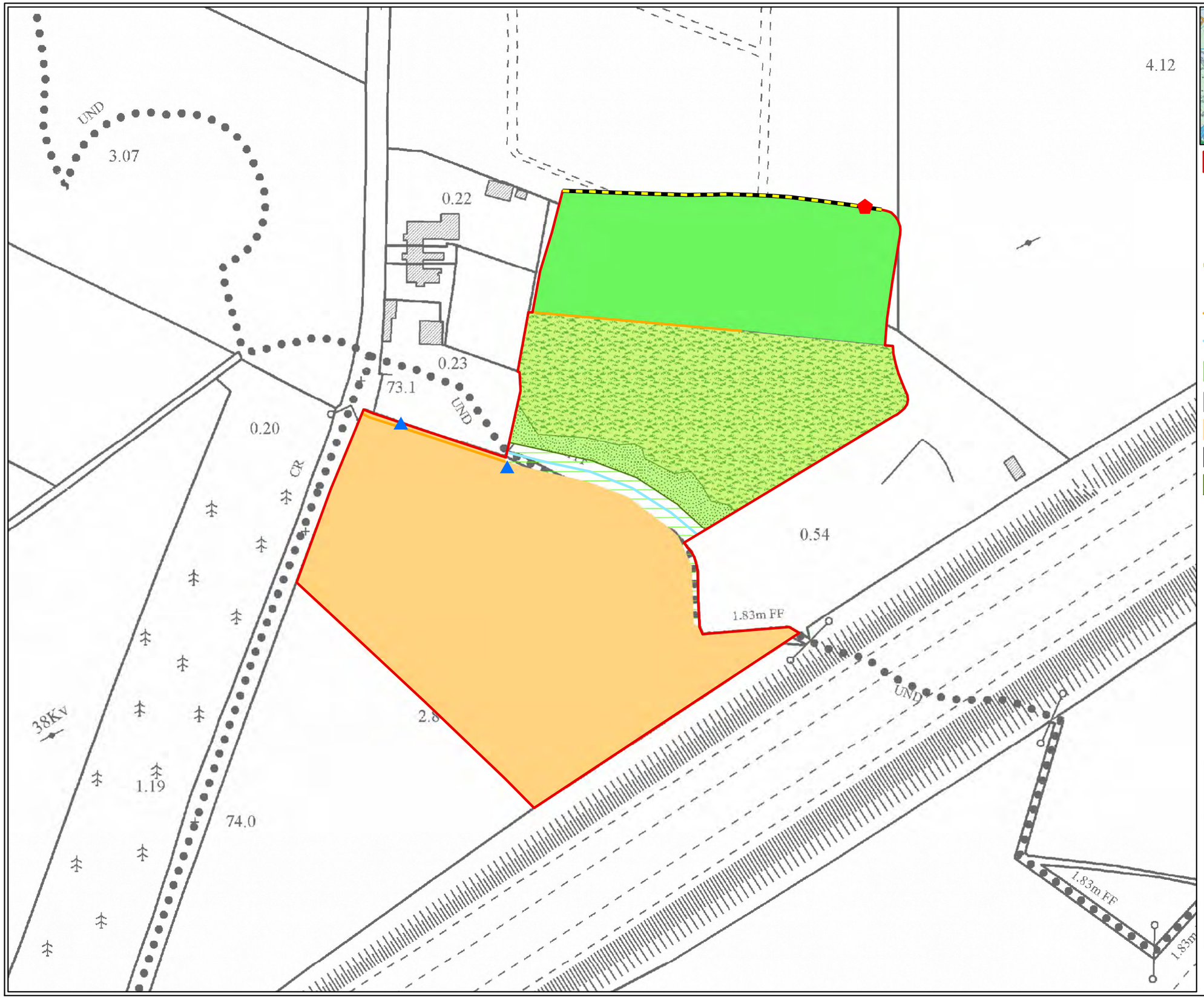
The invasive species recorded within the vicinity of the proposed development are listed below in Table 3-2.

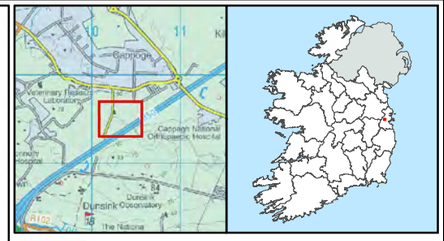
The location of invasive/non-native species recorded are shown in Figure 3-1.

Table 3-2: Non-native species and relevant project elements (Third Schedule listed species shown in bold)

Species	Risk of Invasiveness (NBDC Classification)	Location within development
Rhododendron *Rhododendron ponticum*	High	Outside site, within Cherry Laurel hedging along northern site boundary
Cherry Laurel *Prunus laurocerasus*	High	Outside site, hedging along northern site boundary
Butterfly Bush *Buddleja davidii*	Medium	Within site, on spoil heaps along boundary and centre of site.

Path: R:\Map Production\2021\P21-150\Workspaces\EcIA\P21-150_GIS_EcIA_Fig8-4_Habitat_Map_EIAR_A3.mxd





Proposed Site Boundary

Invasive Species

- Buddleja
- Rhododendron
- Cherry Laurel

Habitat Classification

- ED2 - Spoil and bare ground
- FW4 - Drainage ditches
- GA1/GS2 - Improved grassland/ dry meadows Mosaic
- BL3 - Buildings and artificial surfaces
- ED3 - Recolonising bare ground
- WL2 - Treelines
- WS1 - Scrub

N W E S

0 25 50 100 Meters

TITLE:	Habitat Map		
PROJECT:	SID Application, EIAR and IE Licence Application for Thorntons		
FIGURE NO:	8-4		
CLIENT:	Thorntons Recycling		
SCALE:	1:1500	**REVISION:**	0
DATE:	14/09/2022	**PAGE SIZE:**	A3

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4. INVASIVE/NON-NATIVE SPECIES ACCOUNTS

The International Union for Conservation of Nature (IUCN) in their 'IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species' 2000 paper describes non-native invasive species (referred to as an invasive species) as:

> "*an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity*".

The three non-native species listed below were recorded at the proposed development. Accounts of these species, summaries of their ecology, growth and management periods, and distribution are included below. The species in bold are included in the Third Schedule:

Species formally identified as invasive:

- Rhododendron (*Rhododendron ponticum*)
- Cherry Laurel (*Prunus laurocerasus*)
- Butterfly Bush (*Buddleja davidii*)

The following species: Rhododendron and Cherry Laurel, are outside but adjacent to the proposed footprint of works. As such measures have been included on a precautionary basis in the event they need to be implemented (i.e. if they spread or there is a risk of interaction with seeds/underground plant material due to proximity).

4.1 Rhododendron (Rhododendron ponticum)

4.1.1 Species Ecology

This evergreen shrub is widespread across Ireland and can grow to a height of 5m, producing purple flowers. It spreads through abundant seed dispersal and vegetative layering. Rhododendron is found on a wide variety of habitats, forming dense stands. It reduces native plant cover through competition for light and by releasing toxic chemicals produced by its roots into the surrounding soil. Also, rhododendron can host fellow invasive species *Phytophthora ramorum* (sudden oak death), which can affect several tree species.

It has been assessed by the National Biodiversity Data Centre as having a high risk of impact on native Irish species.

Plate 4-1: *Rhododendron ponticum*. Source: www.invasivespeciesireland.ie (August 2021)

4.1.2 Timeframe

An overall spray applied to the foliage will provide effective control of young bushes up to 1.3m high or as re-growth 2-3 years after cutting back. The best time for application is from early May to late September but in milder areas applications earlier and later than this have in the past proved successful.

4.2 Cherry Laurel (Prunus laurocerus)

4.2.1 Species Ecology

Cherry Laurel is an evergreen shrub that forms dense thickets comprised of either a single stem or multiple stems (especially if it has been trimmed). The thick evergreen 5-15cm long oblong-ovate leaves are glossy green on the surface and pale underneath. Leaves are arranged alternately on short leaf stalks and leaf edges are toothed with pointed tips. Small white fragrant flowers are held in clusters (racemes) and flowers are comprised of five petals and many yellow stamens. The fruits are purple/black and cherry-like and held in clusters.

Plate 4-2: Cherry Laurel. Source: Kingcounty.gov (August 2021)

4.2.2 Timeframe

Cherry Laurel can be cut down at any time of year; the herbicide glyphosate can also be applied throughout the year, however May to October inclusive is a sub-optimal period. Of principle concern when cutting and/or moving vegetation or surrounding soil would be the movement of viable seeds. As such the optimal time for cutting would be outside the flowering and fruiting period.

4.3 Butterfly Bush (*Buddleia davidii*)

4.3.1 Species Ecology

The Butterfly Bush is a multi-stemmed shrub that can reach 4m in height. From June to September, the arching branches bear conical panicles of lilac flowers, which may occasionally be white, pink, red or purple. Leaves are long and serrated along the edges. In the winter, flower heads and seed capsules remain despite the plant being deciduous. Up to 3 million seeds are produced per plant and can remain dormant in the soil for many years. Butterfly Bush is common throughout Ireland. It spreads through abundant seed dispersal by wind and draught behind vehicles. While being a valuable source of nectar, especially for butterflies, *Buddleia* can cause structural damage to buildings by rooting in cracks in masonry.

Plate 4-3: Butterfly Bush (*Buddleia daviddii*) Source: wildflowers of Ireland (Dec 2022)

4.3.2 *Timeframe*

Optimal time for treatment and/or movement of material is outside of flowering and seed-bearing periods and treatment should be undertaken in winter and spring.

5. PROPOSED MEASURES FOR THE MANAGEMENT OF INVASIVE SPECIES WITHIN AND ADJACENT TO THE PROPOSED DEVELOPMENT

It is recommended that a qualified and competent specialist in the treatment of invasive plant species, with appropriate experience and expertise, is employed for the duration of the project to ensure that all the measures proposed in relation to the Invasive Species Management Plan are implemented.

Specific consideration will be given to particular locations, due to their potential for disturbance during works. It is proposed to clear the vegetation within the site, which includes Butterfly Bush. Cherry Laurel and Rhododendron are also present in the hedgerow outside the northern site boundary. Control and removal of Cherry Laurel and Rhododendron (located outside the proposed development footprint) is advocated to enhance the site's environment and prevent the site acting as a reservoir for the spread of invasive species to other areas.

As a general rule, where invasive species are within the footprint of proposed works, they must be contained and disposed of correctly. Where they are outside the proposed footprint, avoidance can be relied on where feasible to prevent their spread.

As such, options for avoidance, control and removal are detailed below.

5.1 General Measures

While it is extremely important and more efficient to contain invasive species at the point of infestation, care shall be taken ensure that invasive species are not spread outside the site.

Invasive Species Ireland (ISI) notes that invasive non-native species are the second greatest threat (after habitat destruction) to worldwide biodiversity. Invasive species negatively impact Ireland's native species by changing habitats and ultimately threatening ecosystems, which impacts on biodiversity as well as economics, as they are costly to eradicate.

Halting the spread of non-native invasive species can be achieved via prevention, containment, treatment and eradication (ISI, 2021).

5.1.1 Prevention

Prevention of the spread of invasive species will be achieved by:

- The full implementation of the invasive species management plan in conjunction with a competent and experienced Invasive Species Specialist Contractor.
- Supervision of control measures and treatment works by an appropriately qualified ecologist or invasive species specialist.
- Raising awareness of site workers via toolbox talks given by a suitably qualified person as part of site introduction, informing workers what to look out for and what procedure to follow if they observe an invasive species.
- Only planting or sowing native species within the proposed site will be allowed.

- Unwanted material originating from areas on-site where invasive species have been identified at the site will be transported off site by an appropriately licensed waste contractor and disposed of properly at a suitably licenced facility.
- Signs will warn people working there that there is invasive species contamination.
- Stockpiles of soil contaminated with invasive species are to be indicated clearly with appropriate signs and isolated.
- Ensure good hygiene practices.
- Remove the build-up of soil on equipment.
- Keep equipment clean.
- Do not move fouled equipment from one site to another.
- Prior to the full disposal of invasive species on-site, all vehicles exiting the site will be washed down with a pressure washer to prevent the transport of seeds, since this cannot be prevented comprehensively by any other measure.

5.1.2 Containment

The three most common ways a site can become infected are:

1. Importation of infected soil.
2. Contamination on vehicles and equipment.
3. Illegal dumping.

Containment of invasive species will be achieved by:

- A pre-construction survey to reconfirm the findings of the EIAR during the growing season immediately prior to the construction phase. This will mark out the extent of invasive plant species. This survey shall inform the finalised draft of the invasive species management plan prior to the commencement of works. Prior to the construction phase, invasive species are to be treated (Section 5.2 for treatment methods).
- Cordoning of invasive species outside the works footprint shall include a buffer of 1m surrounding the area of infestation (2m for Rhododendron).

  This will prevent plants with underground rhizomes being transported to other sections of the site and it will also prevent contact with plants which could result in the transport of seed, fruit or vegetation to other parts of the site. No construction works will occur within exclusion zones prior to the eradication of invasive species.
- No machinery or personnel shall be allowed within exclusion zones. Similarly, there shall be no storage of materials within or adjacent exclusion zones.
- No soil or vegetation shall be removed from this area unless it is contained and is transported via an appropriately licensed waste contractor to a suitably licenced facility for treatment.
- Informing all site staff through toolbox talks as part of site inductions.
- Any new sightings of invasive plant species shall be relayed to construction staff and the developer. These areas shall follow the same protocol as current infested areas.

- It is possible, particularly in the first year of control, that new plants will sprout following the initial removal/treatment, either because shade suppression will be reduced or due to soil disturbance. As such, several additional visits will likely be required. Three visits, May/June, July/August and September/October should be sufficient to catch all regrowth, although, a cautionary approach is advisable. Plants that germinate after September/October are very unlikely to have sufficient time to complete their life cycle and produce seeds.

5.1.3 Prevent Spread:

- Import only clean soil from known sources.
- Ensure all vehicles and equipment are cleaned to avoid cross contamination.
- Follow instructions provided for containment of invasive species (Section 5.1.2).
- Promote native species and biodiversity, only native species are to be introduced to the site.
- Report all sightings.

5.2 Species-Specific Measures

5.2.1 Rhododendron

A single young Rhododendron has been identified at the site. Two options for the treatment of Rhododendron have been proposed. Any one or a combination of these options shall be used to eradicate Rhododendron from the site and avoid the spread of the species. However, the following general recommendations will be adhered to as part of the plan:

- No treatment measures to take place in these areas without supervision and agreement by appointed Rhododendron eradication specialist.
- Equipment, clothing and footwear is to be checked following treatment operations and cleared of fruits/seeds as necessary.

Option 1 – Physical control

This method involves using a toppler or mechanical winch, or hand-pulled for younger plants (as is the case within the vicinity of the development). This option is effective as the roots are relatively shallow, seldom deeper than 45cm. Chainsaw cutting of the root-ball is effective on larger plants, which is not appropriate for the younger plant associated with this development. The accumulated material is either windrowed or mounded and breaks down naturally or is burnt. Follow-up is required to ensure no re-infestation.

Physical control is the most appropriate option for Rhododendron associated with the development.

Option 2 – Chemical control

This method involves cutting the main stem of the plant down near ground level, and applying herbicide to the freshly cut wound.

The herbicide concentrations used, and timings of applications vary according to which chemical is used. When treating many stems, vegetable dye added to herbicide is useful for highlighting the stems that have and haven't been treated. The use of a brush or other such applicator will provide an accurate application and prevent damaging adjacent non-target plants via spray drift. Please see table below for best treatment time (ISI, 2008).

Since the 26th November 2015, only a DAFM-registered professional user can apply Plant Protection Products that are authorised for professional use. As such any application of herbicide must be carried out by a professional user. Since the 26th November 2016, it has been a requirement for sprayers to have passed a Pesticide Application Equipment Test before being used to apply professional use Plant Protection Products.

Any reproductive plant material will be carefully disposed of following NRA (2010) Guidelines. Any equipment used will be inspected and thoroughly cleaned, as will the footwear and clothing of operatives removing invasive species material. Any material arising from cleaning of equipment and footwear will be disposed of in a manner which will not cause the spread of invasive species.

5.2.2 Cherry Laurel

Four options for the treatment of Cherry Laurel have been proposed. Any one or a combination of these four options shall be used to eradicate Cherry Laurel from the site and avoid the spread of the species. However, the following general recommendations will be adhered to as part of the plan:

- No treatment measures to take place in these areas without supervision and agreement by appointed Cherry Laurel eradication specialist.
- The Cherry Laurel plant contains cyanide and as per good practice will only be handled with gloves. This plant will be disposed of via an appropriately licensed waste facility.
- Equipment, clothing and footwear is to be checked following treatment operations and cleared of fruits/seeds as necessary.

Option 1 – Cut to stump and dig out stump; bury onsite

This method involves cutting the main stem of the plant down near ground level and digging out the stump and any visible roots. This option is not usually practical in areas where there are other invasive plants present as the disturbed soil can allow for the setting of seeds or the spread of rhizomes of adjacent species (ISI, 2008).

Option 2 – Cut to stump and treat stump with herbicide

This method involves cutting the main stem of the plant down near ground level and applying herbicide to the freshly cut wound.

The herbicide concentrations used, and timings of applications vary according to which chemical is used. When treating many stems, vegetable dye added to herbicide is useful for highlighting the stems that have and haven't been treated. The use of a brush or other such applicator will provide an accurate application and prevent damaging adjacent non-target plants via spray drift. Please see table below for best treatment time (ISI, 2008).

Since the 26th November 2015, only a DAFM-registered professional user can apply Plant Protection Products that are authorised for professional use. As such any application of herbicide must be carried out by a professional user. Since the 26th November 2016, it has been a requirement for sprayers to have passed a Pesticide Application Equipment Test before being used to apply professional use Plant Protection Products.

Option 3 – Cut to main stem and inject stem with herbicide

This method involves the 'drill and drop' method where the main stem is cut, and a hole drilled into the cut. The main drawback to this technique is that the plant is left in place to rot, which can take a decade or more. Please see Table 5-1 below for best treatment time (ISI, 2008).

Option 4 - Cut back to stump and spray regrowth with herbicide

This application involves cutting a main stem down near ground level and then treating the new stems with herbicide. This method is the least effective as some stems may be missed and not treated. Also, the application of herbicide is generally via spraying, which can result in adjacent non-target plants being killed off. Please see Table 5-1 below for the best treatment times (ISI, 2008).

Cutting	J	F	M	A	M	J	J	A	S	O	N	D
Glyphosate	J	F	M	A	M	J	J	A	S	O	N	D
Tryclopyr*	J*	F*	M*	A*	M*	J*	J*	A*	S*	O*	N*	D*
Ammonium sulphate	J	F	M	A	M	J	J	A	S	O	N	D

Optimum treatment time. Remember to consider breeding birds before embarking on a programme.
Suboptimum treatment time but can be effective. In the case of glyphosate based herbicides consider higher concentrations 25--100% during this time period.
* Suitable for treatment any time after cutting and appearance of new growth.

Figure 5-1: Optimum time for the treatment of Cherry Laurel (ISI, 2008).

Any reproductive plant material will be carefully disposed of following NRA (2010) Guidelines, and transported offsite by an authorized waste collector to an authorized waste facility. Any equipment used will be inspected and thoroughly cleaned, as will the footwear and clothing of operatives removing invasive species material. Any material arising from cleaning of equipment and footwear will be disposed of in a manner which will not cause the spread of invasive species.

5.2.3 Butterfly Bush

Since the primary mode of spread for this species is via the transport of seeds in wind, the potential for spread due to human activities is considered relatively less important than for the other invasive species present; Butterfly Bush would continue to disperse and spread on its own in the absence of human intervention, while for the other species present, transport by humans is a more important mechanism of spread.

Control measures should focus on preventing the transport of seed outside the site during construction works, and minimising disturbance of ripe seed-heads if clearance works are required to be carried out while ripe seed is present. Due to the presence of butterfly bush within the site, exclusion zones surrounding plants are impractical. As such, measures to prevent the accidental transport of seed outside the site should be focused on washing down of machinery exiting the site prior to full disposal of this invasive species from the site.

Since vegetation clearance will be required prior to works, measures should be taken to minimise the potential for disturbance of seed. These measures should focus on the removal of flower spikes from all plants present within the site. If treatment can be undertaken while plants are in flower, all flower-spikes should be removed and buried on-site.

If treatment must be undertaken after flowers have been fertilised, each flower spike should first have a bag placed over it before cutting to prevent seeds being dislodged and spread during the process. The bags containing seed-heads should then be retained onsite and buried during re-grading works.

Following removal of reproductive material, plants should be cut to the basal stump, which is then treated (brushed on) immediately with a systemic weed killer mix, and cut material either retained on-site and buried during construction works or transported offsite by an authorized waste collector to an authorized waste facility.

6. MANAGEMENT PLAN

The management of any invasive species is achieved by the assessment and mapping of the invasive species, containment once found, continual monitoring and record keeping as well as the safe disposal of invasive species material.

6.1 Containment

For the efficient use of resources, namely financial and physical effort, it is important to prevent the further spread of invasive species by containment. Containment will be achieved via:

- Cordoning off the area of infestation using demarcation fencing to prevent further spread of seed by people or machinery.
- Mark the cordoned off area with an information/warning sign.
- Toolbox talks to be carried out for all maintenance workers working within the site.
- Landholder to be informed of location of the invasive species and the management plan.
- To help with monitoring of the infestation, the area is to be outlined with spray paint.
- Ensure anyone treating the infestation is a suitably qualified trained and certified professional who follows the management plan.
- The site will be re-surveyed prior to treatment / construction works to reconfirm the findings of the original survey.
- Follow up surveys will be carried out post-construction to determine effectiveness of treatment and trigger further treatment if required.

6.2 Schedule

The schedule for treatment is detailed in Table 6.1.

Re-surveys for all invasive species will be required, to ensure that treatment measures were effective, and to trigger further treatment if necessary.

Please note that the schedule and treatment method may require amendment following any given site visit.

Table 6-1: Schedule of measures to eradicate and prevent spread of invasive species at the proposed development

Year	Details of measures
1	• A pre-construction survey (to reconfirm the findings of the EIAR) will be undertaken during the growing season to mark out the extent of invasive species within the footprint of the project prior to any works commencing on-site. • Invasive species material that is to be retained onsite will be buried in advance of other works, and no further excavation or disturbance of these areas will take place. • All invasive species observed shall include a buffer of up to 1m surrounding (2m for Rhododendron) the area of infestation. This will prevent plants with underground rhizomes and seeds being transported to other sections of the site and it will also prevent contact with plants, which could result in the transport of seed, fruit or vegetation. • Treatment of invasive species using one or more of the treatment options proposed in Section 5. • Only once treatment has been completed and invasive species have been removed from within the area of works/buried securely will works commence. • Toolbox talk shall be given to all personnel accessing the site. • Site to be monitored continually for signs of regrowth of all invasive species during construction activities. Disposal of all cut and excavated plant matter, if chosen to be processed off-site, must be done so through an authorized waste facility. The haulage of this material must be undertaken by an authorized waste collector.
2 - 5	• For 5 years following construction, site to be monitored annually for signs of regrowth of invasive species.

6.3 Mapping, Evaluating and Record Keeping

During each treatment the following will take place before control treatments:

- Check that the area of infestation is still cordoned off and a warning/information sign is still in place;
- Photographs of the area(s) of invasive species infestation;
- Map the extent via recording GPS coordinates and measure the length and width of infestation and plot on map;
- Evaluate the status/condition of the infestation;
- If the infestation has spread spray paint the extent of the new area (for comparison on next visit);
- Make sure step 1-5 are recorded.

At the end of each site visit the recorded data will be compared with the findings of this report and where required the management plan shall be updated. A short report on the progress of treatment works, and any subsequent monitoring will be produced annually during the construction and monitoring periods.

6.4 Appropriate Disposal

6.4.1 Storage

As outlined in Section 5, all cut and excavated plant matter will be stored securely in line with the relevant treatment methodology.

6.4.2 Disposal

Invasive species will be disposed in one of two ways, as outlined below:

Deep Burial (onsite)

Burial of plant matter and possible contaminated soil from within the proposed site can be completed as per the species-specific measures discussed in Section 5. Invasive species material generated within the site may be disposed of within the planning boundary, in accordance with the measures detailed in Section 5. This method could be employed where practicable at the outset of site clearance to prevent the spread of invasive species early on.

Licensed Disposal

Disposal of invasive species and contaminated soil generated off-site can be completed through an appropriately authorized waste collector and waste facility. It is noted that all invasive species material disposed of off-site requires acceptance at an appropriately authorized waste facility. In addition to this, Third Schedule-listed species such as Rhododendron also require an additional licence for transportation.

7. CONCLUSION

There is a legal obligation not to spread plants listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011-2021; the relevant species therefore that of principal concern, is Rhododendron (*Rhododendron ponticum*).

Environmental best practice dictates the need to take measures to prevent the spread of these species.

Various treatment measures are advocated for the invasive species present on-site, with several options available in most cases.

It is recommended that a competent, licenced and experienced invasive species management contractor is appointed to eradicate invasive species from the site. Any operatives applying herbicides must be appropriately trained and certified.

A dedicated invasive species survey is required to be undertaken by the appointed contractor prior to the commencement of construction to reconfirm the findings of the preplanning surveys.

All invasive species present on-site will be required to be cordoned off prior to any treatment works, with exclusion zones in place as specified in Section 5.

A quarantine zone where equipment washing, and inspection of clothing and footwear can be carried out will be established at the site entrance prior to treatment works and remain in operation until all vegetation has been removed or buried.

Where on-site burial of invasive species takes place, areas should remain cordoned off, with appropriate methodologies in place to ensure no disturbance occurs during subsequent works.

Treatment works will be supervised by an appropriately licenced invasive species specialist.

Yearly monitoring for re-growth of invasive species is recommended for up to five years following construction.

With the implementation of the measures detailed in this document, the spread of invasive plant species will not result from any activities associated with the proposed project. The primary measures are avoidance, control, correct disposal, and sanitation of equipment. Where specified, localised eradication will also be carried out, to enhance habitats and remove reservoirs for further infestation.

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