The proposed Data Centre Buildings F and G will be constructed towards the eastern edge of the proposed site development boundary c. 50m from the emerging Buildings B and C and set back typically 90 to 110m from the western site boundary with the R121. Both buildings are rectangular in plan and will be orientated so that their short elevations incorporating the administration and finer grained uses will face west towards the R121. The longer elevation that are larger in scale and incorporate the back-up generators will face south and internally towards the GIS substation and Building A.

The setback area along the R121 boundary will accommodate internal access roadways, a bio retention pond, a wetland area, landscaping, underground utilities and a number of smaller structures that are ancillary to the Data Centre buildings. The setback will ensure the proposed Data Centre buildings are visually set well back into the development site and will provide a visual foil incorporating layers of perimeter and internal landscaping that will render the buildings less prominent from the public road.

Building E is much smaller and will be located behind Building A and at the southern end of the setback zone such that it will be visually screened by Building A and by the perimeter landscaped berms along the R121.

Along the Cruiserath Road and the R121, there are substantial existing berms with mixed woodland landscaping that provide a strong immediate landscape character along the road corridors. Building A is in operation and forms a continuous building line set back from the Cruiserath Road boundary. It is partially visible on the eastern and western approaches to the lands and intermittently visible through the southern perimeter landscaping from the immediate roadway. The emerging Buildings B and C are partially visible from the Cruiserath Road towards the south eastern corner of the site where they are set behind Building A. During construction of the Proposed Development, there may be glimpse views over the parapet of Building A and the perimeter landscape berms of tower cranes located centrally within the overall development site. Additional site lighting will increase the amount of artificial light within the site context. Effects on landscape character will be ***temporary*** to ***short term***, ***slight/not significant*** and ***neutral***. Moving further east along Cruiserath Road and west along Damastown Avenue, the existing street trees and the falling ground levels are such that the Proposed Development site quickly becomes screened by intermediate structure and natural features and any effects on landscape character will reduce accordingly.

Along the R121, construction of the Proposed Development, and in particular Buildings F and G, will be more readily apparent when the structural frames are erected and as cladding materials are installed. Buildings F and G will gradually emerge as new large-scale high-tech buildings set behind the perimeter landscaped berms along the R121 boundary. During construction, tower cranes will be visible, and construction activity will become more apparent as the structures are completed to their full height and finishes are applied. Effects on landscape character will be ***temporary*** to ***short term***, ***moderate*** and ***negative***.

Along Cruiserath Drive to the north of the development, and in the vicinity of the Carlton Hotel, the extent of foreground landscaping in the hotel carpark and along Cruiserath Drive is such that deeper views southwards into the development site are limited and intermittent. During construction, there will be glimpse views of tower cranes and of the taller built elements of Building F as it will be the most northerly building and closest to Cruiserath Road. Construction of additional high-tech structures will be consistent with the emerging trend on the overall development lands and wider context and effects on landscape character will be ***temporary*** to ***short-term***, ***slight/moderate*** and ***neutral***.

Should construction of the permitted office development at Cruiserath Drive (Register Ref. FW18A/0121) precede the Proposed Development, its presence will have already altered the landscape character at Cruiserath Drive, and effects on landscape character arising from the Proposed Development will be reduced somewhat but remain ***slight/moderate*** and ***neutral***.

Effects on landscape character during construction from the residential areas to the immediate west of the R121 will be ***temporary*** to ***short-term***, ***slight/not significant*** and ***neutral*** by virtue of the strong tree planting that defines the boundary between the residential areas and the R121. Further west within the heart of the residential developments, effects on landscape character will be ***imperceptible*** by virtue of the visual enclosure provided by the forms of buildings, streets and open spaces within the residential area.

Effects on landscape character from the elevated grounds of the church ruin at Mulhuddart Church and Graveyard to the south of the site will be ***temporary*** to ***short-term***, ***imperceptible*** and ***neutral***.

Effects on Views

Effects on views during construction will be ***temporary*** to ***short-term***, and will also vary considerably from ***moderate*** to ***imperceptible***, and from ***neutral*** to ***negative***.

Visibility from the south along the Cruiserath Road will be limited by the existing perimeter landscape berms and planting and the established Building A. There may be occasional glimpse views of tower cranes during construction as well as some additional site lighting, however effects on views will be ***slight/not significant*** and ***neutral***. From locations further east along Cruiserath Road and west along Damastown Avenue, visibility towards the Proposed Development is quickly obstructed by existing street trees and the falling ground levels respectively and limiting any potential effects on views from these locations.

Along the R121, the proposed Buildings F and G will become more visible than the existing Building A and GIS substation (Building D) and the emerging Buildings B and C. The gradual addition of Buildings F and G will further establish the new high-tech campus character of the overall development lands by introducing two additional and substantial Data Centre buildings. During construction, tower cranes and the structural frames will become visible over and behind the perimeter landscape berms and the addition of cladding will finish the buildings to reveal their final forms. Effects on views from the R121 during construction will be ***moderate*** and ***negative*** as construction of new large scale buildings becomes apparent along the eastern side of the road.

Along Cruiserath Drive to the north of the development, and in the vicinity of the Carlton Hotel, existing street trees and carpark landscaping substantially restrict views into the development lands. During construction, there will be glimpse views of tower cranes and of the uppermost portions of the building and impacts of views will be ***slight*** and ***neutral***.

Should construction of the permitted office development at Cruiserath Drive (Register Ref. FW18A/0121) precede the Proposed Development, its presence will reduce visibility towards the Proposed Development from Cruiserath Drive and the Carlton Hotel, and visual effects will be reduced somewhat but will remain ***slight*** and ***neutral***. Visual effects from the office building itself, if constructed, will be ***moderate*** and ***negative*** as the Proposed Development will be openly visible within the view south from the office development itself.

Within the residential areas to the west of the R121, visibility will be limited to areas adjoining the R121 and where established boundary tree planting permits filtered views across the R121 towards the development site. Visual effects will be ***slight/not significant and negative***. Visual effects from within the residential areas and open spaces further west of the R121, and from the elevated grounds of the church ruin at Mulhuddart Church and Graveyard to the south of the site, will be ***imperceptible and neutral***.

11.5.3 Assessment of Effects During Operation

As noted previously, the permitted Building A and GIS substation building (Building D) have been constructed and are operational and Buildings B and C are under construction. Landscape and visual effects of the Proposed Development there assume the prior completion or substantial completion of Buildings A, B C and the GIS substation.

Effects on Landscape Character

Effects on landscape character during operation will be permanent and will generally vary from ***slight/not significant*** to ***moderate***, and from ***neutral to negative***.

Prior to implementation of the Proposed Development, the above mentioned Buildings A, B C and the GIS substation will already occupy the southern and eastern parts of the overall development site and the southern, western and northern perimeter landscaping will have been reinforced and extended. The north western portion of the overall development site will present substantially as an early stage construction site incorporating elements of site infrastructure and large areas of undeveloped but modified land.

The introduction of Buildings E, F and G will intensify the large-scale high-tech campus character of the overall development site. The proposed internal site landscaping builds on and adapts the previously permitted site landscaping so as to avail of further landscape opportunities arising from the detailed design of the Proposed Development. Internal site landscaping will include a bio retention pond, a native wetland, wild flower meadows, copses and areas of native woodland and wetland planting, beehives, and reinforcement of existing perimeter landscape planting so as to provide visual screening and a rich biodiverse campus landscape that incorporates a network of ecological corridors.

Along the Cruiserath Road and approaching the site from the southwest and southeast, the existing Building A and southern perimeter landscape berms will substantially restrict visibility towards the Proposed Development. There may be some increase in the extent of site lighting however, much of the proposed lighting will be low level and will have high cut-off values to minimise light-spill. Effects on landscape character will be ***imperceptible***. Locations further east along Cruiserath Road and further west along Damastown Avenue will not be impacted by virtue of the existing screening afforded by the established street trees on Cruiserath Road and the quickly reducing ground levels along Damastown Avenue.

Along the R121, the Proposed Development, and in particular Buildings F and G, will alter the character of the roadway by reinforcing high-tech campus identity and character of the overall development lands along the eastern side of the R121. The western elevations of Buildings F and G will present the administration and finer grained uses of those buildings towards the R121 and main site entrance. The elevational composition and treatment has been designed to moderate the overall scale of the buildings, present high-quality finishes towards the R121 and beyond and

provide definition to the main campus entrance off the R121 roundabout. Effects on landscape character will be ***moderate*** and ***neutral***.

Along Cruiserath Drive to the north of the development, and in the vicinity of the Carlton Hotel, the Proposed Development will have ***slight*** and ***neutral*** effect on landscape character as the development will be setback substantially from the northern site boundary and the existing street trees along Cruiserath Drive and carpark landscaping at the Carlton Hotel will remain prominent in the foreground.

Should construction of the permitted office development at Cruiserath Drive (Register Ref. FW18A/0121) precede the Proposed Development, its presence will have already altered the landscape character at Cruiserath Drive, and effects on landscape character arising from the Proposed Development will be reduced somewhat but remain ***slight*** and ***neutral***.

Effects on landscape character from residential areas to the immediate west of the R121 will be ***slight*** and ***neutral*** along the eastern edge of the residential areas by virtue of the separation provided by the mature trees along the western side of the R121. Further west from within the residential areas, effects on landscape character will be imperceptible by virtue of the enclosing nature of the residential buildings, streets and landscaping. Effects on landscape character from the elevated grounds of the church ruin at Mulhuddart Church and Graveyard to the south of the site will be ***imperceptible and neutral***.

Effects on Views

Effects on views during operation will be permanent and will also vary considerably from ***moderate to imperceptible***, and from ***neutral to negative***.

Along the Cruiserath Road and approaching the site from the southwest and southeast, the existing Building A and southern perimeter landscape berms will substantially restrict views of the Proposed Development. There may be some increase in the extent of site lighting however, much of the proposed lighting will be low level and will have high cut-off values to minimise light-spill. Effects on views will be ***imperceptible***. Visual effects from further east along Cruiserath Road will be limited by the tree lined nature of the road and from from further west along Damastown Avenue due to the reducing ground levels.

Along the R121, the Proposed Development, and in particular the upper parts of Buildings F and G, will be visible above and behind the existing perimeter landscaping. The buildings will introduce new built elements that further define the high-tech campus identity and character of the overall development lands, however they will not limit or obstruct views towards any more distant or significant landscape elements. Effects on views along the R121 will be ***moderate*** and ***neutral***.

From the north, at Cruiserath Drive and from the vicinity of the Carlton Hotel, effects of views will be ***slight*** and ***neutral***.

Should construction of the permitted office development at Cruiserath Drive, (Register Ref. FW18A/0121) precede the Proposed Development, its presence will reduce visibility towards the Proposed Development from Cruiserath Drive and the Carlton Hotel, and visual effects will be reduced somewhat but will remain ***slight*** and ***neutral***. In such circumstances, visual effects from the permitted office building will be ***moderate and negative*** as the Proposed Development will be openly visible in views south from the office development itself.

The residential areas to the immediate west of the R121 will have partial filtered visibility through the existing mature tree boundary towards the Proposed Development giving rise to visual effects that are ***slight/not significant and negative***. Visual effects from the core of the residential area further west of the R121, and from the elevated grounds of the church ruin at Mulhuddart Church and Graveyard to the south of the site, will be ***imperceptible*** and ***neutral***.

11.6 MITIGATION MEASURES AND MONITORING

11.6.1. General

The Proposed Development is designed as a high-quality facility, in suitably zoned lands, and in the context of a broad range of contemporary and traditional high-tech and industrial developments that are similar in nature.

It is noted that Buildings A and the GIS substation are completed and Buildings B and C will be at an advanced stage of construction prior to commencement of construction of the Proposed Development and will include elements of the overall perimeter and site landscaping mitigation measures included with those planning permissions.

The Proposed Development includes Data Centre Building E, F and G . Buildings F and G are c. 130m long, 65m wide and 19.8m high. These building are to be oriented such that their shorter façades incorporating the administration and other finer grained uses will face westwards towards the R121. The longer facades that are inherently more substantial in scale and include the back-up generators and flues will face south within the overall development lands and towards the rear of the existing Building A and GIS substation building.

The buildings will also be set back by c. 90 to 110m from the R121 so that there is a substantial buffer between the public road and the buildings. The setback buffer will accommodate low level and underground elements of the development including surface and foul drainage, internal access roadways, attenuation ponds and smaller scale ancillary plant elements. The buffer zone will be heavily landscaped to provide a strongly biodiverse campus landscape character that enhances biodiversity and provides an attractive setting for employees and visitors of the facility.

The building facades, and in particular the western facades facing the public roadway, are to be finished using a combination of high-quality light and dark cladding materials defining projecting and recessed planes that will moderate the overall scale of the facades, provide visual interest and establish a high-tech identity that is commensurate with the overall development site objectives.

Perimeter landscaping comprises established berms ranging in height from 2 to 5m and planted with native woodland and shrub species. Additional landscape berms will be constructed and planted in a similar manner and existing berm planting will be inter-planted so as to further reinforce perimeter landscape screening.

Building E is substantially smaller than Building F and G, and will be located behind the western end of the existing Building A and behind new landscape berms between Building E and the R121 so that it is effectively absorbed into the overall site.

Mitigation During Construction

Other than providing for a managed and orderly construction site, the principal mitigation measures, involve the appropriate stripping and storage of topsoil and subsoil sufficient for the reinstatement of temporary construction areas, for

reinstatement of the temporary construction compound area and for landscape works proposed on the site as described in the Landscape Masterplan (drawing ref:452-101).

Mitigation During Operation

Landscape and visual mitigation measures are substantially provided by the existing site perimeter landscape berms and by additional landscape elements included under the existing planning permissions. The Proposed Development includes amendments to some as the permitted landscape scheme so as to take advantage of additional opportunities arising from the detailed design of the Proposed Development and to further enhance the overall landscape mitigation strategy.

Mitigation measures are also inherent in the architectural and landscape design for the Proposed Development and therefore focus on the implementation of the proposed architectural and landscape measures. The landscape measures are set out in the accompanying Landscape Masterplan (drawing ref:452-101).

As with the permitted Buildings A, B, C and the GIS substation, the Proposed Development will also use horizontal cut-off light fittings for the lighting standards on site roads and carparks so as to minimise light spill.

11.6.2 Monitoring

Monitoring During Construction

During construction, the contractor will ensure that the site is managed and maintained in an orderly manner and in accordance with the CEMP, with particular care and attention to perimeter areas that might give rise to adverse landscape and visual effects from outside the construction site

Monitoring During Operation

All landscape works will be maintained in line with normal landscape maintenance / management works and failed and/or defective works will be made good, as required, on a regular basis.

11.7 PREDICTED IMPACTS OF THE DEVELOPMENT

Residual effects are described with reference to a series of Accurate Visual Representations (AVRs) included in Appendix 11.1, and include views from twelve locations that are representative of the views towards the site from the vicinity of the development site and from the wider area. It is noted that the eastern side of the site is bound by the existing BMS facility which is not considered sensitive to the Proposed Development in relation to landscape and visual impacts, and as such, no views are provided from the east.

The locations of the AVRs are indicated on Figure 1.0 View Location Map in Appendix 11.1, and for each view, the following variations are provided:

- As Existing, showing the current baseline situation;
- As Proposed, showing the Proposed Development; and,
- Cumulative, showing the Proposed Development in combination with other planned development and including the indicative future masterplan development of an additional data centre (Building E) in the northernmost portion of the Proposed Development site. Note that commentary on Cumulative Effects is included in Chapter 16 of this EIA Report.

The series of AVRs in Appendix 11.1 are from representative locations along the Cruiserath Road and the R121 Road, from Cruiserath Drive to the north; and from the residential areas to the west of the R121.

View 1, *Figure 1.1.1*, is from the Cruiserath Road opposite the existing BMS facility. The presence of an access gateway to the BMS facility at this location provides a localised break in the otherwise continuous roadside tree planting and perimeter site planting, and the boundary between the BMS facility and the overall development site can be seen perpendicular to the road boundary. The existing Data Centre Building A is readily visible in the medium ground and Buildings B and C are under construction and partially visible to the right of the view behind Building A and leading along the BMS boundary.

Figure 1.1.2 includes the Proposed Development however it is shown in a red outline indicating it will be entirely screened beyond the established developments on the site with landscape and visual effect.

Views 2, *Figure 1.2.1*, is from the roundabout at the junction of the Cruiserath Road and the R121 Road. The existing Data Centre Building A is partially visible beyond the landscape mounding at the southwest corner of the overall lands and the street trees and perimeter planting on the development site can be seen leading along Cruiserath Road and the R121.

Figure 1.2.2 includes the Proposed Development, and indicates that Data Centre Building G will be partially visible and Building F substantially screened by virtue of the existing vegetation both on the roundabout and along the R121 development site boundary. Landscape and visual effects are considered to be ***slight neutral***.

View 3, *Figure 1.3.1*, is from along the R121 approaching the overall site entrance, and illustrates the typical perimeter berms and landscaping that existing along the western boundary of the overall site. Building A is effectively out of view coverage to the right.

Figure 1.3.2 includes the Proposed Development and indicates visibility of approximately the upper half of Buildings F and G with the lower portion screened by existing and proposed landscape planting. The effect of combining light and dark cladding panels can be seen to moderate the overall scale of both buildings. The addition of the buildings provides a greater sense of the main entrance which is located on the eastern side of the roundabout as well as clearly signalling the high-tech campus development. Landscape and visual effects are considered to be ***moderate neutral***.

View 4, *Figure 1.4.1*, is approaching the R121 roundabout at the site entrance from Boulevard Bealing Village. Similar to View 3, it also demonstrates the existing landscape boundary treatment along the site boundary with the R121 but with a break forming at the entrance from the roundabout. The existing GIS substation building and part of Building A are partially visible to the right of the view and there are glimpses of some of the parapet elements of Buildings B and C in the distance beyond the perimeter vegetation.
Figure 1.4.2 includes the Proposed Development and similar to View 3, indicates the upper half of Buildings F and G presenting over and behind the perimeter landscaping. The northern elevation of Building E is also partially visible to the right of the view. Landscape and visual effects are considered to be ***moderate neutral***.

View 5, *Figure 1.5.1* is from further north along the R121 at Boulevard and also illustrates the nature and extent of landscape treatment along the site boundary and within the public roadway. A short break in the perimeter mound can be see towards the right of the view affording glimpse visibility of Buildings B and C under construction.

Figure 1.5.2 includes the Proposed Development. Data Centre Building F is partially visible and prominent in the view including parts of the northern and western elevations. The effect of the architectural treatment using light and dark cladding panels can be seen to moderate the overall scale of the shorter western elevation facing the R121 and wrapping around the northwest corner of the building. The longer northern elevation is finished in a simpler manner but recedes into the development site and becomes substantially screened by perimeter planting. Landscape and visual effects are considered to be ***moderate neutral***.

View 6, *Figure 1.6.1* is from further north along the R121 approaching the roundabout at the Carlton Hotel, and also illustrates the nature and extent of landscape treatment along the site boundary and within the public roadway. A second short break along the northern site perimeter mound can be seen towards the left of the view affording glimpse views of Buildings B and C under construction. into the development lands.

Figure 1.6.2 includes the Proposed Development and illustrates the addition of new high-tech building beyond the perimeter landscaping. The north western corner and northern parapet of Building F clearly visible and there are glimpse views of Building G beyond. Landscape and visual effects are considered to be ***moderate neutral***.

View 7, *Figure 1.7.1* is from the grounds of the Carlton Hotel just outside the main hotel entrance door. The car parking area in the foreground leads to the landscaped edges of Cruiserath Drive beyond. There is a glimpse view through the intermediate landscaping of part of the existing BMS facility.

Figure 1.7.2 includes the Proposed Development and indicates there will be partial glimpse views through the intermediate landscaping of the uppermost parapet of Building F. Landscape and visual effects are considered to be ***slight neutral***.

View 8, *Figure 1.8.1* is from the roundabout at the end of Cruiserath Drive and leading westwards towards Tyrellstown. There are substantial landscape berms within the BMS lands to the left, and the Carlton Hotel is out of the view coverage to the right. The tree lined nature of the public road is readily apparent and provides substantial screening along both sides of the road.

Figure 1.8.2 includes the Proposed Development and indicates the uppermost parapet of the Data Centre Building F being partially visible above and behind intermediate landscaping. Landscape and visual effects are considered to be ***slight neutral***.

View 9, *Figure 1.9.1* is from the residential open space at Bishop's Orchard. The wall and railing provide a strong physical and visual boundary between the residential area and the R121 and beyond.

Figure 1.9.2 includes the Proposed Development however it is shown in a red outline indicating it will be effectively screened beyond the foreground and intermediate vegetation. Landscape and visual effects are considered to be ***slight neutral***.

Views 10 and 11, *Figures 1.10.1 and 1.11.1*, are from Pairc an Bhuibhaird and Boulevard Bealing Village respectively, and both illustrate the enclosure afforded by existing residential development to open spaces and streetscapes.

Figures 1.10.2 and 1.11.2 include the Proposed Development however it is shown in a red outline indicating it will be entirely screened beyond the buildings and streets of the residential development.

Views 12 and 13, *Figures 1.12.1 and 1.13.1*, are from Damastown Avenue and Cruiserath Road approaching the Proposed Development site from c. 300m. These clearly shows the screening effect of the rising intermediate terrain and the street tree planting with limited visibility of even the existing Building A.

Figures 1.12.2 and 1.13.2 include the Proposed Development however it is shown in a red outline indicating it will be entirely screened beyond any intermediate buildings of natural elements.

View 14, *Figure 1.14.1*, is from the elevated grounds of the church ruin at Mulhuddart Church and Graveyard to the south of the site, and illustrates the strong foreground of the older and extended graveyard setting, with a range of contemporary communications infrastructure, electricity pylons and high-tech industrial development beyond. It is noted that the existing Data Centre Building A and GIS substation buildings are not visible in the view.

Figure 1.14.2 includes the Proposed Development however it is shown in a red outline indicating it will be entirely screened beyond the middle ground trees.

11.8 RESIDUAL EFFECTS

The Proposed Development site is located towards the north western part of the wider development lands between the Cruiserath Road, R121 and Cruiserath Drive. These wider development lands share a boundary with the existing BMS facility to the east. The overall development lands have been the subject of a number of previous planning permissions including Data Centre buildings, a GIS substation, grid connection development and associated site and site landscape development works.

The development site is zoned for High Technology development, and does not contain any landscape features that are considered to be sensitive to development. The Proposed Development site set behind the existing Data Centre building A and set back from the R121 public road by c. 100m. The overall development site includes extensive perimeter landscaped berms with mixed native woodland and shrub planting that is mostly well established and provides immediate visual screening of the development lands. The R121 along the western side of the development site provides substantial separation between the site and the established residential development to the west of the road. The western side of the road also comprises a green buffer with mature tree planting that further separates the different land uses. Lands to the east and south of the development already contain substantial large scale high technology facilities.

Landscape and visual effects arising from the Proposed Development will be ***not significant***, and will generally range from ***moderate*** to ***slight*** and ***neutral.*** Landscape and visual effects from the wider locality, including from the residential areas to the west of the R121, will be ***not significant*** or ***imperceptible***.

The cumulative impact assessment is addressed Chapter 16 of this EIA Report. The photomontages in Appendix 11.1 illustrate the cumulative impact of the permitted, proposed and future indicative masterplan along with visual Permitted Developments adjoining the site.

Interactions are addressed in Chapter 17 of this EIA Report.

11.9 REFERENCES

- EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports, May 2022
- EPA 'Draft Advice Notes for preparing Environmental Impact Statements' (2015).
- The Landscape Institute/ Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment (3rd Edition);
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report;
- Government of Ireland (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018); and
- Fingal County Development Plant 2017 – 2023.

APPENDIX 11.1

PHOTOMONTAGES

PREPARED BY BRADY SHIPMAN MARTIN

(INCLUDED AS A SEPARATE BOUND DOCUMENT)

12.0 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

12.1 INTRODUCTION

The site of the Proposed Development is located at Cruiserath Road, Blanchardstown, Dublin 15 (ITM 707735, 741837; see Figure 12.1). It is located in the townland of Cruiserath, the Barony of Castleknock and the Civil Parish of Finglas. In order to place the Proposed Development in context, an assessment of available archaeological, architectural and cultural heritage resources were examined for an area of approximately 1.5km from the Proposed Development site. This broadly comprised the townland of Cruiserath, Co. Dublin and the surrounding townlands of Ballycoolen to the south, Bay to the east, Buzzardstown to the west, Goddamendy to the east, Hollywoodrath to the north, and Tyrrelstown to the west.

Figure 12.1 Site location map showing townlands in the vicinity of the Proposed Development (source: www.downsurvey.tcd.ie)

12.2 METHODOLOGY

12.2.1 Record of Monuments and Places

The Record of Monuments and Places (RMP), comprising the results of the Archaeological Survey of Ireland, is a statutory list of all recorded archaeological monuments known to the National Monuments Service. It was established under Section 12 of the National Monuments (Amendment) Act 1994. The relevant files for these sites contain details of documentary sources and aerial photographs, early maps, OS memoirs, the field notes of the Archaeological Survey of Ireland and other relevant publications. Sites recorded on the RMP all receive statutory protection under the National Monuments Acts 1930 to 2014 (The information contained within the RMP is derived from the earlier non-statutory Sites and Monuments Record (SMR); some

entries, however, were not transferred to the statutory record as they refer to features that on inspection by the Archaeological Survey were found not to merit inclusion in that record or could not be located with sufficient accuracy to be included. Such sites however remain part of the SMR. The record is a dynamic one and is updated so as to take account of on-going research. The RMP was consulted. There are no recorded archaeological monuments located within the site boundary. There are 15 recorded archaeological monuments within the study area which comprises a distance of c. 1.5km from the Proposed Development (see Figure 12.2, Table 12.1 and Appendix 12.1).

12.2.2 Recorded Archaeological Finds

The National Museum of Ireland's topographical files are a national archive of all known archaeological finds from Ireland. They relate primarily to artefacts but also include references to monuments and contain a unique archive of records of previous excavations. The topographical files were consulted to determine if any archaeological artefacts had been recorded from the area. Other published catalogues of prehistoric material were also studied: Raftery (1983 - Iron Age antiquities), Eogan (1965; 1993; 1994 - bronze swords, Bronze Age hoards and goldwork), Harbison (1968; 1969a; 1969b - bronze axes, halberds and daggers). There are no topographical finds recorded from the study area. However, it should be noted that numerous archaeological finds were recorded from archaeological excavations in the study area, including within the site boundary (see below).

12.2.3 Recorded Archaeological Excavations

The excavation bulletin website (www.excavations.ie) was consulted to identify previous excavations that have been carried out within the study area. This database contains summary accounts of excavations carried out in Ireland from 1970 to 2022. The 13 excavations undertaken in the study area were assessed (see Figure 12.3, Table 12.2 and Appendix 12.2).

12.2.4 Cartographic Sources

Cartographic sources were used to identify additional potential archaeological and cultural heritage constraints. Manuscript map sources assessed included the Down Survey map of 'The Parrishes of Ward and Mallahidert in the Barony of Castleknock' (Figure 12.4) and Rocque's 'An Actual Survey of the County of Dublin, 1760' (Figure 12.5). Other cartographic sources consulted consisted of the Ordnance Survey 6" first (Figure 12.6) and second (Figure 12.7) editions and Ordnance Survey 25" maps (T.C.D. Map Library, www.osi.ie).

12.2.5 Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) is a systematic programme of identification, classification and evaluation of the architectural heritage of the State. The Minister for Arts, Heritage and the Gaeltacht is currently using the Inventory as the basis for making recommendations for the NIAH. There are five structures included in the NIAH within c. 1.5km of the Proposed Development (see Appendix 12.3 and Figure 12.8). None are visible from the Proposed Development.

12.2.6 County Development Plan

The Fingal County Council Development Plan 2017-2023 was also consulted. The plan includes policy objectives for the protection of the County's archaeological,

architectural and cultural heritage. The Record of Protected Structures (RPS) contained within the plan includes every structure which is of special architectural, archaeological, artistic, cultural, scientific, social or technical interest within the county boundaries. There are five structures included in the RPS within c. 1.5km of the Proposed Development (see Appendix 12.3). None are visible from the Proposed Development.

12.2.7 Aerial Photography

Modern Ordnance Survey aerial photographic coverage dating from 1999, 2000 and 2005 and 2022 available on the Ordnance Survey of Ireland (www.osi.ie) and Google Maps were assessed (see Figures 12.9 and 12.10)

12.2.8 Historical Research

The baseline historical research utilised sources including Lewis' Topographical Dictionary of Ireland (Lewis 1837), the Proceedings of the Royal Irish Academy and the Journal of the Royal Society of Antiquaries. See Bibliography for full list of references used.

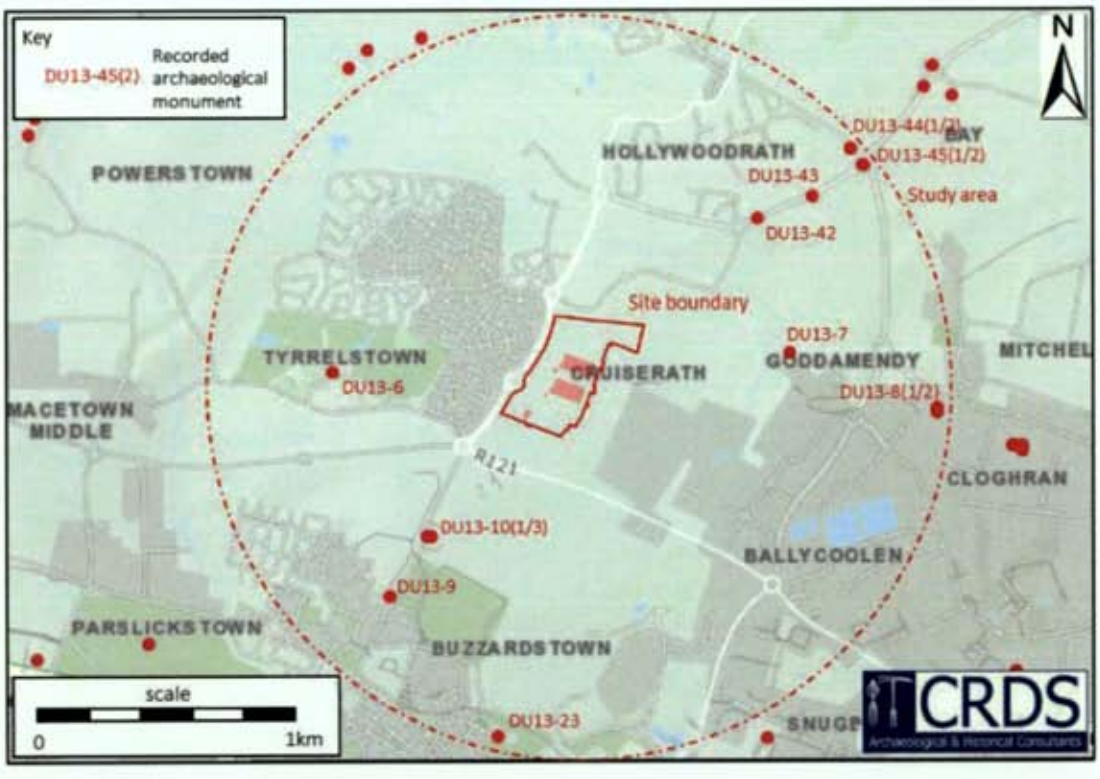

Figure 12.2 Recorded archaeological monuments within c. 1.5km of the Proposed Development (source: www.archaeology.ie)

12.3 RECEIVING ENVIRONMENT

12.3.1 Archaeological, Architectural and Cultural Background

The Proposed Development is located in the townland of Cruiserath, in the Electoral Division of Blanchardstown ED 1901, in Civil Parish of Finglas, in the Barony of Castleknock, in the County of Dublin (www.townlands.ie). The Irish name for Cruiserath is Ráth an Chrúisigh (www.logainm.ie/en/17239).

The earliest evidence for human activity in the study area was uncovered in advance of the construction of the N2 Link Road at Tyrrelstown. The remains consisted of a group of three cremation pits (RMP no. DU013-043, see Figure 12.2, Table 12.1 and Appendix 12.1; Excavation no. 2008:370; see Figure 12.3, Table 12.2 and Appendix 12.2). The pits contained a mixture of cremated bone, charcoal and burnt clay. In one of the pits the cremation deposit was placed in a coarse pottery vessel. Radiocarbon dating of this burial produced a date of 1010-840 cal. BC (calibrated radiocarbon date) placing it in the Late Bronze Age.

Table 12.1 *Recorded archaeological sites and monuments*

RMP No.	Site Type	Townland
DU013-006----	House - 16th/17th century	Tyrrelstown
DU013-007----	Field system	Goddamendy
DU013-008001-	Church	Cloghran
DU013-008002-	Graveyard	Cloghran
DU013-009----	Ritual site - holy well	Tyrrelstown
DU013-010001	Church (in ruins)	Buzzardstown
DU013-010003-	Graveyard	Buzzardstown
DU013-023----	House - 16th/17th century	Buzzardstown
DU013-042----	Kiln - corn-drying (AD1020-1180)	Hollywoodrath
DU013-043----	Cremation pit (1010-840BC)	Bay
DU013-044001-	Kiln (160BC – AD50)	Bay
DU013-044002-	Cremation pit	Bay
DU013-045001-	Ring-ditch (1370-1110BC)	Bay

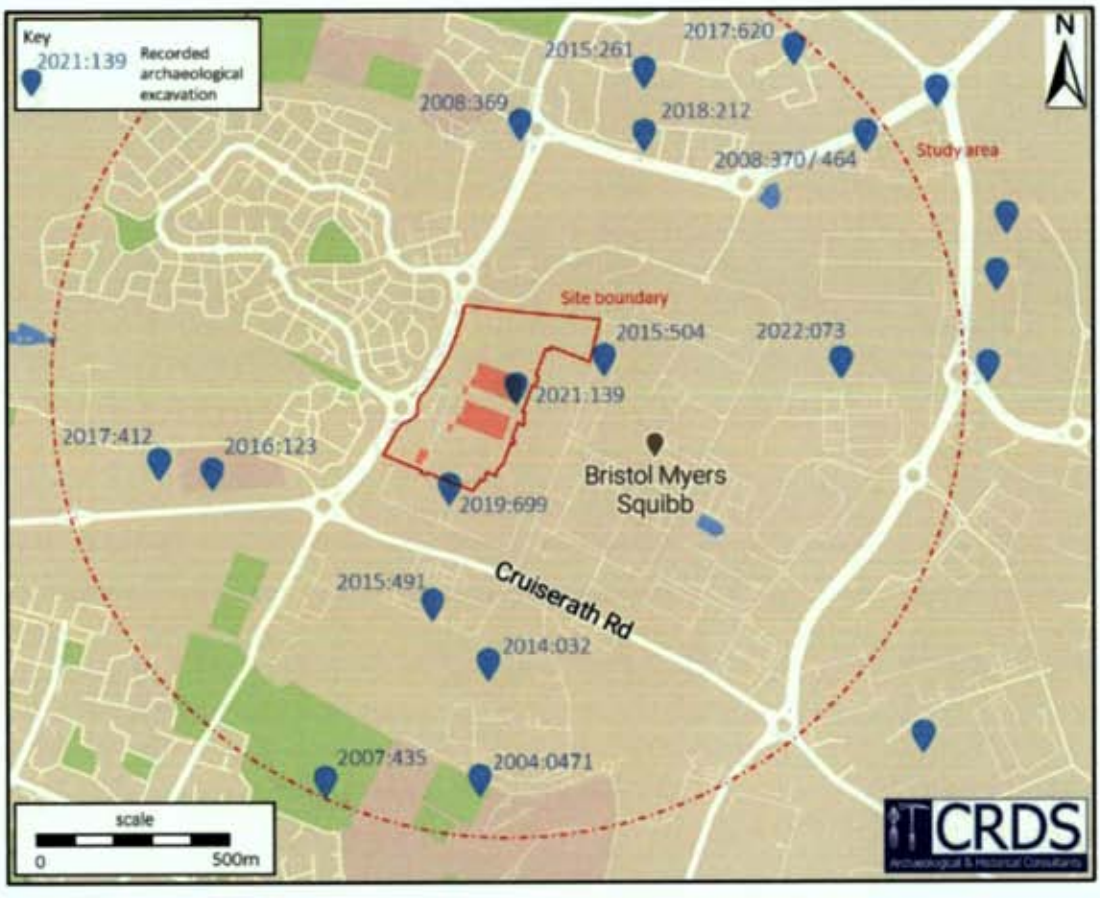

Figure 12.3 *Recorded archaeological excavations within c. 1.5km of the Proposed Development (source: www.excavations.ie)*

The local landscape is sited within the Plain of Brega, which was known as Síl nÁedo Sláine during the early medieval period, and formed part of the dynasty of the southern Uí Néill (Byrne 2001, 88). The most frequently encountered monument from this period are ringforts, which typically consist of a circular ditched embankment or stone rampart. Ringforts represent the remains of defended farmsteads and date from c. AD 500–1200. A large number of these monuments have been destroyed in Leinster as a result of agricultural practices, and often the only indication of the former presence of a ringfort is preserved via townland names such as dún, rath, cashel, or lios. The placename 'Cruiserath' is derived from Ráth an Chrúisigh (www.logainm.ie) meaning the rath of the Cruise or Cruce family. The Cruises were a very prominent local family in the Middle Ages and succeeded Henry Tyrrell in the office of Chief Sergeant of Dublin County.

Table 12.2 *Recorded archaeological excavations*

Excavation no	Site name	Site type
1999:260	Cruiserath	18th-century house and farmyard
2007:435	Buzzardstown	No archaeological significance
2008:369	Tyrrelstown to Cherryhound	Testing
2008:370	Bay 1	Late Bronze Age cremations
2008:464	Hollywoodrath 1	Early medieval
2014:032	Buzzardstown	Isolated pit
2015:261	Hollywoodrath	No archaeology found.
2015:491	Buzzardstown	No archaeological significance
2015:504	Cruiserath and Goddamendy	No archaeology found
2016:123	Tyrrelstown	No archaeological significance
2017:412	Tyrrelstown	No archaeological significance
2017:620	Hollywoodrath, Ratoath Road	No archaeology found
2018:212	Hollywoodrath	Charcoal-production pit
2019:699	Cruiserath	No archaeological significance
2021:139	Cruiserath	Kiln, barrow, enclosure ditch and pits
2022:073	Goddamendy	Field system/no archaeology found

Excavations undertaken in advance of the N2 Link Road, uncovered an early medieval corn-drying kiln (RMP no. DU013-042, see Figure 12.2, Table 12.1 and Appendix 12.1; Excavation no. 2008:464, see Figure 12.3, Table 12.2 and Appendix 12.2). The kiln comprised a series of pits and gullies. Deposits contained within it consisted of alder, hazel, cherry, and elm charcoal. The charcoal recovered provided a radiocarbon date of AD1020-1180 placing at the transition between the early and later medieval periods. A single piece of flint and a fragment of Dublin-type pottery were recovered from the topsoil at the site.

The Civil Survey records 'the walles of a greate stone house with five or six smale houses' at Tyrrelstown (RMP no. DU013-006, see Appendix 12.1; Simington 1945, 227). The house was built by the Belling family (Ronan 1937, 159-60) and damaged in the 1641 Rebellion. A new house was built on the site in the early nineteenth century (NIAH ref. no. 11346002, RPS no. 673; see Figure 12.8 and Appendix 12.3).

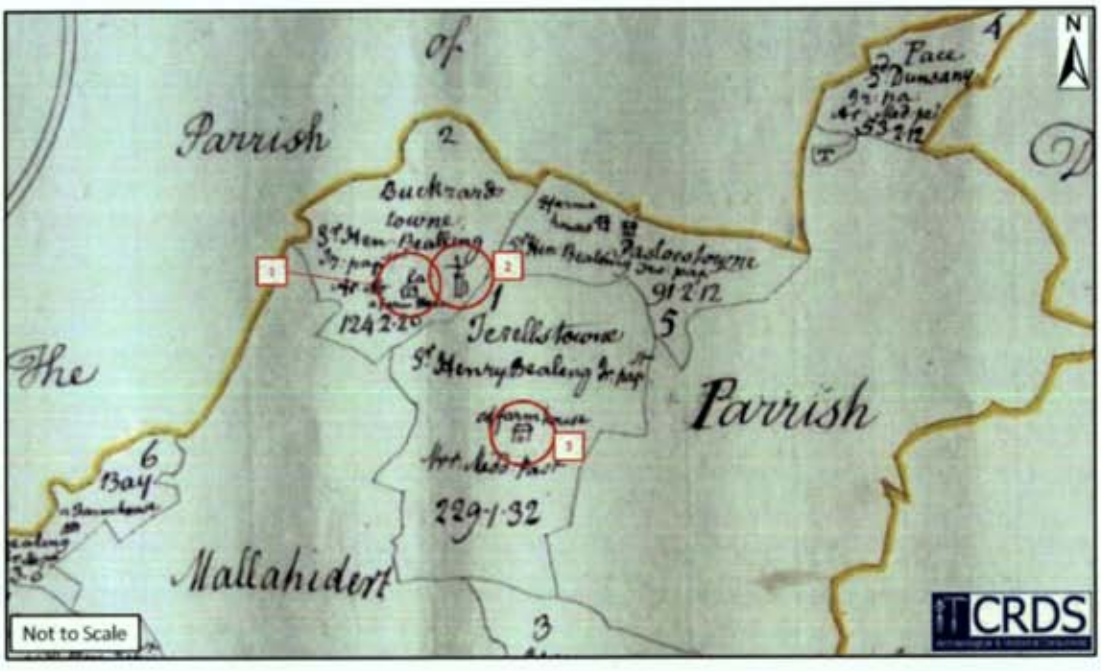

Figure 12.4 *Down Survey Parish maps of the Ward and Mulhuddart, showing Tyrrellstown House (3), Buzzardstown House (1) and Buzzardstown Church (2) (source: www.downsurvey.tcd.ie)*

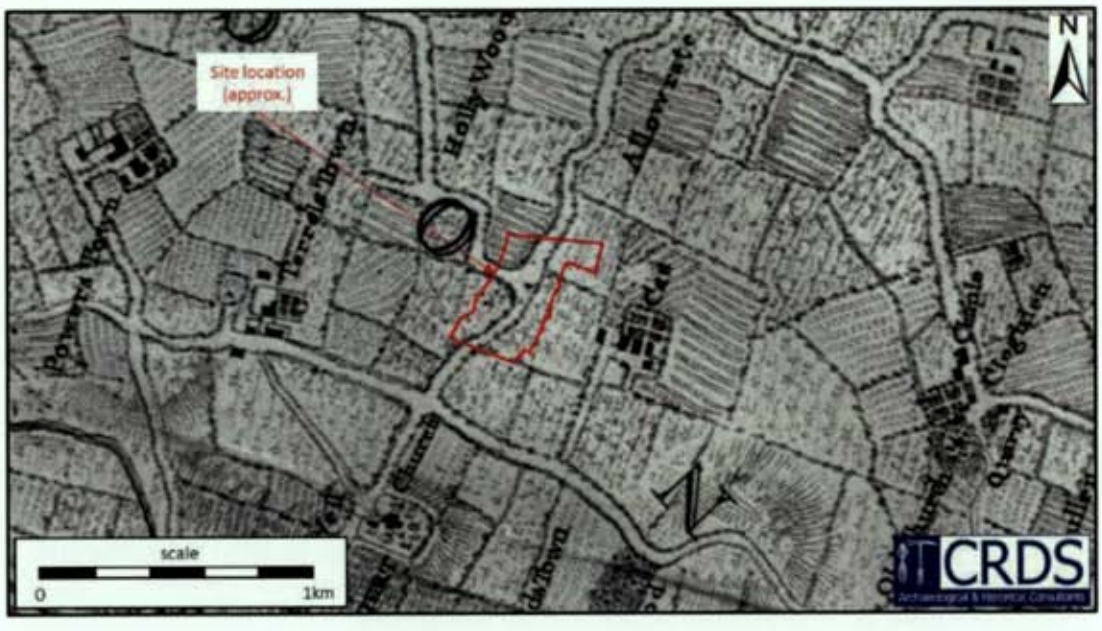

Figure 12.5 *Extract from Roques map of southwest County Dublin 1760 (source: www.dublinhistoricmaps.ie/maps/1600-1799/index.html)*

The site of Cruiserath House, an eighteenth century house, is also indicated on Rocque's map of Dublin, 1760 (see Figure 12.5) and the 1st and 2nd editions of the Ordnance Survey map (see Figures 12.6 and 12.7) immediately outside the eastern boundary of the Proposed Development. The site was subject to archaeological assessment prior to the construction of the Bristol Meyers Squibb development (see Excavation no. 1999:260, see Figure 12.3, Table 12.2 and Appendix 12.2). The house was demolished in the mid-twentieth century and subsequently replaced by a modern house and large farmyard. The archaeological test trenches were located to identify remains of the modern buildings and the site of the eighteenth century house. They revealed the disturbed and truncated remains of masonry and red brick walls, and well-preserved cobbled surfaces. The Civil Survey of Dublin 1654-56 records a '*thatcht house with a barne with two or three smale cottages (sic)*' in the townland of Cruiserath (Simington 1945, 227-8), but it remains unclear whether this house was located at the same location as that indicated on the 1st edition Ordnance Survey map.

Figure 12.6 *First edition Ordnance Survey Map showing site and location of Cruiserath House (base map source: www.osi.ie)*

There is very little change in the use of the lands in and around the Proposed Development land between the 1st (1830s) and 2nd (1910s) editions of the Ordnance Survey maps (see Figures 12.6 and 12.7). the lands comprise a series of rectangular shaped fields, with a roadway running northeast – southwest along the western boundary of the Proposed Development lands, which represents the townland boundary between Cruiserath and Tyrellstown.

However, by the time of the 2013-2018 version of the Ordnance Survey aerial photography, the roadway to the west of the Proposed Development has been significantly altered and the lands surrounding the Proposed Development lands have been subjected to significant development. The lands on which the Proposed Development lands however, remain in agricultural use, comprising a series of large open fields in pasture.

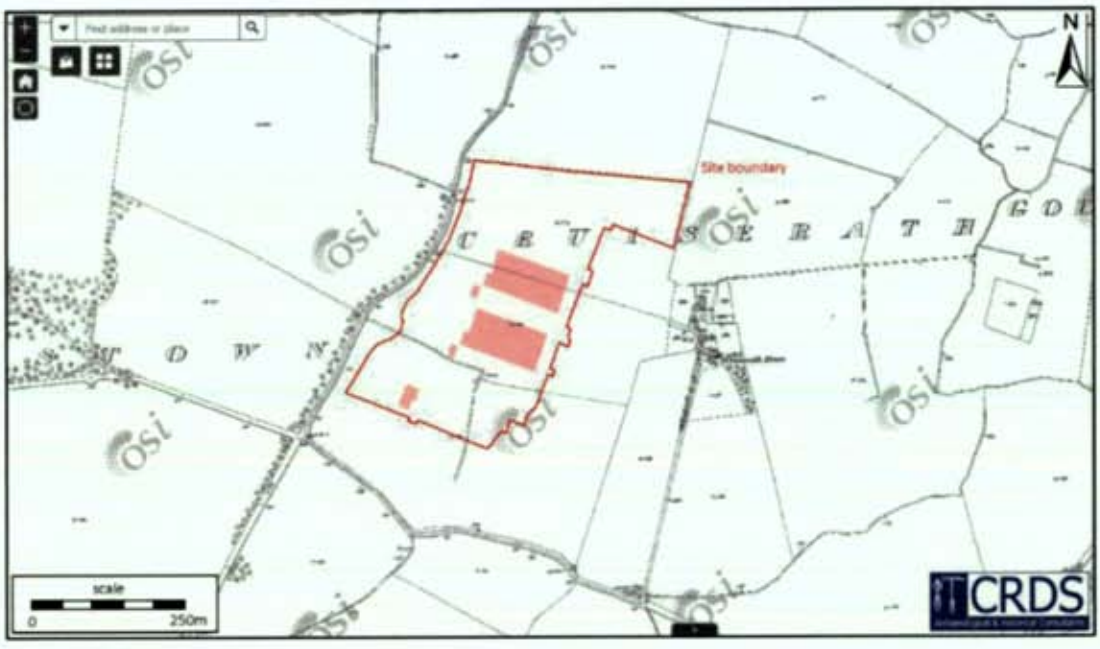

Figure 12.7 *Second edition Ordnance Survey Map showing site and location of Cruiserath House (base map source: www.osi.ie)*

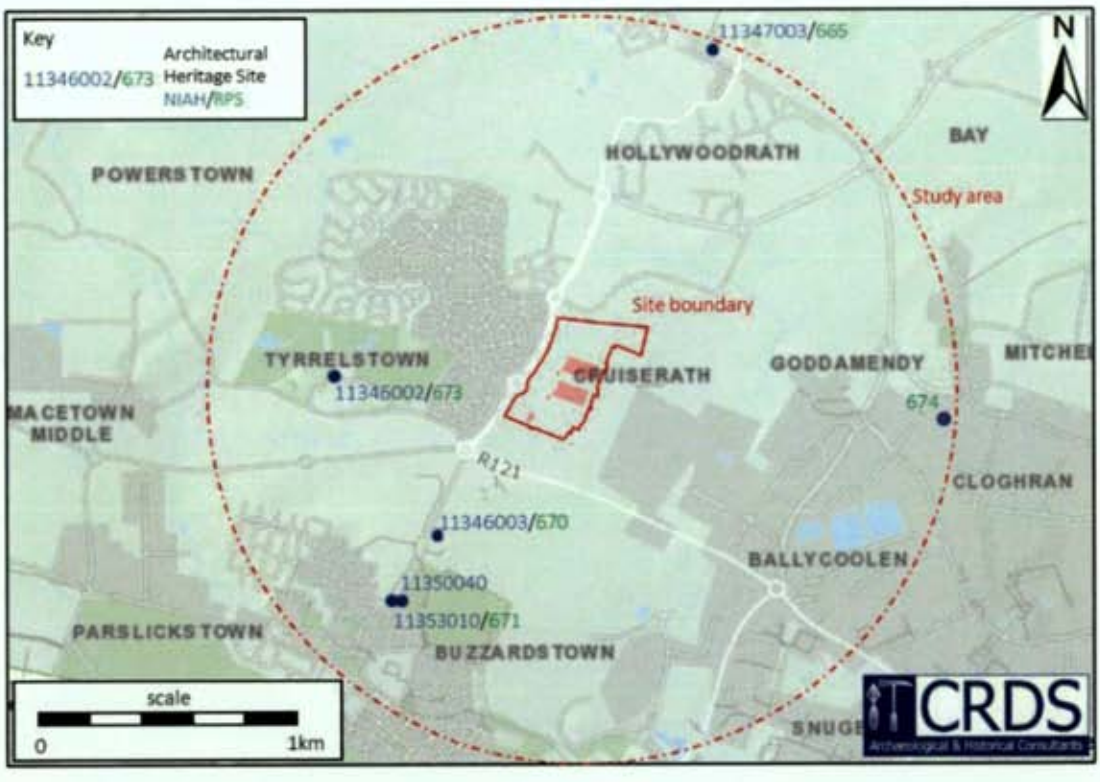

Figure 12.8 *RPS and NIAH structures within c. 1.5km of the Proposed Development (source: www.archaelogy.ie; www.buildingsofireland.ie; www.fingal.ie/fingal-development-plan-2017-2023)*

Figure 12.9 *Aerial Photograph showing the Proposed Development site (date 2013-2018 (base map source: www.osi.ie)*

12.3.2 Previous Archaeological Assessment

A programme of archaeological investigations comprising geophysical survey (License no. 19R0030) and test trenching (Excavation no. 2019:699) was undertaken within the overall landholding in 2019 (see Figure 12.3, Table 12.2 and Appendix 12.2). The geophysical survey revealed a number of linear anomalies (M01–M09) interpreted as representing former field boundaries and possibly some pit anomalies (L01–L04).

The subsequent test trenching programme consisted of a methodical array of trenching targeting the identified geophysical anomalies, but also providing as much coverage as possible across the remaining parts of the overall landholding area in order to assess the potential for subsurface archaeological remains.

A total of 33 test trenches were excavated across the overall landholding, an area measuring 26ha. Excavation ceased at the first significant archaeological level or at natural subsoil. A number of agricultural drainage ditches were identified which corresponded to anomalies M03 and M06–M09. Two land drains were also recorded. The remaining anomalies related to natural geological features. No archaeologically significant features were identified during the test trenching programme.

Traces of the excavated test trenches are clearly visible on the 2022 aerial photography of the Proposed Development lands (Google maps: see Figure 12.10)

Figure 12.10 *Aerial Photograph of the Proposed Development site 2022 (base map source: www.google.ie/maps)*

12.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The Proposed Development comprises the construction of three data centre buildings and associated ancillary development. Associated works will include the construction of the internal road network, footpaths, carparking and the drainage and attenuation network and the provision of landscaping and utilities (see Chapter 2 for full description of development).

12.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

12.5.2 Construction Phase

As the lands in which the Proposed Development is located have been subjected to an extensive programme of archaeological geophysics (License no. 19R0030) and archaeological testing (Excavation no. 2019:699), and this work did not identify any archaeologically significant features and concluded that no further mitigation would be required on site, there no direct or indirect (visual) impacts on archaeological and cultural heritage associated with the Proposed Development.

There will be no direct or indirect (visual) impacts on the architectural heritage features identified within the desktop assessment due to their distance from the site, local topography and intervening developments.

12.5.3 Operational Phase

There are no potential impacts on archaeological, architectural and cultural heritage expected as a result of the operation of the Proposed Development.

12.5.4 Do-nothing Scenario

There are no potential impacts on archaeological, architectural and cultural heritage expected in the case of a Do-nothing Scenario.

12.6 REMEDIAL AND MITIGATION MEASURES

12.6.2 Construction Phase

As detailed in Section 12.3.2 above, the lands in which the Proposed Development is located have been subjected to an extensive programme of archaeological geophysics (License no. 19R0030) and archaeological testing (Excavation no. 2019:699). This work did not identify any archaeologically significant features, indicating that the potential for previously unrecorded sub-surface archaeological features occurring is very low. Therefore no further mitigation is required on site.

Please note that the recommendations given here are subject to the approval of the National Monuments Service, Department of the Culture, Heritage and the Gaeltacht.

12.6.3 Operational Phase

No mitigation measures are required for archaeological, architectural and cultural heritage during the operational phase of the Proposed Development.

12.7 PREDICTED IMPACT OF THE DEVELOPMENT

12.7.2 Construction Phase

The construction phase of the Proposed Development will not impact directly on any sites included in the RMP. Previous archaeological investigations on site did not identify any significant archaeological features. Therefore, the effect is ***neutral*** and ***imperceptible***.

12.7.3 Operational Phase

The operational phase of the Proposed Development is not predicted to have any impact on archaeological, architectural and cultural heritage.

12.8 RESIDUAL IMPACTS

Subject to the implementation of appropriate archaeological mitigation measures, no residual impacts on archaeological, architectural and cultural heritage are predicted.

The cumulative impact assessment is addressed Chapter 16 of this EIA Report.

Interactions are addressed in Chapter 17 of this EIA report.

12.9 REFERENCES

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APPENDIX 12.1

RECORDED ARCHAEOLOGICAL MONUMENTS

Recorded Archaeological Monuments located within c. 1.5km of the Proposed Development are listed below (source RMP for Dublin, www.archaeology.ie).

RMP No.	**DU013-006----**
Site Type	House - 16th/17th century
Townland	TYRRELSTOWN
ITM	706703, 741900
Description	Tyrrelstown House occupies the site of a mid-17th century house built by the Bellings family (Ronan 1937, 159-160). Named on the Down Survey (1655-6) map and described in the Civil survey (1654-6) as 'the walls of a great stonehouse' (Simington 1945, 227). It had been damaged in the 1641 Rebellion leaving only walls remaining. Detached five-bay two-storey house, c.1820, attached to earlier two-storey house, c.1720, to rear. Farmyard complex, c.1820 to rear. Compiled by: Geraldine Stout; Updated by: Christine Baker; Date of upload: 18 January 2015.
Source	Sources: Ronan, M. V. 1939 Mulhuddart in Dublin Historical Record Vol. 1 II No. 4, pp. 158-60. According to Ronan (1939, 159-60) there was a large house at Tyrrelstown in the middle of the 17th century built by the Bellings family. This was destroyed during the Rebellion of 1641 leaving only walls remaining. This dwelling is marked on the Down Survey 1650 map described in the Civil Survey of 1654 is the walls of a great stone house (Simington 1945, 227). There may have been incorporated into the structure of the later mansion.

RMP No.	**DU013-007----**
Site Type	Field system
Townland	GODDAMENDY
ITM	708521, 741977
Description	The 1837 OS 6-inch map shows an irregular pattern of small fields which may be part of a medieval settlement. This field system was visible on aerial photography taken in 1971 (FSI 2418/417). Built over. Not visible at ground level. Compiled by: Geraldine Stout; Updated by: Christine Baker; Date of upload: 18 January 2015. Date of last visit: 27 April 2010.
Source	Fairey Survey of Ireland October, 1971, 2418/417. An aerial photograph taken by Fairey Survey of Ireland shows an irregular patter of small fields. These are marked on the 1837 OS 6" map. The area has been built on, leaving no trace of the field system.

RMP No.	**DU013-008001-**
Site Type	Church
Townland	CLOGHRAN (Castleknock By.)
ITM	709109, 741755 RMP yes
Description	Located in a roughly square graveyard located on a rock outcrop which has been quarried away up to the limits of the graveyard. Prior to c. 1300 this church was connected to Finglas parish until it became a chapel on the lands of All Hallows who supplied one of the Canons to say mass there. It was granted with all other possessions of All Hallows to Dublin Corporation in 1538 (Ronan 1940, 182-194). Only grass covered wall footings of the church survive. These are built of randomly coursed masonry (dims. L13m, Wth 5.5m, H 0.4m). There are openings in the north and south walls. The east end is dominated by a large tree. Some internals burials. Compiled by: Geraldine Stout

	Updated by: Christine Baker. Date of upload: 18 January 2015. Date of last visit: 23 November 2013. -Source Ronan, M. V. Rev. 1940. Mulhuddart and Cloghran-Hiddert in JRSAI Vol 70, pp. 187-191.

RMP No.	**DU013-008002-**
Site Type	Graveyard
Townland	CLOGHRAN (Castleknock By.)
ITM	709107, 741739
Description	A roughly square graveyard on a natural rise which has been quarried to the very edge of the graveyard. It contains a number of 18th century memorials. Bounded by cast-iron railings and hedgerows. The grave markers consist of 18th, 19th and early 20th century headstones. One of the oldest visible is that of Margaret Roe who died in 1737. The graveyard was previously surveyed in 1992 (Egan). Also Joseph Gormly 1751, McMahon 1774 in Latin. Compiled by: Geraldine Stout. Updated by: Christine Baker. Date of upload: 18 January 2015. Date of last visit: 23 November 2013. References: Egan, M. 1992, Memorials of the Dead: Dublin City and County, Volume 5.

RMP No.	**DU013-009----**
Site Type	Ritual site - holy well
Townland	TYRRELSTOWN
ITM	706926, 741013
Description	This vaulted well-house stands by the roadside. The well is approached by stone steps. On the roof are two finials, one a stone carved with a cross in relief and the other a stone niche with an inscription. It is still venerated. Formerly a pattern day was held on the 8th of September (Ó Danachair 1958-60, 76; Daly 1957, 19). The water is traditionally reputed to cure sprains, cuts, bruises and rheumatism. The well is recognised by Fingal County Council as 'County Geological Site' (Parkes 2012, 52). Compiled by: Geraldine Stout, Paul Walsh; Date of upload: 29 November 2013.
Source	Anon, 1897, Excursions in County Dublin. Descriptive sketch of places visited in JRSAI Vol. 27, p. 446-60. Daly M.J.F. 1957. Curative Wells in Old Dublin in Dublin Historical Record, XVII, No. 1, pp. 13-24. Healy, P. 1974, Report on Monuments and Sites of Archaeological Interest in County Dublin, pp. 21. Parkes, M. 2012 Islands, coast and quarries. The geological heritage of Fingal. Fingal County Council, Dublin. Ronan, M. V. Rev. 1940. Mulhuddart and Cloghran-Hiddert in JRSAI Vol 70, pp. 182-93

RMP No.	**DU013-010001**
Site Type	Church (in ruins)
Townland	BUZZARDSTOWN
ITM	307145, 241221
Description	Located in a prominent position with land falling away gently to the west and steeply to the south. This church was first mentioned in the early 15th century on the incorporation of a guild described as 'the guild and fraternity of our Lady of St. Mary of the Church of Mulhaddart' (Ball 1920 44-46). The Civil Survey 1654 mentions the walls of a church at Buzzardstown (Simington 1945, 227) The church is situated in a raised graveyard, which curves along the western side. It has an undivided nave and chancel (internal dimension L. 20.22m, width 8.73, height 0.05m, wall thickness 0.97-1.20m) with a residential tower that survives to the first floor level. Built of roughly coursed shaley limestone with dressed quoins. The vault over the ground floor shows traces of wickerwork centring (external dimensions L. 7.45m, width 4.9m). First floor has a projecting turret on the south side, a window on the west and two wall recesses in the

	north. The nave is entered through segmental arched opening in the north wall. Interior is featureless.
Source	Anon, 1897, Excursions in County Dublin. Descriptive sketch of places visited in JRSAI Vol. 27, p. 446-60. Bell, F. E. 1920. South Fingal, pp. 44-46. Daly M.J.F. 1957. Curative Wells in Old Dublin in Dublin Historical Record, XVII, No. 1, pp. 13-24. Healy, P. 1974, Report on Monuments and Sites of Archaeological Interest in County Dublin, pp. 21. Ronan, M. V. Rev. 1940. Mulhuddart and Cloghran-Hiddert in JRSAI Vol 70, pp. 182-93.

RMP No.	**DU013-010003-**
Site Type	Graveyard
Townland	BUZZARDSTOWN
ITM	707092, 741247
Description	Graveyard walled and curved along west at some height above the road. The oldest section of the graveyard is the raised area that surrounds the church (DU013-010001-). It contains 18th, 19th century and modern gravestones as well as a number of re-used architectural fragments. The graveyard has been extended to the north twice. The graveyard was previously surveyed by Egan in 1993 (Fingal Historic Graveyards project 2008). Compiled by: Christine Baker Date of Upload: 7 February 2015
Source	Fingal Historic Graveyards Project 2008, Vols. 1 and 2 http://www.fingal.ie/planning-and-buildings/heritage-in-fingal/heritage-and-communities/historic-graveyards/

RMP No.	**DU013-023----**
Site Type	House - 16th/17th century
Townland	BUZZARDSTOWN
ITM	707360, 740453 RMP NO
Description	The Down Survey (1655-6) map shows a dwelling at Buzzardstown near Buzzardstown House. In the second half of the 18th century the family of Flood owned Buzzardstown House-on a winter's night in 1761 it is recorded that the gable-end of Mr Flood's house at Mulhuddart suddenly gave way, whereby Mrs Flood and her daughter were killed. Test excavation (Licence no. 06E0184) was undertaken at the site of Buzzardstown House but archaeological remains were not located. Compiled by: Geraldine Stout Updated by: Christine Baker Date of upload: 20 January 2015 Note -there is not enough evidence to identify the DS site to Buzzardstown House.

RMP No.	**DU013-042----**
Site Type	Kiln - corn-drying
Townland	HOLLYWOODRATH
ITM	708398, 742509
Description	A corn-drying kiln associated with a collection of pits and gullies was excavated ahead of the Tyrrelstown to N2 Cherryhound Interchange link road in 2008 (E3920). The kiln was a SE-NW orientated, steep-sided hollow with a concave oxidised base. It contained four stratified deposits representing successive phases of use. Charcoal remains of alder, hazel, cherries, elm and Maloideae were present. It was radiocarbon dated to AD1020-1180 . A single piece of flint and a single fragment of Dublin-type ware were recovered in the topsoil (O' Hara , R. 2011, 104). Compiled by: Geraldine Stout; Date of upload: 27 August 2012.
Source	Excavation licence no. E3920 Robert O'Hara (Hollywoodrath 1).

RMP No.	DU013-043----
Site Type	Cremation pit
Townland	BAY
ITM	708610, 742598
Description	Excavated (Licence no. E3917) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of a cluster of three cremation pits. Pit 1 (0.47m x 0.40m) contained a mix of cremated human bone, charcoal and fragments of burnt clay. While the weight of cremated bone recovered was a fraction of a cremated individual analysis revealed the burial to be an older adolescent or perhaps an adult (O'Hara R. 2008, 2). Pit 2 (0.27m x 0.25m) contained a mix of cremated human bone, charcoal and fragments of burnt clay. While the weight of cremated bone recovered was a fraction of a cremated individual analysis revealed the burial to be an older adolescent or, perhaps, an adult. A charred false oat-grass tuber was identified and may have been used as kindling for the funeral pyre (O'Hara R. 2008, 2). Pit 3 (0.5m x 0.4m) was located immediately adjacent to Pit 2 and contained cremation deposit placed within a coarse pottery vessel. The burial was radiocarbon dated to the Late Bronze Age (1010-840 cal. BC). The vessel which survived to a height of 12cm is a Late Bronze age vessel similar to domestic vessels of the same date (O'Hara R. 2008, 3). Compiled by: Christine Baker; Date of upload: 6 February 2015
Sources	Excavation Licence no. E3917.

RMP No.	DU013-044001-
Site Type	Kiln
Townland	BAY
ITM	708764, 742789
Description	Excavated (Licence no. E3918) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of an oval kiln. (1.2m x 0.5m). It contained a single mixed deposit including charcoal identified as alder, hazel, ash, cherry/blackthorn and willow/poplar. No charred grain was recovered. The kiln was radiocarbon dated to the middle Iron Age (160 BC – AD 50) (O'Hara R. 2008, 2). Compiled by: Christine Baker Date of upload: 6 February 2015
Sources	Excavation Licence no. E3918.

RMP No.	DU013-045001-
Site Type	Ring-ditch
Townland	BAY
ITM	708816, 742725
Description	Excavated (Licence no. E3918) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of an annular ring ditch (4.2m int. diam.). The interior contained a deposit of charcoal and cremated bone (0.3m diam.) placed slightly off-centre within the enclosing ditch. Charcoal from this deposit was identified as hazel while charred barley grains could indicate food offerings placed on the pyre. It was radiocarbon dated to the Middle Bronze Age, 1370-1110BC (O'Hara R. 2008, 3). Compiled by: Christine Baker Date of upload: 6 February 2015
Sources	Excavation Licence no. E3918.

RMP No.	DU013-045002-
Site Type	Cremation pit
Townland	BAY

ITM	708815, 742726
Description	Excavated (Licence no. E3918) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of a circular pit (0.4m diam.) and was located 6m SE of a ring ditch (DU013-045001-). The pit contained a deposit of charcoal (alder and ash) and cremated bone of an adult or older adolescent (O'Hara R. 2008, 3). Compiled by: Christine Baker Date of upload: 6 February 2015
Sources	Excavation Licence no. E3918.

APPENDIX 12.2

EXCAVATIONS

The excavation bulletin website (www.excavations.ie) was consulted to identify previous excavations that have been carried out within the study area. This database contains summary accounts of excavations carried out in Ireland from 1970 to 2018 in the townland of Cruiserath.

Excavation no: **1999:260**
Site name: CRUISERATH, MULHUDDART
SMR No.: N/A
Licence No.: 99E0620
Author: Margaret Gowen, Margaret Gowen & Co. Ltd, 2 Killiney View, Albert Road Lower, Glenageary, Co. Dublin.
Site type: 18th-century house and farmyard
ITM: E 714426m, N 733926m
Description: This site at Cruiserath, Mulhuddart, Co. Dublin, was due to be redeveloped for industrial purposes and lay adjacent to an existing, newly developed industrial office park. The site is bounded by Ballycoolin Road to the south, the Goddamendy Industrial Park to the east, agricultural fields to the north and Church Road to the west. An archaeological assessment of the site was requested as a condition of planning permission.

The Proposed Development was the subject of an environmental impact statement, the cultural heritage research for which included an assessment of the medieval and more recent history of the site. The sources suggested that it had limited archaeological potential. The townland name is derived from the name of its early medieval owners, the Cruise family. Clearly the appendage 'rath' either suggests the pre-existence of a rath within the townland or may refer to a medieval, moated earthwork site. No remains of either type of site can be identified in the cultivated lands of the townland or in the aerial photographs of the site.

The later medieval development of the site was undocumented, but Rocque's map indicated a number of structures/dwellings and an associated garden on the site, which coincided with the position of the access drive to the house from the west. Cruiserath House, as depicted on the 1st edition of the Ordnance Survey, was also undocumented.

The site of Cruiserath House and its adjacent farm buildings saw continuous use, modification and rebuilding from the 19th century. The house appeared to have been demolished in the 1940s or 1950s and replaced with a small, double-fronted house to the south. A very large industrial farmyard was later developed, apparently in the 1970s. The site was evidently cleared of all structures and boundaries, even the recent farm buildings, before the preparation of the environmental impact statement and before the acquisition of the site for development purposes. All that survived were the very extensive concrete yard surface, three large silage pits, the overgrown remains of the tarmac drive to the concrete yard area and the modern house, the foundations of which are easily identified.

The test-trenching was undertaken in two phases during November 1999. Long slit-trenches were opened using a mechanical excavator with a 2m-wide toothless bucket. These were positioned between the remains of the modern house, the supposed site of the earlier house and the modern farmyard. A number of supplementary trenches were later opened in areas where features were revealed.

The test-trenches revealed the very truncated and disturbed remains of a number of masonry and red brick walls and the very well-preserved remains of cobbled surfaces, all of which were found, when superimposed by CAD, to accord remarkably with the layout depicted on the 1st edition of the OS. The remains were too poorly preserved to establish their relative date, and it was not possible, without full excavation, to establish whether any remains of the 18th-century house survived or to what extent it may have been modified. The high level of

resolution between the remains record and the OS, however, in spite of the poor preservation of the remains, facilitated the identification of various elements of the house and the early farmyard complex, including the walled garden, kitchen garden and quadrangular farmyard. The structure for the new industrial facility did not impinge on the complex, and to avoid a requirement for full excavation the associated carpark was raised in level in order to preserve the remains in situ.

Excavation no: **2007:435**
Site name: Buzzardstown
SMR No.: N/A
Licence No.: 07E0273
Author: Judith Carroll, Judith Carroll & Co. Ltd, Consultant Archaeologists, 11 Anglesea Street, Temple Bar, Dublin 2.
Site type: No archaeological significance
ITM: E 707235m, N 740882m
Description: The site was located within the constraint area of DU013–023, Buzzardstown House, in Mulhuddart, Dublin 15. Trial testing took place on the site in April 2007 prior to the construction of a new structure for community training to accommodate the Tolka River project, with associated stoned and blinded carpark. A total of six trenches were excavated. The testing of the site yielded no archaeological features or finds.

Excavation no: **2008:369**
Site name: Tyrrelstown to Cherryhound Interchange, Bay/ Cherryhound/ Cloghran/ Cruiserath/ Goddamendy/ Hollywoodrath/ nKillamonan
SMR No.: N/A
Licence No.: 07E1147
Author: Robert O'Hara, Archaeological Consultancy Services Limited, Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth.
Site type: Testing
ITM: E 707717m, N 742620m
Description: The proposed Tyrrelstown to N2 (Cherryhound Interchange) link road will connect Mulhuddart Village with the N2 Finglas–Ashbourne motorway at Cherryhound Interchange. It will consist of c. 4.5km of new dual carriageway with associated works. The scheme will also require the widening and realigning of sections of the existing road network. The assessment of the Proposed Development involved the mechanical excavation of 198 test-trenches with a combined total length of 9879.36m, resulting in a total excavated area of 21240.62m2.
Fourteen fields were tested, and four archaeological sites were identified: Bay 1 (cremation pits), Bay 2 (kiln, ring-ditch, cremation pit), Bay 3 (kiln and possible field system associated with DU014–089) and Hollywoodrath 1 (early medieval activity).

Excavation no: **2008:464**
Site name: Hollywoodrath 1
SMR No.: N/A
Licence No.: E003920
Author: Robert O'Hara, Archaeological Consultancy Services Limited, Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth.
Site type: Early medieval
ITM: E 708625m, N 742611m
Description: A collection of pits, gullies and a cereal-drying kiln were excavated at Hollywoodrath 1, Co. Dublin, ahead of the Tyrrellstown to N2 Cherryhound Interchange link road Two of these features were dated to the 11th–12th century ad and are likely to represent the remains of agricultural/industrial activity immediately preceding the Anglo-Norman period.

Excavation no: **2008:370**
Site name: Bay 1
SMR No.: N/A
Licence No.: E003917

Author:	Robert O'Hara, Archaeological Consultancy Services Limited, Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth.
Site type:	Late Bronze Age cremations
ITM:	E 708625m, N 742611m
Description:	A collection of Late Bronze Age token cremation burials was excavated at Bay 1, Co. Dublin, ahead of the Tyrrellstown to N2 Cherryhound Interchange link road. Two burials were in simple dug pits, while a third was contained within an upright Late Bronze Age vessel. This latter burial was radiocarbon dated to 1010–840 bc.

Excavation no:	**2014:032**
Site name:	College Business & Technology Park, Snugborough Road, Buzzardstown
SMR No.:	n/a
Licence No.:	14E0141 ext.
Author:	Mark Moraghan
Site type:	Isolated pit
ITM:	E 707660m, N 741201m
Description:	An excavation was carried out in the townland of Buzzardstown in the College Business & Technology Park, Blanchardstown, Dublin 15 in May 2014. Two areas of archaeological potential were identified in earlier testing, carried out by Fintan Walsh (14E0141). These areas were excavated within the south-west corner of the development area. The three spreads recorded in Area 1 were identified as non-archaeological in origin. A single pit was recorded in Area 2 which contained a small quantity of charcoal, seed and burnt bone. It was not possible to determine if the bone was animal or human due to the condition and size of the fragments. Analysis of the seed and charcoal indicated cereal-drying activity was ongoing in the vicinity however no in situ burning was recorded. The pit, which appeared to contain domestic refuse, has been dated to the early medieval period. IAC Ltd, Unit G1, Network Enterprise Park, Kilcoole, Co. Wicklow

Excavation no:	**2015:261**
Site name:	Hollywoodrath
SMR No.:	N/A
Licence No.:	15E0142
Author:	Aidan O'Connell
Site type:	No archaeology found.
ITM:	E 708042m, N 742764m
Description:	An archaeological assessment was carried out of the western half of a large mixed residential development at Hollywoodrath (near Mulhuddart) off the Ratoath Road and the R121 Church Road. Phase 1 of the overall development covers an approximate area of 6.8ha. Twelve test trenches totalling 1540m were excavated within the site. No archaeological finds or features were uncovered during the assessment. Archer Heritage Planning Ltd, 8 Beat Centre, Stephenstown, Balbriggan, Co. Dublin

Excavation no:	**2015:491**
Site name:	Buzzardstown
SMR No.:	N/A
Licence No.:	15E0263
Author:	Padraig Clancy
Site type:	No archaeological significance
ITM:	E 707507m, N 741354m
Description:	Testing was undertaken by Courtney Deery Heritage Consultancy at the Proposed Development site (Planning Reference FW15A/0038) within the townland of Buzzardstown, Dublin 15. The site was subjected to geophysical survey (15R0056) the results of which determined the location of 22 test trenches across the site. No artefacts or features of archaeological significance were uncovered within the excavated test trenches. Lynwood House, Ballinteer Road, Dublin 16

Excavation no: **2015:504**
Site name: Cruiserath and Goddamendy
SMR No.: N/A
Licence No.: 15E0395
Author: Annette Quinn
Site type: No archaeology found
ITM: E 708768m, N 742048m
Description: Testing of proposed roads and monitoring of ground works in the vicinity of Cruiserath House within a development site at the Bristol Myers Squibb facility, Cruiserath, Dublin was undertaken in 2015. Planning permission was granted for the construction of a new Biopharmaceutical Manufacturing Facility to the north of the existing BMS Pharmaceutical Campus. The lands, while largely vacant, have undergone considerable disturbance in recent decades. While grass and other vegetation had re-colonised much of the site, hardcore was visible in many places suggesting that topsoil had been removed from much of the development area.
Nine test trenches were excavated along the proposed access roads at the north-west and north-east part of the development site. The trenches varied in length from 14m to 44m, 1.8m in width and 0.2-0.85m in depth. Modern infill was noted at the north-west side of the site, primarily in Trench 1, and accounted for the greatest trench depth in this area. Elsewhere on the site modern disturbance/fill was also apparent but not to the depth noted at the north-west. In general the stratigraphy encountered in the trenches varied throughout the site. The majority of the trenches were located in 'brown field' areas in which grass and sod was no longer extant.
Modern infill was encountered in Trenches 1 and 2 at the north-west side of the site. Further to the north-east, Trenches 3 and 4 were located in a green field area in which there was little modern disturbance. At the north and north-east, Trenches 5-9 were located in brown field areas where topsoil with occasional modern inclusions overlay a grey clay natural. Natural subsoil was exposed in all trenches, which varied from a beige-orange to grey clay which became particularly stoney at the north side of the site. A clay and stone-filled land drain was exposed in Trench 9 and is likely to be 19th-20th-century in date.
No archaeological finds, features or deposits were noted in any of the excavated trenches.
Tobar Archaeological Services, Saleen, Midleton, Co. Cork

Excavation no: **2016:123**
Site name: Powerstown Educate Together School, Tyrrelstown
SMR No.: N/A
Licence No.: 15E510
Author: Antoine Giacometti
Site type: No archaeological significance
ITM: E 706931m, N 741683m
Description: A programme of monitoring took place during groundworks for new school buildings located between Powerstown Road and Damastown Avenue in Tyrrelstown townland, Dublin 15, from November 2015 to February 2016. No archaeological material was identified, and the programme found evidence for extensive modern disturbance of this site relating to the new roundabout, new road and the pre-existing school building. Prior to groundworks there were two schools on the site, a Gealscoil and an Educate Together school. Situated near the site are Tyrrelstown House (DU013-006), a 19th-century two-storey house attached to an earlier c. 1720 house to the rear, on the site of an earlier 16th/17th-century house depicted on the Down Survey. A graveyard and church, known as Mulhuddart Church (DU013-010–), in Buzzardstown townland, has possible pre-Norman characteristics, and is documented from the 15th century, and has 18th- and 19th-century fabric. Rocque's map of 1756 shows a path connecting these two sites passing through the monitored development site, however this path was not identified during the monitoring programme.
Archaeology Plan, 32 Fitzwilliam Place, Dublin 2

Excavation no:	**2017:412**
Site name:	Tyrrelstown
SMR No.:	N/A
Licence No.:	17E0595
Author:	Jean O'Dowd
Site type:	No archaeological significance
ITM:	E 706795m, N 741707m
Description:	Test trenching involved the mechanical excavation of 263.49 linear meters of trenches. The test trenches were positioned to assess the area generally, while avoiding an overhead medium voltage powerline that traverses the site and an underground medium voltage powerline close to the western boundary. Two shallow features were investigated. It is likely, given their nature, extent and location, that these features are contemporary to modern drainage features. They are not considered to be of any archaeological significance. The results of the investigations have indicated that no sub-surface archaeological remains are present within the areas tested as part of the footprint of the Proposed Development at Tyrrelstown, Dublin 15. Rubicon Heritage Services Ltd., Office 8, Dominick Court Dominick Street Lower, Dublin 1

Excavation no:	**2017:620**
Site name:	Hollywoodrath, Ratoath Road
SMR.:	n/a
Licence No.:	15E0142 ext.
Author:	Aidan O'Connell
Site type:	No archaeology found
ITM:	E 708432m, N 742834m
Description:	An assessment was carried out of the eastern half of a large mixed residential development at Hollywoodrath (near Mulhuddart) off the Ratoath Road and the R121 Church Road near Tyrellstown in north-west Dublin. A previous assessment carried out of the western half of the site (15E0142) recorded no archaeological material. In the current phase of development (Phase 2 (Sub-phases 2A-E)) fourteen test trenches totalling 4107m were excavated within the site. No archaeology was recorded. Archer Heritage Planning, 8 Beat Centre, Stephenstown, Balbriggan, Co. Dublin.

Excavation no:	**2018:212**
Site name:	Hollywoodrath
SMR No.:	n/a
Licence No.:	18E0662
Author:	Tim Coughlan, IAC Ltd
Site type:	Charcoal-production pit
ITM:	E 708045m, N 742599m
Description:	A programme of test trenching was carried out at the site of a proposed housing development at Hollywoodrath, Dublin 15. Testing was undertaken in response to planning conditions attached to the Proposed Development (Planning Ref.: FW16A/0191). Testing was carried out over two days from 8 November 2018 using a mechanical excavator fitted with a flat grading bucket. The trenches were located systematically across the site to fully investigate its archaeological potential. Testing revealed one area of archaeological significance, which has been designated as Archaeological Area 1 (AA 1). This comprised a probable charcoal-production pit. The nature of the identified archaeology suggests that further similar features may survive across the site, outside the locations of the test trenches. There will be an adverse impact on the charcoal-production pit C3 located within AA 1. This will be caused by ground disturbances associated with the Proposed Development. Any associated or features in the immediate vicinity will also be impacted by the development. It is recommended that the pit be excavated. IAC Ltd, Unit G1, Network Enterprise Park, Kilcoole, Wicklow

Excavation no: **2019:699**
Site name: Cruiserath
SMR No.: N/A
Licence No.: 19E0483
Author: Jean O'Dowd
Site type: No archaeological significance
ITM: E 707549m, N 741658m
Description: A programme of archaeological test trenching was undertaken at a Proposed Development site at Cruiserath, Blanchardstown, Dublin 15. The Proposed Development involves the construction of a structure with an overall height of c. 13m. A geophysical survey was carried out at the site in June 2019 (Licence No 19R0030) revealed a number of linear anomalies (M01–M09) likely to represent former field boundaries and possibly some pit anomalies (L01–L04).
The subsequent test trenching programme consisted of a methodical array of trenching targeting the identified geophysical anomalies, but also providing as much coverage as possible across the remaining parts of the development area in order to assess the potential for subsurface archaeological remains.
A total of 33 test trenches were excavated across the proposed lands, an area measuring 13.93ha. Excavation ceased at the first significant archaeological level or at natural subsoil. A number of agricultural drainage ditches were identified which corresponded to anomalies M03 and M06–M09. Two land drains were also recorded. The remaining anomalies related to natural geological features. No archaeologically significant features were identified during the test trenching programme.
No further archaeological mitigation is recommended in relation to this development.
Rubicon Heritage Services Ltd, Office 8, Dominick Court, No. 41 Dominick Street Lower, Dublin 1

Excavation no: **2021:139**
Site name: Cruiserath, Mulhuddart, Dublin 15
SMR No.: N/A
Licence No.: 20E0643
Author: James Hession and Dawn Gooney
Site type: Kiln, barrow, enclosure ditch and pits
ITM: E 707720m, N 741923m
Description: Two separate programmes of test trenching were undertaken at the site. The first was carried out from November 23-26 2020, and was associated with the extension of a High Voltage Cable Route from an existing site in Cruiserath to the Corduff Substation, Dublin 15. A total of 13 test trenches were excavated across the route of the high voltage cable from the data centre to the ESBN substation at Corduff. Test Trenches 1 to 8 were excavated within the townland of Crusierath, with Test Trenches 9 to 13 excavated in the townland of Goddamendy. No features of archaeological significance were identified during archaeological test trenching undertaken in advance of the Proposed Development. The identified features related to modern service trenches and land drainage associated with the former agricultural nature of the site.
The second programme of test trenching was carried out in association with the conditions associated with a grant of planning permission. It was undertaken from 15–19 February 2021, following a geophysical survey. A total of 38 trenches were excavated, confirming the presence of a sub-circular enclosure and other features identified by geophysics. These were grouped in four areas to be resolved in excavation.
Archaeological excavation was undertaken across four areas (Cuttings 1-4) from May 5 to July 9 2021.
Cutting 1 was located in the south-east of the Proposed Development area. Archaeological features identified in Cutting 1 included two linear ditches, pits, a large kiln and a circular hut circle with associated post-holes.
Cutting 2 was located north of Cutting 1, in the north-east of the development area. A single pit with evidence of in-situ burning was identified.

Cutting 3 was located to the west of Cutting 2. This was the largest area investigated and included the enclosure ditch and internal features identified by geophysical survey and subsequent test trenching. A circular barrow was uncovered to the west of the enclosure and several agricultural drainage features were also identified in this area.
Cutting 4 was located to the north-west of Cutting 3. Monitoring of topsoil stripping in this area did not reveal any features of archaeological significance.
Rubicon Heritage Services Ltd. Unit 2, Europa Enterprise Park, Midleton, Co. Cork.

Excavation no: **2022:073**
Site name: Goddamendy, Corduff
SMR No.: DU013-007
Licence No.: Unlicensed Monitoring
Author: Fiona Reilly; Shanarc Archaeology Ltd.
Site type: Field system/no archaeology found
ITM: E 708576m, N 742008m
Description: Unlicensed archaeological monitoring was carried out in accordance with the conditions of Planning Ref. FW20A/0053, relating to the Proposed Development of an ESB Flexible Generation Peaker Plant at Goddamendy, Corduff, Co. Dublin. A recorded historic field system (DU013-007) partially extends across the southern boundary of the development site. Archaeological monitoring comprised the monitoring of a single geotechnical borehole at the site, as well as the removal of tree stumps within the area of the historic field system.
For the borehole, a test pit was initially dug by hand to a depth of 1.2m. The uppermost 0.05-0.1m was dark brown silty soil with roots, becoming rather grey by 0.3m. Below this it became slightly more reddish or yellowish, becoming grey again by 0.8m. Bedrock was struck at 1.7m during subsequent drilling of the borehole. Nothing of archaeological interest was found during borehole monitoring.
Tree removal comprised machine excavation and removal of tree stumps from within the area of the field system; the trees had been felled prior to monitoring. The tree roots were generally quite shallow with a depth of 0.2-0.6m. Nothing of archaeological interest was found during tree stump removal.
Unit 39A, Hebron Business Park, Hebron Road, Kilkenny

APPENDIX 12.3

FEATURES OF ARCHITECTURAL HERITAGE INTEREST

The recorded archaeological sites within the vicinity of the Proposed Development are listed below, all noted in the National Inventory of Architectural Heritage (NIAH) for Co. Dublin (www.archaeology.ie; www.buildingsofireland.ie).

The Record of Protected Structures for Fingal County as listed in the Fingal County Council Development Plan 2017-2033 was also consulted (https://www.fingal.ie/fingal-development-plan-2017-2023)

NIAH Reg No **11346002**
RPS No **673**
Tyrrelstown House, TYRRELSTOWN

Rating	Regional
Cat. of Special Int.	Architectural, Artistic
Original Use	House
In Use As	House
Date	1800 - 1840
Coordinates	306777, 241871
Date Recorded	09/06/2005
Date Updated	--/--/--
Description	Detached five-bay two-storey house, c.1820, with nap rendered Ionic portico. Attached to earlier two-storey house, c.1720, to rear. Farmyard complex, c.1820 to rear. ROOF:U-shaped slate roof with cast-iron ridging and M-profile hipped slate roof to house to rear section; overhanging eaves supported by corbels; rendered corniced chimney stacks with octagonal terracotta pots; decorative ridge cresting. WALLS: Nap rendered with a moulded cornice and granite plinth course and granite quoins. OPENINGS: Square headed with rendered reveals; granite cills supported on nap rendered console brackets; nap rendered architraves; 1/1 timber sash windows to front façade, 2/2 to side, 3/6 and timber casements to rear; timber pedimented door surround with flat panelled pilasters and console brackets; flat panelled timber and glazed door flanked by round headed timber sash windows with coloured glass margin lights.

NIAH Reg No	**11346003**
RPS No	**670**
	Church Road, BUZZARDSTOWN, Mulhuddart

Rating	National
Cat. of Special Int.	Archaeological, Architectural, Social
Original Use	Graveyard/cemetery
In Use As	Graveyard/cemetery
Date	1250 - 1350
Coordinates	307174, 241245
Date Recorded	09/06/2005
Date Updated	--/--/--
Description	Graveyard with various cut stone grave markers from c.1300 to present. Rubble stone church, c.1700, now in ruins.

NIAH Reg No	**11347003**
RPS No	**665**
	Hollywoodrath, HOLLYWOOD, Hollystown

Rating	Regional
Cat. of Special Int.	Architectural
Original Use	Gate lodge
In Use As	Gate lodge
Date	1800 - 1850
Coordinates	308277, 243159
Date Recorded	09/06/2005
Date Updated	--/--/--
Description	Detached three-bay single-storey gate lodge, c.1825, on an L-shaped plan. Projecting central entrance porch. Single-bay single-storey extension to east c.1940. Pair of granite ashlar piers with cast-iron gates and railings.

NIAH Reg No	**11350040**
RPS No	**n/a**
	Belcamp College, BELCAMP

Rating	Regional
Cat. of Special Int.	Architectural, Technical
Original Use	Bridge
In Use As	Bridge
Date	1825 - 1875
Coordinates	320535, 241110
Date Recorded	23/06/2005
Date Updated	--/--/--

NIAH Reg No	**11353010**
RPS No	**671**
	Lady's Well, TYRRELSTOWN, Mulhuddart

Rating	National
Cat. of Special Int.	Archaeological, Historical, Social
Original Use	Holy well
In Use As	Holy well
Date	1650 - 1750
Coordinates	307030, 240985
Date Recorded	24/06/2005
Date Updated	--/--/--
Description	Rubble stone corbelled roof structure surrounding holy well, c.1700, with inscribed stone to gable. Isaac Butler wrote in 1740 about the well and the great Pattern that would occur yearly at it.

NIAH Reg No	**n/a**
RPS No	**674**
Structure Name	**Cloghran Church (in ruins) & Graveyard**
Address	Blanchardstown Corporate Park 2, Cloghran, Blanchardstown, Dublin 15
Description	Remains of footings of medieval church in ruins within square graveyard that is now sited on edge of a Business Park

13.0 TRAFFIC AND TRANSPORTATION

13.1 INTRODUCTION

This chapter assesses the impact that the Proposed Development will have on the surrounding road network during construction and operation.

13.2 METHODOLOGY

This chapter has been prepared taking the following documents into account:

- Fingal Development Plan 2017-2023
- TII Project Appraisal Guidelines (2011)
- TII Traffic and Transport Assessment Guidelines (2014)
- Design Manual for Urban Roads and Streets (DMURS) 2019
- National Cycle Manual (2011)
- Greater Dublin Area Cycle Network Plan (2015)
- Chapter 13 of Environmental Impact Assessment Report (EIAR) submitted in support of planning application ref. FW19A/0087 (Clifton Scannell Emerson Associates, 2019)
- Traffic and Transport Assessment (TTA) submitted in support of planning application ref. FW20A/0153 (ORS, 2020)
- Transport Statement submitted in support of planning application ref. FW18A/0121 (Arup, 2018)

The methodology used to conduct the assessment includes:

1. Establishing baseline (Do-nothing) conditions – The existing conditions will be recorded including existing site location and use, surrounding road network, public transport services, baseline (do-nothing) traffic volumes, and committed development proposals in the area;

2. Defining the development – This includes size, use, access arrangements, parking, staffing, trip generation and distribution, etc. for the operational stages of the development. Details relating to the peak construction phase will also be defined;

3. Assessing impact of the development – The impact of the development on the surrounding road network will be assessed using ARCADY and PICADY Modelling Packages. ARCADY is a software package for predicting capacities, queue lengths and delays at roundabouts and PICADY is a software package for predicting capacities, queue lengths and delays at priority-controlled junctions.

   The junctions in the vicinity of the site have been analysed as follows:

- R121 Church Road/ The Boulevard/ Subject Site Access (4-arm roundabout)
- R121 Church Road (southbound only)/ Site Construction Access (3-arm left-in/ left-out priority-controlled junction)
- R121 Church Road/ R121 Cruiserath Road/ L3021 Church Road/ L3022 Damastown Avenue/ Powerstown Road (5-arm Roundabout)

for baseline and development conditions for the following years:

- Existing Year (2022 - baseline conditions only);
- Peak Construction Activity Year (2026);
- Opening year (2028 - assume Proposed Development full operation);
- Future Year – 5 years after opening (i.e. 2033); and
- Horizon Year – 15 years after opening (i.e. 2043).

4. Baseline conditions will then be compared to full operation case scenarios at each of these junctions (incorporating any changes in geometry into the models);

5. The modelling results will be compiled to determine the operational traffic impact of the development;

6. The largest construction traffic impact will also be discussed for the peak construction traffic movements; and

7. Mitigation measures will then be proposed to offset any impacts that may result from the development.

13.3 RECEIVING ENVIRONMENT

13.3.1 Existing Site Location and Use

The site of the Proposed Development is located on the lands at Cruiserath Road, Dublin 15. The area of the Proposed Development extends to approx. 13.14ha and is located in the administrative jurisdiction of Fingal County Council (FCC). This Proposed Development is the penultimate phase of the masterplan strategy for the Data Centre Campus that was originally granted planning permission in 2017 under FCC planning reg. ref. FW17A/0025 (An Bord Pleanála ref. PL06F.248544). The application site is bounded generally to the west by the R121 Regional Road (Church Road), to the north by vacant lands and by the Carlton Hotel on Cruiserath Drive, and to the south and east by the remaining extents of the Data Centre Campus overall site area and by the neighbouring Bristol Myers Squibb facility.

The subject site is largely greenfield. A Gas Insulated Switchgear (GIS) building with associated electrical infrastructure has recently been completed within the southernmost portion of the application site, and an area of approx. 16,000m² at the centre of the subject site currently serves as a construction compound (including car parking) for these construction works and for the 2 no. permitted data centre buildings 'currently' under construction on the eastern portion of the overall site (permitted under FCC reg. ref. FW19A/0087).

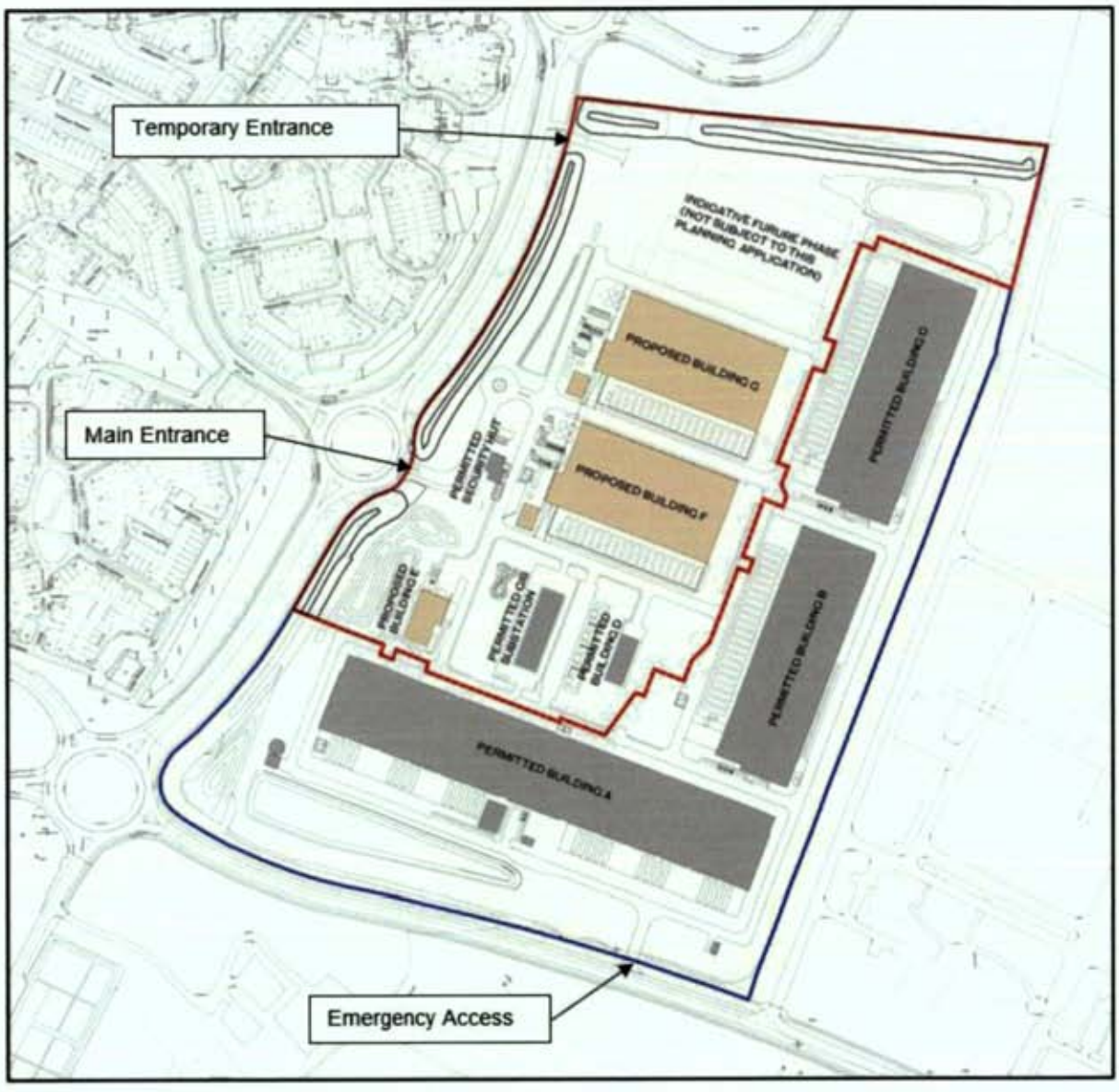


Figure 13.1 *Site Location and Use*

An existing vehicular and pedestrian access to the site is located at its western boundary, at a roundabout on Church Road (R121). This currently serves as the sole regular-use access to the completed data centre building in the southernmost part of the overall site, which is now operational, and shall in future also serve as the operational-phase access to the 2no. data centre buildings now under construction on the eastern portion of the overall site, as well as the operational-phase access to the 3no. data centre buildings proposed under the present application.

An existing temporary entrance is also in place on Church Road at the north-western corner of the application site. This is configured as a left-in/left-out priority-controlled junction, with access from/to the southbound carriageway of Church Road only. This is proposed to serve as the access for traffic related to construction of the Proposed Development.

13.3.2 Existing Road Network

The surrounding road network in the vicinity of the site includes the R121, the N2, the N3, and the M50.

R121

The R121 is a Regional Road, approximately 17.5 kilometres in length. It connects to the R122 in Tyrrelstown at its north-eastern end and to the R109 in Lucan at its south west end. The site is bounded by the R121 to the west and south of the site, with the R121 called Cruiserath Road running along the southern boundary.

In the vicinity of the site, Cruiserath Road provides one lane in each direction (3.3 metre wide eastbound lane; 3.7 metre wide westbound lane), with a 4.1 metre area separating the eastbound and westbound lanes, used to provide right turning or hatched in the form of ghost islands. It also provides off-road cycle tracks in each direction.

Cruiserath Road forms a roundabout junction with Ballycoolin Road, the R121, and Corduff Road approximately 800 metres east of the eastern boundary of the site. It also forms a roundabout junction with the R121, Church Road, Damastown Avenue and Powerstown Road adjacent to the south west corner of the site.

The section of the R121 bounding the western edge of the site provides two lanes and bidirectional off-road cycle tracks in each direction, with the northbound and southbound lanes divided by a concrete barrier.

The R121 forms a roundabout junction with the access road to Boulevard Bealing Village at a point approximately 300 metres north of its roundabout with Cruiserath Road, Church Road, Damastown Avenue and Powerstown Road.

N2/M2

The N2 extends in a north-north-easterly direction from its southern end (where it connects to Junction 5 of the M50) for a distance of approximately 135 kilometres (including the12 kilometre section north of Junction 2 which is classed as motorway i.e. M2) and connects to the A5 at the Northern Ireland border in Tyrone.

The N2 is located approximately 4 kilometres from the site, with access from Exit 2 of the N2 onto a newly constructed access road that connects to the R121, north of the site. In the vicinity Junction 2, the N2 provides three traffic lanes in each direction, with a posted speed limit of 120km/hr.

N3/M3

The N3 extends in a north-easterly direction from its southern end (where it connects to Junction 6 of the M50) for a distance of approximately 135 kilometres (including the 51 kilometre section north of Junction 4 which is classed as motorway i.e. M3) and connects to the A509 at the Northern Ireland border in Fermanagh.

The N3 is located approximately 3 kilometres from the site, with access from Exit 3 of the N3 via Church Road and the R121, south of the site. In the vicinity of Junction 3, the N3 provides two traffic lanes in each direction, with a posted speed limit of 100km/hr.

M50

The M50 is an orbital motorway. It connects to the Port Tunnel at its north end and the M11 (Shankill) at its south end, forming a C-shaped route around Dublin City. In the vicinity of the site, the M50 provides three lanes in each direction, with access to

the M2 and M3 via Junctions 5 and 6; respectively. It has a posted speed limit of 100km/hr through this area.

13.3.3 Existing Public Transport Services

The site is currently serviced by Dublin Bus, with services 40D and 40E stopping in the vicinity of the site.

- The 40D bus provides services between Parnell Street and Tyrrelstown via Finglas Road and Ballycoolin Road, with the first and last services departing at 06:30 and 23:30; respectively. Buses operate on 15-minute intervals during peak periods, with services less frequent during off-peak times.

- The 40E bus provides services between Tyrrelstown and Broomsbridge Luas via Cruiserath Road and Cappagh Road, with the first and last services departing at 06:22 and 23:30; respectively. Buses operate on 30-minute intervals throughout the day, with services slightly less frequent on Saturdays Sundays and Public Holidays.

13.3.4 Existing Traffic Volumes

16 hour traffic surveys were conducted at the following junctions on Tuesday 31st May 2022 between 6am and 10pm:

- R121 Church Road/ The Boulevard/ Subject Site Access (4-arm roundabout)

- R121 Church Road/ R121 Cruiserath Road/ L3021 Church Road/ L3022 Damastown Avenue/ Powerstown Road (5-arm roundabout)

- R121 Church Road/ Cruiserath Drive/ The Boulevard (4-arm roundabout)

- Cherryhound Tyrellstown Link Road/ R121 Church Road/ Bellingsmore Avenue (4-arm roundabout)

- R121 Cruiserath Road/ L3095 Corduff Road/ R843 Ballycoolin Road/ R121 Blanchardstown Road North (4-arm roundabout)

- R121 Cruiserath Road/ College Business Park/ Overall Landholding Site Access (staggered 4-arm priority-controlled junction)

- R121 Church Road (southbound only)/ Site Construction Access (3-arm left-in/ left-out priority-controlled junction)

Surveys were conducted by IDASO Ltd. Resulting peak hours from the surveys were found to be 08:00-09:00 and 17:00-18:00 for AM and PM, respectively, across the seven junctions.

13.3.5 Proposed Future Development in the Area

A review of planning data published by the Department of Housing, Local Government, and Heritage has identified 3 no. active planning permissions sufficiently close to the subject development site and of sufficient scale to alter background traffic flows at the junctions considered in this report, if fully developed as permitted (see Figure 13.2). These are:

- The 2 no. data centre buildings now under construction on the eastern portion of the overall site (FCC reg. ref. FW19A/0087), with a total Gross Floor Area of 20,739m² and with operational-phase vehicular access via the same existing roundabout on Church Road to be used by the subject Proposed Development. (Marked A on Figure 13.2)

- An office development (FCC reg. ref. FW20A/0153) in the Blanchardstown Corporate Park, with a total Gross Floor Area of 23,180m² (excluding basement levels) and with vehicular access to/from Cruiserath Road (R121) and Corduff Road. (Marked B on Figure 13.2)

- An office development (FCC reg. ref. FW18A/0121) immediately to the north of the application site, with an effective Gross Floor Area of approx. 3,500m² and with vehicular access to/from Cruiserath Drive. (Marked C on Figure 13.2)

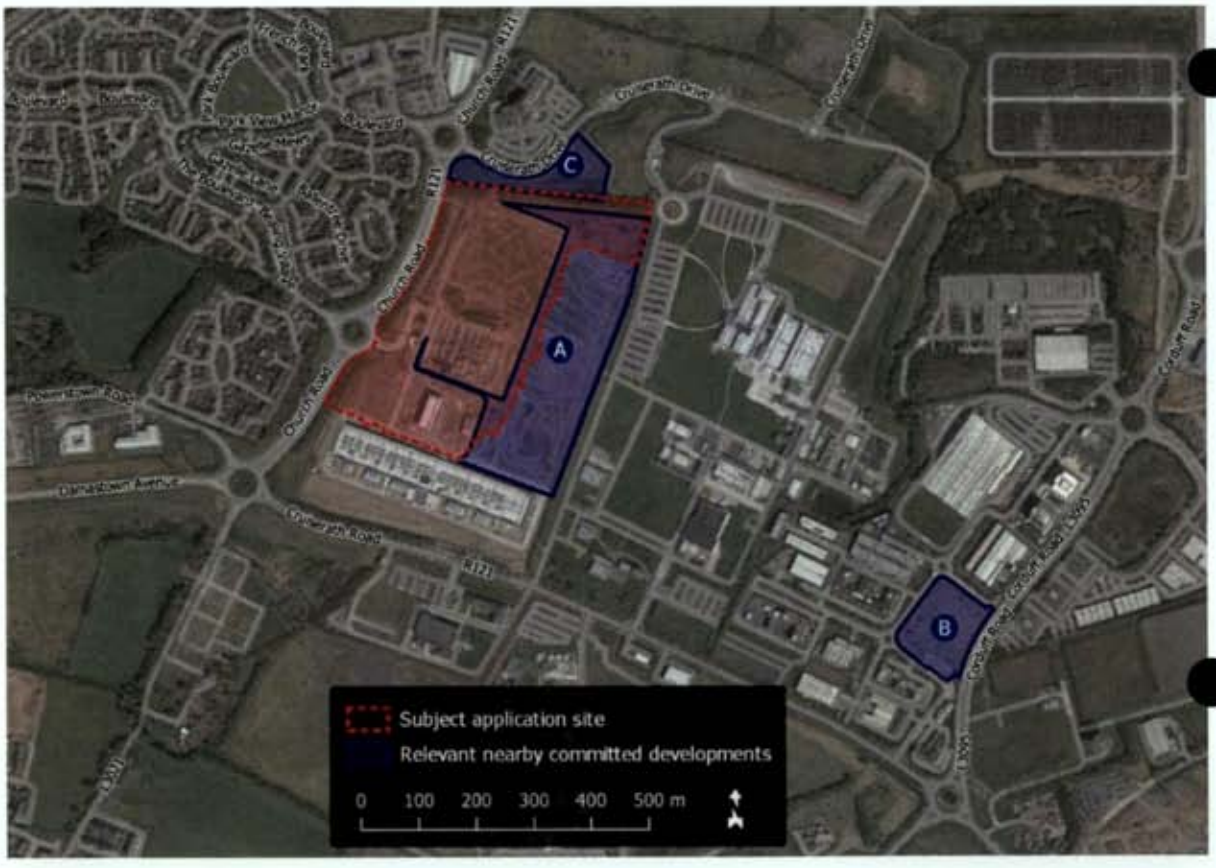


Figure 13.2 *Relevant nearby committed developments*

13.4 CHARACTERISTICS OF THE DEVELOPMENT

13.4.1 General Description and Use

The Proposed Development

The description of the Proposed Development for which a seven-year permission is sought, as set out within the public notices, is as follows:

- "Construction of three data centre buildings (Data Centre E, Data Centre F, and Data Centre G), with a gross floor area (GFA) of c. 1,425 sq.m, c. 20,582 sq.m, and c. 20,582 sq.m respectively, each over two levels (with Data Centre F and G each including two mezzanine levels);
- Data Centre F and G will be located in the north-western portion of the overall landholding, with a primary parapet height of c. 19.8 metres and each will accommodate data halls, associated electrical and mechanical plant rooms, a loading bay, maintenance and storage space, office administration areas, with plant and solar panels at roof level;
- Data Centre E (which will be ancillary to Data Centre F and G) will be located within the south-western portion of the overall landholding, with a primary parapet height of c. 13.1 metres and will accommodate data halls, associated electrical and mechanical plant rooms, a loading bay, maintenance and storage space, office administration areas, with plant at roof level;
- Emergency generators and associated flues will be provided within compounds adjoining each of the three data centre buildings (1 no. for Data Centre E, 19 no. for Data Centre F, and 19 no. for Data Centre G);
- The development includes one diesel tank and two filling areas to serve the proposed emergency generators;
- Provision of ancillary structures including two MV buildings, water storage tanks and three bin stores;
- Construction of access arrangements and internal road network and circulation areas, footpaths, provision of car parking (105 no. spaces), motorcycle parking (12 no. spaces) and bicycle parking (56 no. spaces), hard and soft landscaping and planting (including alteration to a landscaped berm to the north of proposed Data Centre E), lighting, boundary treatments, and all associated and ancillary works including underground foul and storm water drainage network, and utility cables."

13.4.2 Trip Generation

Proposed Development

Trip rates from the Trip Rate Information Computer System (TRICS) database would typically be used to determine the operational-phase vehicular trip generation of new workplace developments. The TRICS database does not however contain surveys of established data centres, which are characterised by a significantly lower staff density than general offices. Trip generation for the Proposed Development has therefore been calculated from first principles, as described below.

The Proposed Development comprises of 3 no. buildings, with the following Gross Floor Areas:

- Building E – 1,455m²
- Building F – 21,582m²
- Building G – 20,582m²

The projected staffing levels for the Proposed Development are given in Table 13.1 and 13.2.

Table 13.1 *Projected Daytime Staffing of Proposed Development*

Shift Type	Shift Times	Building E	Building F	Building G	Total
Security Staff	08:00-17:00	1	3-4	3-4	7-9
General Shift	07:00-19:00	0-2	5-31	5-31	10-64
Visiting and Maintenance Staff	Variable but typically within range 08:00-15:00	0-1	2-15	2-15	4-31
Daytime Total		1-4	10-50	10-50	21-104

Table 13.2 *Projected Night-time Staffing of Proposed Development*

Shift Type	Shift Times	Building E	Building F	Building G	Total
Security Staff	17:00-08:00	1	3-4	3-4	7-9
General Shift	19:00-07:00	0	2-3	2-3	4-6
Night-time Total		1	5-7	5-7	11-15

Note that a minimum of 1 no. security staff assumed to be on duty at all times in each building.

In calculating operational-phase staff trips to and from the site, it has also been assumed that:

- All security staff will arrive to and depart from the site during the peak hours of 08:00-09:00 and 17:00-18:00;
- Approximately one-third of visiting/ maintenance staff will arrive to the site during the AM peak hour of 08:00-09:00;
- All visiting/ maintenance staff will depart from the site outside the peak hours;
- All general staff will arrive and depart to and from the development outside of the peak hours (i.e. arriving and departing either before 08:00 or after 18:00)

In addition to car trips made by staff, it is projected 1 no. Heavy Goods Vehicle (HGV) visit per day shall be made to each of the larger proposed data centre buildings (Buildings F and G). It is however assumed that these HGV trips shall be made outside of the weekday peak hours of 08:00-09:00 and 17:00-18:00.

The Proposed Development's overall projected peak hour vehicular trip generation is given in Table 13.3. To ensure a robust assessment, these have been calculated on the basis of all building's staffing levels being at the upper ends of the ranges given in Tables 13.1 and 13.2.

Table 13.3 *Max. Weekday Peak Hour Operational Traffic Generation*

Time Period	Building E	Building F	Building G	Total Traffic (PCU)
Arrivals				
AM Peak	2	21	21	**44**
PM Peak	1	4	4	**9**
Departures				
AM Peak	1	11	11	**23**
PM Peak	1	4	4	**9**
Total Trips				
AM Peak	3	32	32	**67**
PM Peak	2	8	8	**18**

13.4.3 Modal Choice

Trips to similar developments in the area are currently highly car-based and have very low public transport or slow-mode modal splits. Some trips to the site may be via public transport. However, for the purposes of this report, a conservative approach has been assumed for traffic generation by assuming all trips to the site are by private car or HGV.

13.4.4 Trip Distribution

It has been assumed that all trips to the site will be new trips (i.e. trips that would not appear on the road network without the Proposed Development and indicative future development of one additional data centre in the northern portion of the Proposed Development site). This represents the conservative approach for trip generation.

13.4.5 Trip Assignment

In the operational phase, vehicular traffic generated by the Proposed Development shall arrive and depart from/ to the surrounding road network via the site's existing operational access on the R121 Church Road/ The Boulevard/ Subject Site Access Roundabout. Here, it may travel along Church Road (R121) either to/from the north or to/from the south.

It is assumed that no vehicular traffic to and from the Proposed Development will arrive or depart from/to the residential developments on the western side of the Church Road as it is in walking distance. It is also assumed that no development-related traffic will travel along Cruiserath Drive as it is a secondary road to the Regional Road.

An existing temporary entrance is in place on Church Road (R121), at the north-western corner of the application site. This serves as access for construction traffic to and from the overall site, which currently consists of traffic relating to the 2 no. data centre buildings now under construction on the eastern portion of the overall site (permitted under FCC reg. ref. FW19A/0087). The construction access was included in the traffic survey.

To establish baseline traffic flows at all surveyed junctions, from which future year "do-nothing" figures could be calculated, it was necessary to remove this existing construction traffic from the peak hour surveyed traffic movements at each junction.

The existing temporary access is configured as a left-in/ left-out only priority junction, such that traffic entering or exiting the development site can do so only from/to the southbound carriageway of the R121.

It is assumed that the Proposed Development will be fully operational by 2028. Therefore the traffic associated with the full operation of the Proposed Development would appear on the network in 2028.

The following assessment years have been analysed for the purpose of this report:

- Existing – 2022
- Peak Construction activity year – 2026
- Opening year (full operation) – 2028
- Future year – 2033
- Horizon Year – 2043

Unit 5.3 of the TII Project Appraisal Guidelines (PE-PAG-02017 Travel Demand Projections) has been used to apply growth factors to the existing surveyed background traffic flows, to obtain traffic flows for future year junction assessments. Table 13.4 shows the TII annual growth rates and the resultant cumulative growth in background traffic for each assessment year is given in Table 13.5.

Table 13.4 *TII Central Growth Rates (Light Vehicles)*

Geographic Area	Background Traffic Growth Per Year		
	2016-2030	2030-2040	2040-2050
Dublin Metropolitan Area	+1.62%	+0.51%	+0.44%

Table 13.5 *Predicted Background Traffic Growth*

2026 Peak Construction	2028 Full Completion	2033 Completion +5 years	2043 Completion +15 Years
+6.6%	+10.1%	+15.5%	21.2%

Once these growth factors were applied to the 2022 traffic volumes, the additonal future traffic associated with surrounding approved developments not accounted for in the 2022 count was accounted for to establish baseline (do-nothing) traffic flows. It has been assumed that all Permitted Developments outlined in 13.3.5 above shall proceed and shall be completed by the year 2026. These operational-phase traffic flows have therefore been included in the background traffic flows for all future year assessments. Construction-phase traffic measures in the traffic counts for the datacentre projects are included.

13.4.6 Parking

Car Parking

The Proposed Development comprises of 3 no. buildings, with the following Gross Floor Areas (GFA):

- Building E – 1,455m²
- Building F – 21,582m²
- Building G – 20,582m²

The development shall also include 2 no. MV buildings (422m² combined GFA), bin stores, bike shelters, generator yards and diesel / renewable diesel stores. These elements do not however generate any parking provision requirement.

The development shall include a total of 105 car parking spaces, comprising:

- 98 standard car parking spaces (4.8m by 2.4m)
- 7 designated accessible spaces (4.8m by 2.4m, with 1.2m buffer to rear and sides).

Table 13.6 *Overall Car Parking Provision*

Land use	Car Parking Maximum	Quantum	Max. Parking Provision	Proposed Provision
Data Centres	1 Space per 100m² GFA	42,589m² GFA	426 spaces	105 spaces

The car parking provision of the Proposed Development has been assessed with respect to the Fingal Development Plan 2017-2023, which defines the standard maximum car parking provision for new developments by land use type. Table 13.6 shows the car parking standards applicable to the Proposed Development and illustrates that the total car parking provision does not exceed the maximum number permitted by the Local Authority development plan.

It is projected that a maximum of 104 staff may be present onsite at any one time during the developments operational phase. The proposed car parking provision of 105 spaces shall therefore be sufficient to cater for the developments projected maximum car parking demand.

Disabled-Accessible Car Parking

The development includes a total of 7 disabled-accessible car parking spaces, all located externally at surface level, in proximity to building entrances:

- *1 space at Building E*
- *3 spaces at Building F*
- *3 spaces at Building G*

Table 13.7 *Accessible Car Parking Provision*

Proposed Car Parking Provision	Minimum Required Proportion	Accessible Spaces Required	Accessible Spaces Proposed
Fingal Development Plan 2017-2023			
105 spaces	1%	1	7

The Fingal Development Plan 2017-2023 sets out minimum requirements for the provision of disabled-accessible parking in new developments, as a proportion of the total development car parking provision. Table 13.7 shows the Proposed Development meets the requirements of the Development Plan.

Bicycle Parking

The development shall include a total of 56 bicycle parking spaces, comprising:

- 26 long-stay bicycle parking spaces at Building F (13 covered Sheffield stands);
- 26 long-stay bicycle parking spaces at Building G (13 covered Sheffield stands);
- 4 long-stay bicycle parking spaces at Building E (2 covered Sheffield stands).

The proposed bicycle parking provision has been determined from first principles, based on the development's projected maximum staffing level of 105 people and the relative standards for car and bicycle parking given in the Fingal Development Plan 2017-2023. For data centres, the Fingal Development Plan 2017-2023 stipulates:

- A maximum car parking provision of 1 space per 100m² GFA
- A minimum bicycle parking provision of 1 space per 200m² GFA

The minimum bicycle parking provision requirement is therefore 50% of the maximum permissible car parking provision. As the Proposed Development shall include 105 car parking spaces, this relationship suggests a bicycle parking requirement of 53 spaces. The developments proposed provision of 56 bicycle parking spaces is in line with this number.

It is acknowledged that strict application of the bicycle parking standards set out in the Fingal Development Plan 2017-2023 would result in minimum bicycle parking requirement of 213 spaces, as shown in Table 13.8. It is however submitted that these levels of bicycle parking provision would be excessive in the context of the Proposed Development's projected staffing levels.

Table 13.8 *Bicycle Parking Standards (Current Development Plan)*

Land-use	Cycle Parking Minimum	Quantum	Min. Parking Provision	Proposed Provision
Data Centres	1 space per 200m² GFA	42,589m²	213 spaces	56 spaces

Motorcycle Parking

The Fingal Development Plan 2017-2023 does not specify any requirement for motorcycle parking.

The Proposed Development shall include a motorcycle parking provision of 12 bays.

Electric Vehicle Charging Facilities

The Fingal Development Plan 2017-2023 stipulates that:

> " One (car parking) space or more per 100 spaces should be reserved for electric vehicles with charging facilities"

Table 13.9 *Provision of BEV Charging Facilities*

Proposed Car Parking Provision	Minimum Required Proportion	BEV Charging Spaces Required	BEV Charging Spaces Proposed
Fingal Development Plan 2017-2023			
105 spaces	1%	1	12

Facilities for the charging of battery electric vehicles (BEV's) shall be provided at 12 car parking spaces within the development, representing 11% of its overall car parking provision. All remaining car parking spaces within the development shall be "future-proofed" by the inclusion of ducting to permit the rapid future installation of additional BEV charging points.

13.4.7 Pedestrian Facilities

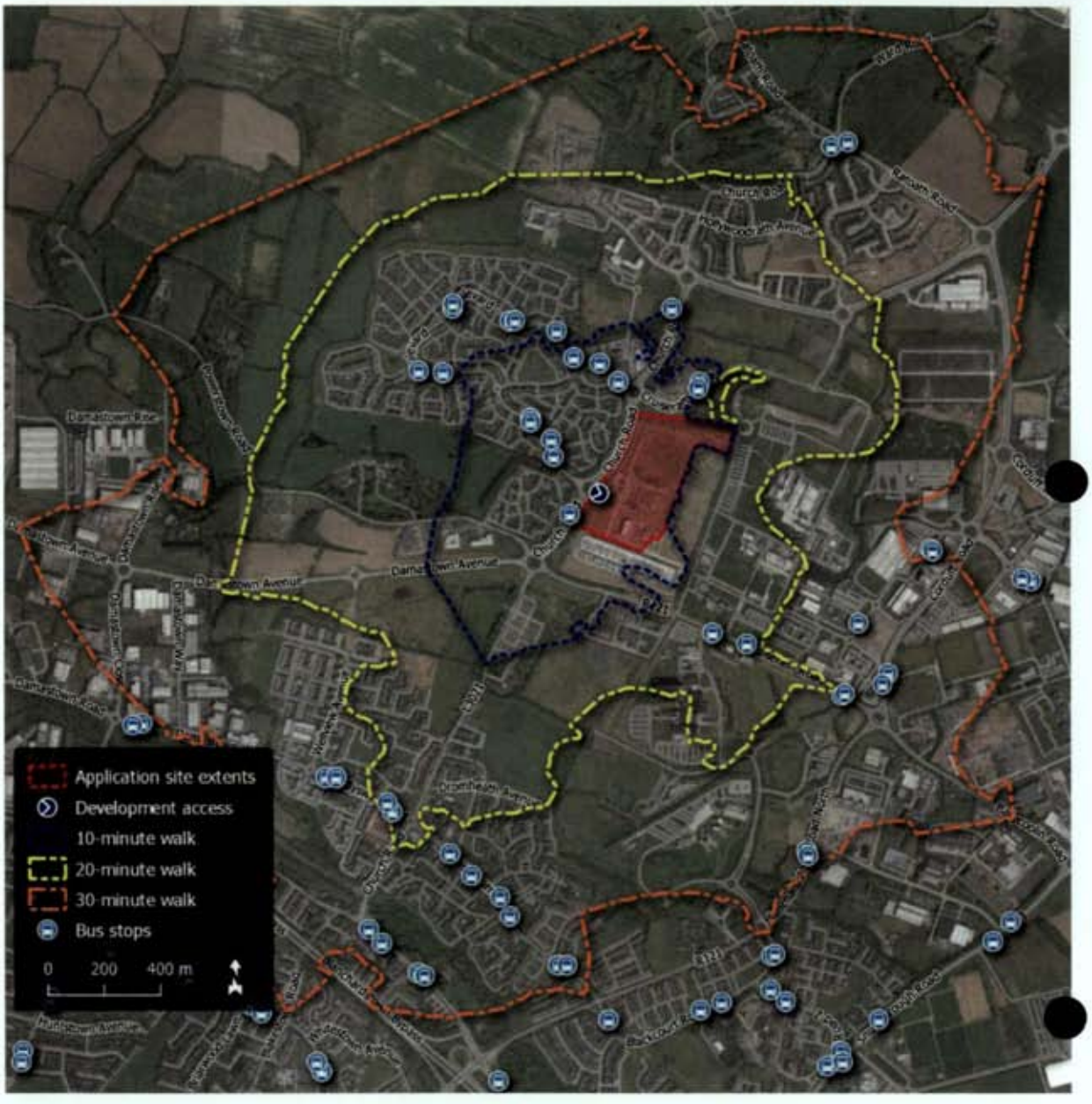


Figure 13.4 *Walking isochrones to/ from application site*

Figure 13.4 shows walking times to and from the Proposed Development, based on an average speed of 4.5km/h. The subject development site is relatively remote with regard to pedestrian accessibility, although a number of existing residential areas are within convenient walking distance. Numerous bus stops are also easily accessible on foot from the site. Raised and segregated footpaths are in place on surrounding roads, as is public lighting. An existing signal-controlled pedestrian crossing is in place on the R121 Church Road, close to the Proposed Development's operational access location on its western boundary.

The Proposed Development includes internal pedestrian footpaths providing safe passage for pedestrians between internal buildings. The pedestrian routes to the buildings are separate from unloading bays and reversing vehicles for pedestrian safety. External public footpaths are provided on both sides of the road along the

south and east boundaries of the site. The internal footpaths connect to these external footpaths, through the site's main access. The land to the north and west of the site is not public land and therefore does not provide access to the site so footpaths are not necessary.

13.4.8 Cycle Facilities

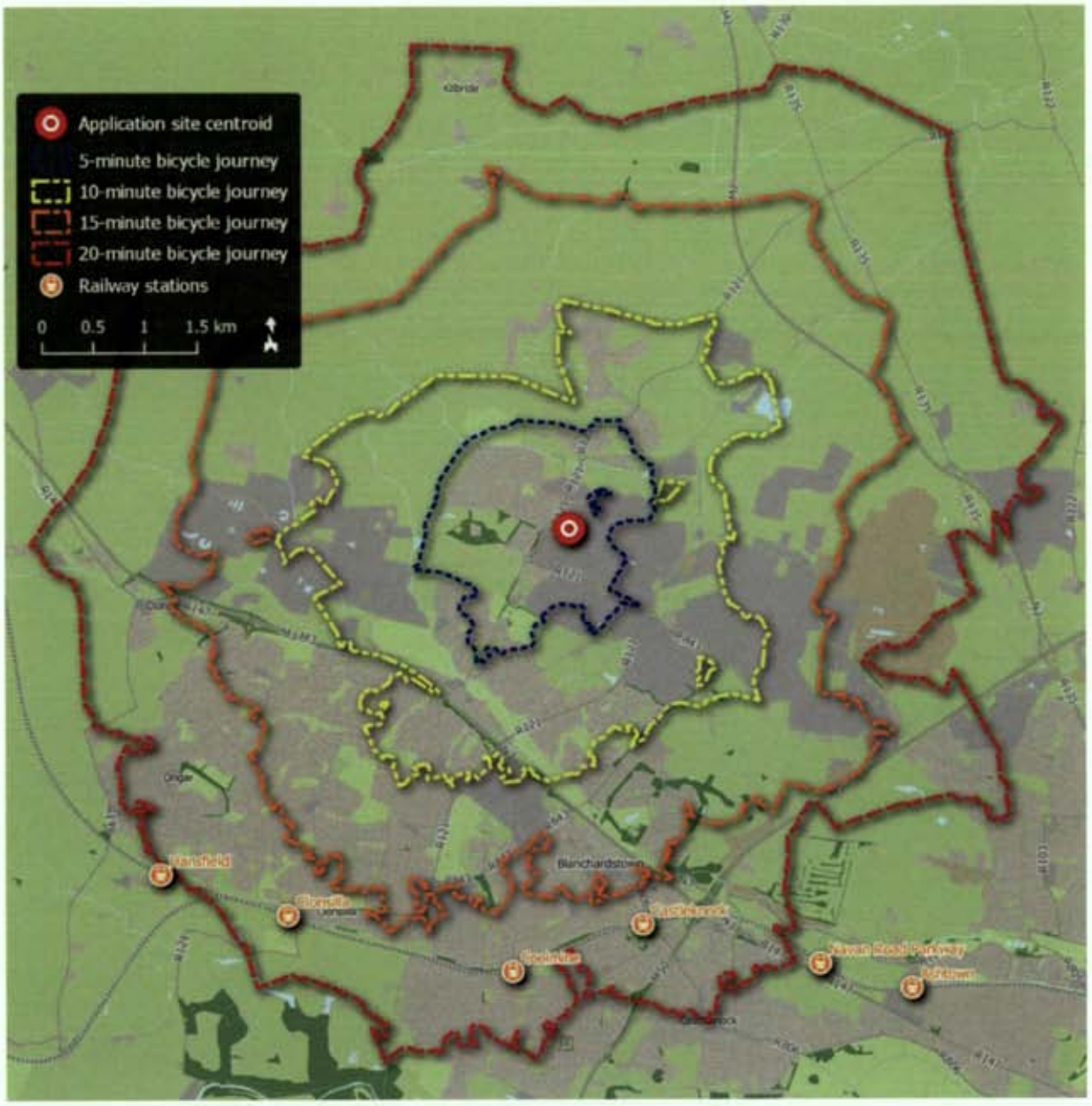


Figure 13.5 *Cycling isochrones to/ from application site*

Figure 13.5 shows bicycle journey times to and from the Proposed Development, based on an average cycling speed of 18km/h. This shows that the application site is within a 20-minute bicycle journey of railway stations on the North Kildare line, as well as being a convenient cycling distance from residential areas in Blanchardstown, Ongar, Clonee, Clonsilla and Castleknock.

There is an excellent cycle network in the vicinity of the site. Cycling infrastructure includes two-way cycle tracks on both sides of the R121 to the west of the site (with cycle facilities up to the main access to the development), and cycle tracks on both

sides of Cruiserath Road south of the site. The provision of cycle parking is addressed in 13.4.6.

Fingal County Council's development plan states the following in relation to shower and changing facilities and lockers:

Shower and Changing Facilities

Suitable shower and changing facilities will be made available in large-scale developments incorporating large amounts of cycle parking. Facilities should be secure, lockable and located in well-lit locations. The following standards shall be adhered to:

- ***1 shower** per office development over 100sq.m (**approximately 5 employees**),*
- *A minimum of **2 showers** for office developments over 500sq.m (approximately **25 employees**),*
- *1 shower per 1000sq.m thereafter,*
- *Changing/drying areas, toilets and lockers should be provided in association with shower facilities.*

Lockers

The number of lockers provided should relate to the number of cycle parking spaces. Lockers should be well ventilated, secure and lockable. Lockers that facilitate multiple short-term users are recommended.'

Based on the above, it is proposed to provide 4 showers and associated changing facilities and 158 lockers for the Proposed Development.

13.5 POTENTIAL IMPACTS OF THE DEVELOPMENT

13.5.1 Construction Phase

Construction traffic would consist of the following:

- Private vehicles belonging to site construction staff;
- Private vehicles belonging to site security staff;
- Occasional Private vehicles belonging to professional staff (i.e. design team, utility companies);
- Light Goods Vehicles (LGV's);
- Heavy construction vehicles, including excavation plant, dumper trucks and other Heavy Goods Vehicles (HGV's).

It is anticipated that the largest construction traffic impact would occur in 2026, when Building E shall have been completed and commissioned, Building G shall have been constructed and shall be undergoing final fit-out and Building F shall be under construction.

Construction traffic has been estimated using data obtained from a similar data centre development, of similar scale, that used a similar construction methodology to the Proposed Development. The following construction data has been used to estimate peak daily construction traffic relating to the three data centre buildings within the Proposed Development (Buildings E, F and G):

- Peak construction operatives for one data centre = 400;
- Maximum construction operatives for final data hall fit-out = 170;
- Average private cars/ operative = 0.6;
- Peak HGVs/day for construction of one Data centre = 110;
- Peak LGVs/ day for construction of one data centre = 30.

Table 13.10 gives the resultant projected maximum daily numbers of light vehicles (cars and LGV's) and heavy vehicles that will access the development site at the peak of construction activity in the year 2026. The generation of HGV and LGV traffic during fit-out has been calculated pro data from their respective generation rates during building construction, based on the numbers of operatives involved in each activity.

Table 13.10 *Maximum Daily Construction Traffic Generation*

Cars	Light Goods Vehicles	Heavy Goods Vehicles	Total Traffic (PCU)
Construction of Building F			
240	30	110	380
Fit-Out of Building G			
102	13	47	162
Total Construction Traffic			
342	**43**	**157**	**542**

Peak hour flows corresponding to peak construction periods were then calculated as follows.

1. Of the 342 Cars (LVs) entering and exiting the site during peak construction, it is assumed:
   - 20% enter the site in the AM peak hour;
   - 4% exit the site in the AM peak hour;
   - 4% enter the site in the PM peak hour; and
   - 20% exit the site in the PM peak hour.
2. Of the 43 LGVs and 157 HGVs entering and exiting the site during peak construction, it is assumed:
   - 10% enter the site in the AM peak hour;
   - 5% exit the site in the AM peak hour;
   - 5% enter the site in the PM peak hour; and
   - 10% exit the site in the PM peak hour.

The resultant maximum potential peak hour vehicular trip generation of the subject site during construction is summarised in Table 13.11.

Table 13.11 *Maximum Peak Hour Construction Traffic Generation*

Time Period	Light Vehicles (cars and LGV's)	Heavy Goods Vehicles	Total Traffic (PCU)
Arrivals			
AM Peak	72	16	109
PM Peak	16	8	34
Departures			
AM Peak	16	8	34
PM Peak	72	16	109
Total Trips			
AM Peak	**88**	**24**	**143**
PM Peak	**88**	**24**	**143**

The Proposed Development will be built on a phased basis to meet customer demand. Our assessment has been done in accordance with the following estimated timeline:

Building E:

- Construction Start – Q2 2023
- Construction Complete – Q2 2024

Building F:

- Construction Start – Q1 2024
- Construction Complete – Q2 2026

Building G:

- Construction Start – Q1 2025
- Construction Complete – Q3 2028

Junction analysis using PICADY indicated that the Ratio of Flow to Capacity (RFC) at the junction of site construction entrance and Cruiserath Road is 3% during the AM Peak hour and 11% during the PM Peak hour, in 2026.

Given the temporary nature of the peak construction phase, the overall impact of the construction phase is considered ***short-term***, ***negative*** and ***not significant.***

13.5.2 Operational Phase

Junction Analysis

Major junctions on the road network in the vicinity of the site were assessed for opening, future and horizon years, namely:

- R121 Church Road/ The Boulevard/ Subject Site Access (4-arm Roundabout)
- R121 Church Road/ R121 Cruiserath Road/ L3021 Church Road/ L3022 Damastown Avenue/ Powerstown Road (5-arm Roundabout)

The junctions were analysed for 2028 (opening year), 2033 (future year) and 2043 (horizon year) with and without the proposed and indicative future development in place. It was assumed that the indicative future development would be operational by 2033 and thus its trip generation was included in future and horizon year development case scenarios. The Proposed Development would be operational in 2028 and thus its trip generation was included in opening, future and horizon year development case scenarios.

The junction capacity analysis was carried out using the ARCADY computer-modelling program (Junctions 9), developed by the Transport Research Laboratory in the UK. This program models capacity, queues and delays at roundabout junctions.

The results of the capacity analysis of the junctions are shown in Table 13.12 below. Note that the '+Dev' column in the table indicates 'plus the Proposed Development' for the 2028 development case scenarios and 'plus the Proposed Development and the indicative future development' for the 2033 and 2043 case scenarios.

The table shows "n/a" entries due to the fact that in May 2022, when the survey was carried out, the development was not operational.

Table 13.12 *Junction Capacity Results for Baseline (Do-nothing) and Development Case scenarios*

Junction	Year	Peak Hour	RFC*		Max. Queue (pcu**		Max. Delay (s/pcu***	
			Base	+ Dev	Base	+ Dev	Base	+ Dev
R121 Church Road/ The Boulevard/ Subject Site Access (4-arm Roundabout)	2022	AM	0.39	n/a	0.65	n/a	5.81	n/a
		PM	0.37	n/a	0.57	n/a	5.49	n/a
	2028	AM	0.46	0.48	0.86	0.91	6.65	6.97
		PM	0.39	0.39	0.64	0.65	5.84	5.94
	2033	AM	0.48	0.50	0.94	1.00	6.96	7.32
		PM	0.41	0.41	0.70	0.70	6.06	6.17
	2043	AM	0.51	0.53	1.03	1.10	7.33	7.73
		PM	0.43	0.43	0.76	0.77	6.31	6.43
R121 Church Road/ R121 Cruiserath Road/ L3021 Church Road/ L3022 Damastown Avenue/ Powerstown Road (5-arm Roundabout)	2022	AM	0.69	n/a	2.17	n/a	8.38	n/a
		PM	0.74	n/a	2.78	n/a	9.79	n/a
	2028	AM	0.86	0.87	5.85	6.31	16.36	17.49
		PM	0.97	0.97	16.30	17.01	46.69	48.46
	2033	AM	0.92	0.93	9.54	10.58	25.97	28.52
		PM	1.03	1.03	35.99	37.56	89.44	92.65
	2043	AM	0.98	0.99	20.18	23.12	50.47	56.24
		PM	1.09	1.09	70.36	72.45	157.70	162.02

*RFC (Ratio of Flow to Capacity. A junction operating at capacity would have an RFC value of 1.
**PCU (Passenger Car Unit. It is the impact that a vehicle has on the traffic variables compared to a single car.
***s/PCU. Delay in seconds experienced per PCU.

R121 Church Road/ The Boulevard/ Subject Site Access (4-arm Roundabout)

2028 Opening-Year

The ARCADY junction analyses indicate the following main impacts that the Proposed Development will have on the performance of the R121 Church Road/ The Boulevard/ Subject Site Access (4-arm Roundabout) in the Opening-Year 2028, compared to "do nothing" case scenario in the same year:

- The Ratio of Flow to Capacity (RFC) value will increase by 0.02 and remain the same; respectively; during the AM and PM peak hours;
- Max queues will increase by 0.05 and 0.01 respectively; during the AM and PM peak hours;
- Delays will increase by 0.32 seconds per pcu on worst affected lane during AM peak; and increase by 0.10 seconds per pcu on worst affected lane during the PM peak.

While the performance of the junction does become lower, as would be expected with the opening of Proposed Development, it will still operate within capacity (with an RFC value of 0.48 in AM Peak, and 0.39 in PM Peak) and at a satisfactory level.

2033 Future-Year

The ARCADY junction analyses indicate the following main impacts that the Proposed Development and indicative future development will have on the performance of the roundabout junction of the R121 Church Road/ The Boulevard/

Subject Site Access (4-arm Roundabout) in the Future-Year 2033, compared to "do nothing" case scenario in the same year:

- The Ratio of Flow to Capacity (RFC) value will increase by 0.02 and remain the same; respectively; during the AM and PM peak hours;
- Max queues will increase by 0.06 and stay the same; respectively; during the AM and PM peak hours ; and
- Delays will increase by 0.36 seconds per pcu on worst affected lane during AM peak; and increase by 0.11 seconds per pcu on worst affected lane during the PM peak.

While the performance of the junction does become lower, as would be expected with the opening of the Proposed Development and indicative future development, it will still operate within capacity (with an RFC value of 0.50 in AM Peak, and 0.41 in PM Peak) and at a satisfactory level.

2043 Horizon-Year

The ARCADY junction analyses indicate the following main impacts that the proposed and indicative future development will have on the performance of the R121 Church Road/ The Boulevard/ Subject Site Access (4-arm Roundabout) in the Horizon-Year 2043, compared to "do nothing" case scenario in the same year:

- The Ratio of Flow to Capacity (RFC) value will increase by 0.02 and remain the same; respectively; during the AM and PM peak hours;
- Max queues will increase by 0.07 and 0.01; respectively; during the AM and PM peak hours ; and
- Delays will increase by 0.40 seconds per pcu on worst affected lane during AM peak; and increase by 0.12 seconds per pcu on worst affected lane during the PM peak.

While the performance of the junction does become lower, as would be expected with the opening of proposed and indicative future development, it will still operate within capacity (with an RFC value of 0.53 in AM Peak, and 0.43 in PM Peak) and at a satisfactory level.

R121 Church Road/ R121 Cruiserath Road/ L3021 Church Road/ L3022 Damastown Avenue/ Powerstown Road (5-arm Roundabout)

2028 Opening-Year

The ARCADY junction analyses indicate the following main impacts that the Proposed Development will have on the performance of the R121 Church Road/ R121 Cruiserath Road/ L3021 Church Road/ L3022 Damastown Avenue/ Powerstown Road (5-arm Roundabout) in the Opening-Year 2028, compared to "do nothing" case scenario in the same year:

- The Ratio of Flow to Capacity (RFC) value will increase by 0.01 and remain the same; respectively; during the AM and PM peak hours;

- Max queues will increase by 0.46 and 0.71; respectively; during the AM and PM peak hours ; and

- Delays will increase by 1.13 seconds per pcu on worst affected lane during AM peak; and increase by 1.77 seconds per pcu on worst affected lane during the PM peak.

While the performance of the junction does become lower, as would be expected with the opening of the Proposed Development, it will still operate within capacity (with an RFC value of 0.97 in AM Peak, 0.87 in PM Peak).

2033 Future-Year

The ARCADY junction analyses indicate the following main impacts that the proposed and indicative future development will have on the performance of the R121 Church Road/ R121 Cruiserath Road/ L3021 Church Road/ L3022 Damastown Avenue/ Powerstown Road (5-arm Roundabout) in the Future-Year 2033, compared to "do nothing" case scenario in the same year:

- The Ratio of Flow to Capacity (RFC) value will increase by 0.01 and remain the same; respectively; during the AM and PM peak hours;

- Max queues will increase by 1.04 and 1.57; respectively; during the AM and PM peak hours ; and

- Delays will increase by 2.55 seconds per pcu on worst affected lane during AM peak; and increase by 3.21 seconds per pcu on worst affected lane during the PM peak.

While the performance of the junction is not significantly lower with the Proposed Development and indicative future development, the recorded RFC values are above acceptable levels with or without the proposed and indicative future development in 2033 (with an RFC value of 0.93 in the AM Peak, 1.03 in the PM Peak). It should be noted that the impact of the development in 2033 is minor and that the reduced performance of the junction is, for the most part, due to background traffic growth. However, mitigation measures to offset the impact of background traffic growth and the proposed and indicative future developments in 2033 are discussed in Section 13.6.

2043 Horizon-Year

By 2043, with or without the proposed and indicative future development, the roundabout junction of the R121 Church Road/ R121 Cruiserath Road/ L3021 Church Road/ L3022 Damastown Avenue/ Powerstown Road (5-arm Roundabout) is expected to be over-capacity in the AM and PM peak hours (RFC of 0.98 without proposed and indicative future development; 0.99 with the proposed and indicative future development in the AM and an RFC of 1.09 without proposed and indicative future development; 1.09 with the proposed and indicative future development in the PM). It should be noted that the impact of the proposed and indicative future development in 2043 is minor and that the reduced performance of the junction is, for the most part, due to background traffic growth.

Mitigation measures to lessen the impact of background traffic growth and the introduction of the proposed and indicative future development case scenario in 2041 are discussed in Section 13.6.

13.5.3 Road Safety

Collision Data

Table 13.14 shows collision data recorded within the study area for the 5 most recent years of available data (2011-2015). The highlighted data entry relates to a collision recorded at the Boulevard Bealing Village/R121 Roundabout and is most relevant to the study becuase it is closest collision to the site recorded during those 5 years.

This collision was minor in severity. It involved a collision between two cars, and is a rear-end/straight type collision. It was recorded on a Tuesday between the hours of 10:00 and 16:00 in 2012 and three casulties resulted from the collision.

Figure 13.6 *RSA Collision Map showing extent of study area captured in data for analysis*

Looking at a more extensive area, all collision records taken between 2011 and 2015 on the study area have been included in our assessment (see Figure 13.6, for area captured in analysis). Collision data was sourced from the RSA Irish Road Collision database (http://www.rsa.ie/RSA/Road-Safety/Our-Research/Collision-Statistics/Ireland-Road-Collisions/).

Eight collisions were recorded during this period, including zero fatal (0%), one (12.5%) serious, and seven (87.5%) minor (see Figure 13.3).

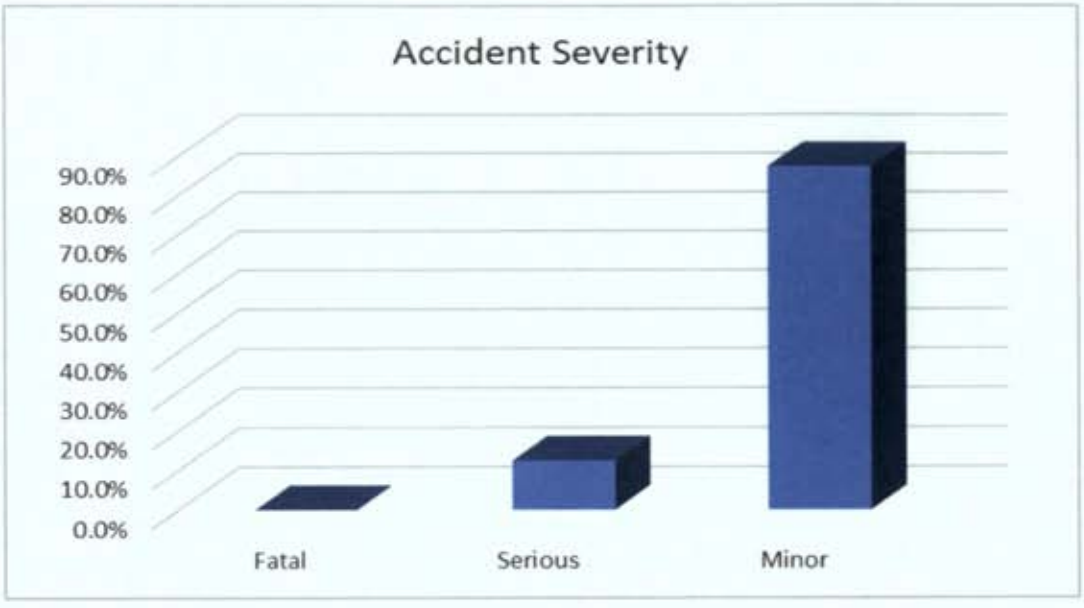


Figure 13.7 *Collision Severity*

Figure 13.8 shows the type of collisions recorded in the area. One (12.5%) of these collisions involved a car hitting a pedestrian. This collision was serious in severity.

Three (37.5) collisions were classed as "rear and straight". Two involved a car and one involved a bus.

One (12.5%) of these collisions was classed as "head-on conflict". One (12.5%) collision was recorded involving right turning vehicle.

The remaining two collisions were classed as 'Other'. One involved a bicycle and the other one involved a goods vehicle. All two 'Other' class collisions were minor in severity.

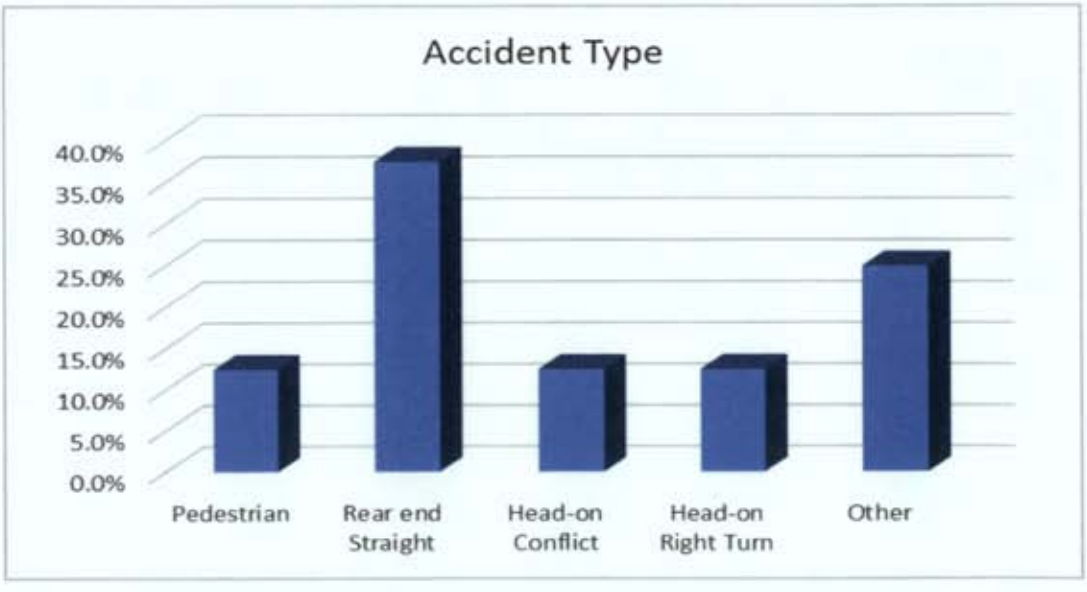


Figure 13.8 *Collision Type*

Figure 13.9 shows the day of the week when each collision occurred. The highest proportion of collisions occurred on Thursday, with 50% of total collisions recorded on that day. Tuesday also recorded relatively high proportions of total collisions at 25%.

The lowest proportion of collisions occurred on Monday, Wednesday and Friday, with no collisions recorded on each of these days. An equal number of collisions occurred on the remaining two days, with 12.5% recorded on Saturday and Sunday.

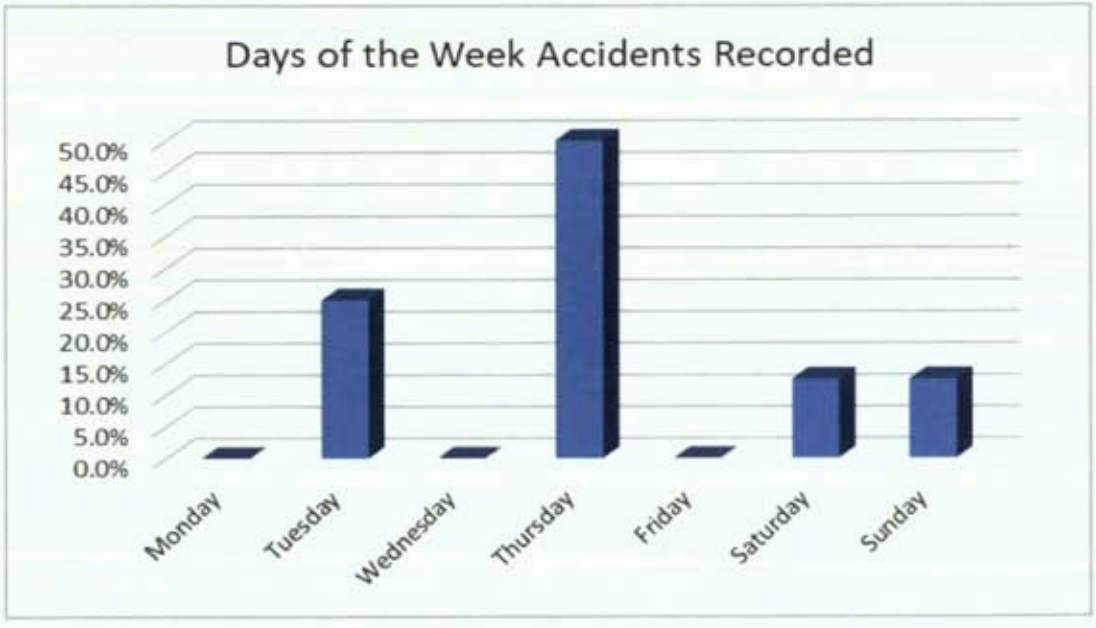


Figure 13.9 *Days of week Collisions Recorded*

Table 13.13 shows the time of day collisions in the study area occurred. Times are categorised into six time periods as follows:

- 03:00-07:00 (3 hrs);
- 07:00-10:00(3 hrs);
- 10:00-16:00 (6 hrs);
- 16:00-19:00 (3 hrs);
- 19:00-23:00 (4 hrs); and
- 23:00-03:00 (4 hrs).

At 50%, the highest proportion of collisions occurred during the 10:00-16:00 time period. However, this was the longest time period, with an average collision rate of 8.33% per hour.

At 37.5%, the next highest proportion of collisions occurred during the 19:00-23:00 time period. This time period was 2 hours shorter than the 10:00-16:00 period and the collision rate was found to be the highest per hour at 9.38% during this period.

The collision rate was the third highest for the 07:00-10:00 period at 12.5% and 4.17% for the hourly period. No collisions were recorded for the periods 03:00-07:00; 16:00-19:00 and 23:00-03:00.

Table 13.13 *Time of Day Collisions Recorded*

Time Period when Collisions Occurred	03:00-07:00	07:00-10:00	10:00-16:00	16:00-19:00	19:00-23:00	23:00-03:00
Percentage of total Collisions recorded during time period	0.00%	12.50%	50.00%	0.00%	37.50%	0.00%
Percentage of total Collisions recorded per hour of specified time period	0.00%	4.17%	8.33%	0.00%	9.38%	0.00%

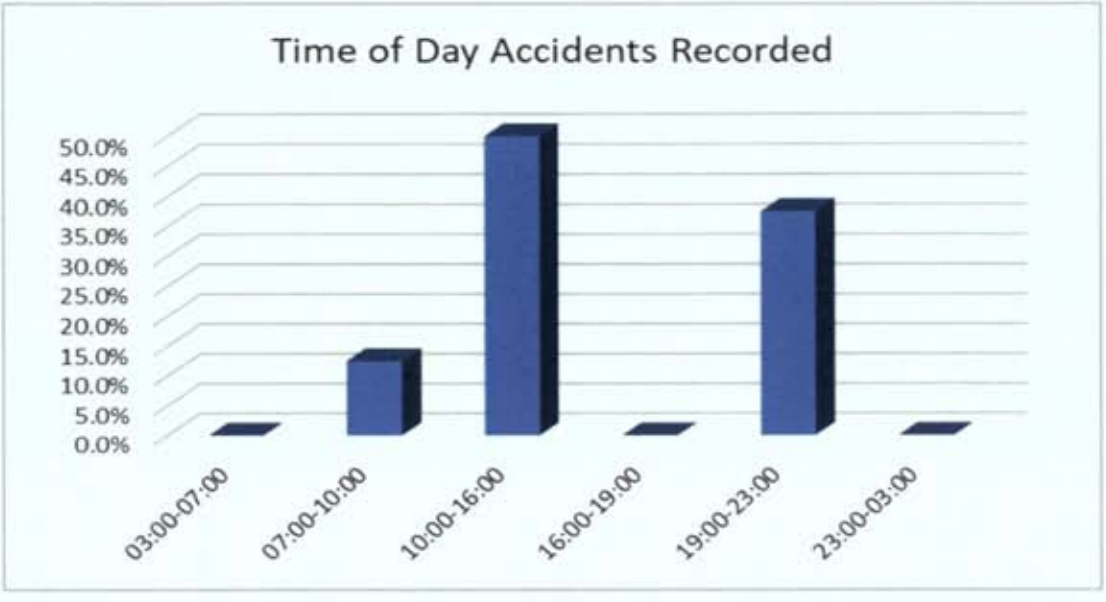


Figure 13.10 *Time of Day Collisions Recorded*

Based on the above collision data analysis, it can be concluded that the number of collisions recorded in the area surrounding the site over the 5 most recent years of data is low compared with collision rates in other zones, with no collision black spots or notable collision patterns that would indicate a road safety design flaw on the road infrastructure surrounding the site.

Location	Severity	Road User(s)	Collision Type	No. Casualties	Year	Day	Time	Speed
Boulevard Bealing Village/R121 Roundabout	Minor	Car	Rear end straight	3	2012	Tue	10-4pm	60km/hr
Damastown Ave/Church Rd/R121 Roundabout	Minor	Bus	Rear end straight	3	2012	Sat	7-11pm	50km/hr
Corduff Rd/Ballycoolin Rd/R121 Roundabout	Minor	Goods Vehicle	Other	1	2012	Thu	10-4pm	50km/hr
Corduff Rd/Ballycoolin Rd/R121 Roundabout	Minor	Bicycle	Other	1	2014	Thu	10-4pm	50km/hr
Park Blvd/Boulevard Roundabout	Serious	Car	Pedestrian	1	2014	Sun	7-11pm	50km/hr
Damastown Ave/Church Rd/R121 Roundabout	Minor	Car	Rear end straight	9	2015	Tue	7-11pm	50km/hr
Corduff Rd/Ballycoolin Rd/R121 Roundabout	Minor	Car	Head-on conflict	3	2015	Thu	10-4pm	50km/hr
Corduff Rd – 150m north of Ballycoolin Rd	Minor	Car	Head-on right turn	2	2015	Thu	7-10am	50km/hr

Table 13.14 *Collision Data for Study Area*

Internal Traffic

The internal layout of the site has been designed to give clear, legible routes for pedestrians, cyclists and motorists to enter and exit the development.

External Traffic

As stated above, the Proposed Development will not add a significant amount of additional traffic to the surrounding road network during operation. Design of the proposed construction and main site access junctions with Cruiserath Road and the R121 (NE) (undertaken as part of the permitted Building A development); respectively; has been done such that adequate sightlines are provided for all road users.

13.6 REMEDIAL AND MITIGATION MEASURES

13.6.1 Construction Phase

During the construction phase of the development, the following measures will be put in place to reduce the impact on the surrounding environment:

1. The contractor will be required to provide wheel cleaning facilities, and regular cleaning of the sites construction and main access road will be carried out.
2. Temporary car parking facilities for the construction workforce will be provided within the site and the surface of the car park will be prepared and finished to a standard sufficient to avoid mud spillage onto adjoining roads.
3. Monitoring and control of construction traffic will be ongoing during construction works. Construction traffic will be managed to avoid unnecessary trips during peak hours.

13.6.2 Operational Phase

None required.

13.7 PREDICTED IMPACTS OF THE DEVELOPMENT

Mitigation measures (discussed in Section 13.6) will be implemented to offset any potential traffic impacts of the Proposed Development.

ARCADY results in Table 13.12 show that the RFC values do not experience significant change between the base scenario and the scenario with the development.

Therefore, the predicted impact of the Proposed Development, will be ***short-term***, ***negative*** and ***not significant*** for the construction phase and ***long-term, slightly negative*** and ***imperceptible*** for the operational phase.

13.8 RESIDUAL IMPACTS

The residual traffic impacts of the Proposed Development, will be ***slight negative*** and ***imperceptible.***

The cumulative traffic impact of the development and other surrounding developments has been addressed as part of the traffic impact assessment and is further explained in Chapter 16 of this EIA Report.

Interactions are addressed in Chapter 17 of this EIA Report.

14.0 MATERIAL ASSETS

14.1 INTRODUCTION

This chapter evaluates the potential impacts, from the Proposed Development on Material Assets as defined in the EPA EIA Report Guidelines 2022, the EPA Draft Advice Notes for EIS 2015, and European Commission Guidance on Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017). A full listing of relevant legislation is included in Chapter 1.

14.2 METHODOLOGY

The Directive requires an assessment *of the direct and indirect significant effects of a project on the following factors:*

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats

protected under Directive 92/43/EEC and Directive 2009/147/EC;

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape;

(e) the interaction between the factors referred to in points (a) to (d).

The Directive 2011/92/EU defined Material Assets as '*resources that are valued and that are intrinsic to specific places; they may be of either human or natural origin*' this included architectural and archaeological heritage. The Directive 2014/52/EU included architectural and archaeological heritage as components of cultural heritage; this EIA Report has also done so within Chapter 12 (Archaeological, Architectural and Cultural Heritage).

The EPA EIA Report Guidelines 2022 state that material assets are taken to mean "*built services and infrastructure, roads and traffic and waste management*". The EPA Draft Advice Notes for EIS 2015 also gives examples of material assets including assimilative capacity of air and water; ownership and access; and tourism and recreational infrastructure. The European Commission Guidance (2017) refers to several examples of material assets including buildings, other structures, mineral resources and water resources.

Material Assets associated with the following chapters are considered within the relevant chapter below:

- Chapter 5, Population and Human Health;
- Chapter 6, Land, Soils, Geology & Hydrogeology;
- Chapter 7, Hydrology;
- Chapter 9, Air Quality & Climate;
- Chapter 10, Noise and Vibration;
- Chapter 12, Cultural Heritage;
- Chapter 13, Traffic and Transportation;
- Chapter 15, Waste Management.

This chapter assesses ownership and access, built services and infrastructure, which have not already been addressed elsewhere in this EIA Report. The likely significant effects on built services and infrastructure, if any, are assessed under the following subheadings:

- Land Use, Property, and Access;
- Power and Electrical Supply;
- Surface water infrastructure;
- Foul drainage infrastructure;
- Water supply;

The methodology for assessment is as follows:

- Identifying the receiving environment : receptors / assets with potential to be affected by changes in the baseline conditions (receiving environment).
- Assessing the characteristics of the Proposed Development - Predicting the magnitude of likely changes to the baseline receiving environment.
- Assessing the potential effects : significance of effect taking into account receptors / assets and magnitude of effect.
- Identifying and assessing appropriate mitigation measures, including alternatives.
- Assessing the significance of residual effects, taking account of any mitigation measures.

Do Nothing Scenario

If the Proposed Development did not occur, the Permitted Development would be completed. As the land is zoned for High Technology development, it is likely that the site would be developed and have similar impact on material assets would follow in the future.

14.3 OWNERSHIP AND ACCESS

This section addresses ownership and accessibility of the site for the Proposed Development.

The site of the Proposed Development as described in Chapter 2 (Description of the Proposed Development) is owned by the Operator. A letter of consent, to apply for development on the lands from the Operator, is included with the planning application.

As detailed in Chapter 2, the Proposed Development site is located entirely within an overall landholding of 26.14 hectares, bounded to the south the Cruiserath Road / R121, to the west by Church Road / R121, to the north by Hollywood Road and the Carlton Hotel, and to the east by BMS pharmaceutical facility. The Proposed Development site is c. 13.14 hectares in extent. It is undeveloped. Building D has recently been constructed within the southernmost portion of the site, and an area at the centre of the site currently serves as a construction compound (including car parking) for the construction of Buildings B and C.

The Proposed Development is the third phase of the Data Centre Campus. In 2018, planning permission was granted for a data centre building (referred to herein as

Building A) and associated ancillary development on the southern portion of the overall landholding (ABP Reg. Ref.: PL06F.248544 / FCC Reg. Ref.: FW17A/0025). This development also provided for the implementation of boundary treatments and landscaping within the overall landholding and for entrances to the overall landholding from the R121 and Cruiserath Road. A second phase of data centre development was granted permission in 2019 (Reg. Ref.:FW19A/0087) which comprises two data centres (referred to herein as Buildings B and C) and associated ancillary development. Building A is fully operational, and the overall landholding is now established as a data centre campus. Buildings B and C are currently under construction at the site. A full description of the permitted data centre developments (Buildings A, B and C) is provided Section 2.2.3.

The main access to the site will be via the existing access-controlled entrance from the R121 roundabout to the west of the site. The entire landholding is fully secured with a 3m high security fence, CCTV and surveillance systems. An existing temporary construction access is also in place on Church Road at the north-western corner of the application site. This is configured as a left-in/left-out priority-controlled junction, with access from/to the southbound carriageway of Church Road only. This currently serves as the sole access for all construction traffic to and from the overall site and shall also serve as the sole access for traffic related to construction of the Proposed Development. There is good visibility on approach to both access points as detailed in Chapter 13 (Traffic and Transportation).

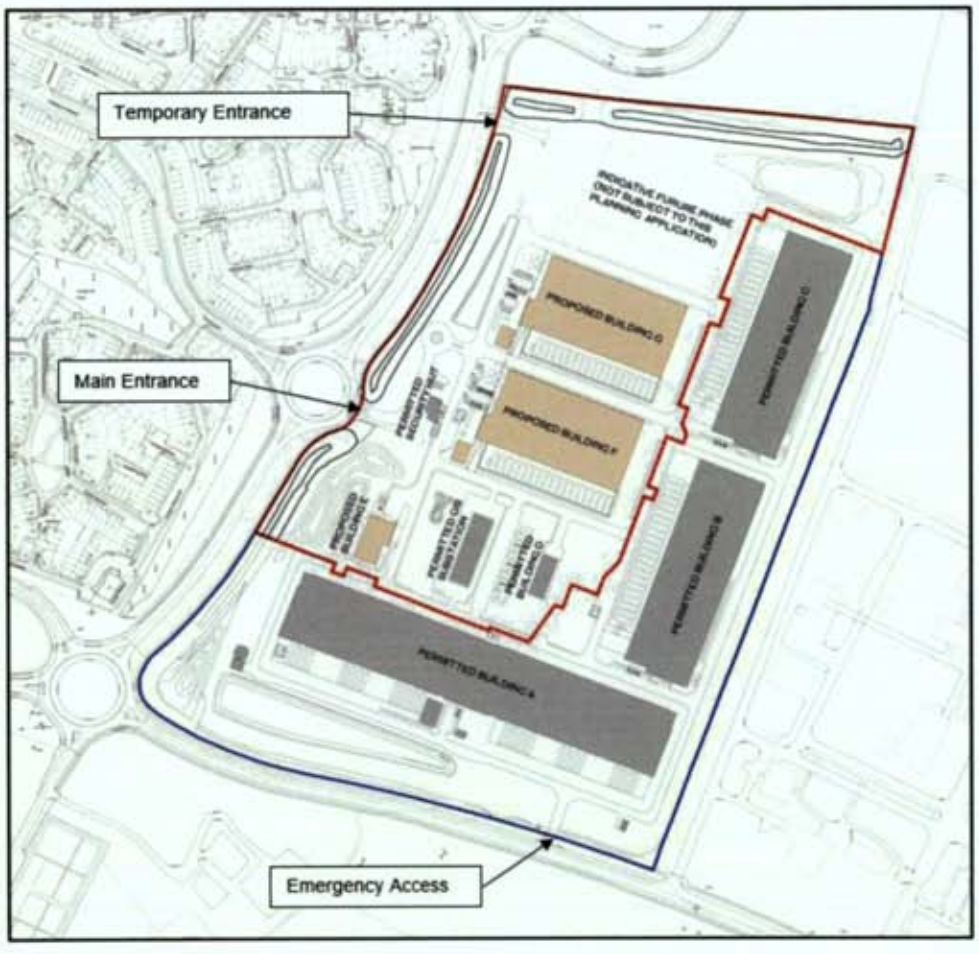


Figure 14.1 *Site Location and access routes: Source Engineering Services Report , EPA, Google)*

14.4 RECEIVING ENVIRONMENT

The proposed drainage infrastructure has been described in Chapter 2 (Description of the Development) and Chapter 7 (Hydrology). Detailed water supply and drainage design information is provided in the *Engineering Services Report*, prepared by CS Consulting Group, which accompanies the planning application.

The associated built services and infrastructure which service the landholding are summarised in the following sections.

The built services and infrastructure required for the Permitted Development, Building A, are already established, and as such the receiving environment for the Proposed Development are considered to include the permitted built services and infrastructure.

14.4.1 Power and Electrical Supply

The availability of power was a key consideration in the original site selection as described in Section 4.3.2 of Chapter 4 (Alternatives). One of the key reasons this site was originally chosen for the first phase of development on the site i.e. Building A was the proximity to the 110kV and 220kV Corduff AIS substation.

The power requirements for the existing, permitted and Proposed Development will be provided from the existing 220kV GIS substation on site (Building D) located south of proposed Buildings F and G, and to the east of proposed Building E. A connection agreement to supply the Proposed Development is in place with EirGrid. Full details on power supply, energy efficiency and sustainability are provided in the Energy Statement included as part of this planning application.

The existing substation and transmission line is designed to support power demand for the existing, permitted and Proposed Developments as well as the future indicative data centre development.

14.4.2 Telecommunications

A fibre optic cable distribution network is in place for the Permitted Developments, and it will be extended to the Proposed Development. No works are required outside of the redline for connection.

14.4.3 Surface Water Infrastructure

There is an existing 900mm diameter connection to the IDA surface water drainage system under the R121 in the south east corner of the overall landholding. The IDA surface water network was originally sized to accommodate future development of the area and has sufficient capacity to accommodate run-off from the entire land holding.

The allowable discharge rates for the overall landholding of c. 26.14 hectares is 126.3l/s, as set out in the *Engineering Planning Report* prepared by CS Consulting which accompanies the planning application.

The Permitted Developments include the installation of drainage infrastructure necessary to service Buildings A, B and C including a surface water drainage network, hydrocarbon interceptors, attenuation basins and a flow control device to limit the discharge from the site to the allowable discharge rate.

14.4.4 Foul Drainage Infrastructure

An existing IDA foul drainage network is available along the R121 which services the adjacent Blanchardstown Corporate Park and transports sewerage to the main treatment works at Ringsend Wastewater Treatment Plant (WWTP). There is an existing 375mm diameter connection to this foul drainage network in the south eastern corner of the overall landholding.

The Permitted Developments include the installation of wastewater drainage infrastructure necessary to service the Permitted Developments.

As noted in Chapter 2 (Description of the Development) and the *Engineering Planning Report*, a pre-connection enquiry (PCE) was submitted to Irish Water (IW) in November 2016 which addressed wastewater discharges for the Permitted Development as well as development of the indicative masterplan for overall landholding which included the Proposed Development as well as future development of one further data centre. A confirmation of feasibility (CoF) was received from Irish Water (IW Reference Number: CUST16622) which is included in the Engineering Services Report.

14.4.5 Water Supply

There is an existing 500mm diameter watermain in the R121 along the south east corner of the overall landholding, which is fed from mains water supply. Existing watermain infrastructure constructed as permitted under planning reg. refs FW17A/0025 and FW19A/0087 is in place within the application site. This comprises 100 mm diameter watermains to the south of the proposed Building E and to the south and west of the proposed Building F.

14.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

14.5.1 Construction Phase

Power and Electrical Supply

As previously noted, the construction compound for Buildings B and C is currently located in the centre of the subject site. Subject to grant of permission for the Proposed Development, the construction compound will be relocated to the north of the proposed location of Building F and will be used for Buildings B, C and the Proposed Development. The temporary power supply already established for the construction of Buildings B and C will be re-established at the new compound location and will be used for the construction of Buildings B and C and the Proposed Development.

The excavation of trenches within the vicinity (a few metres) of existing electrical services will be carried out in consultation with EBS Networks to ensure there is no impact on existing users.

Telecommunications

Telecommunications including fibre required during the construction phase will be provided via a temporary mobile connection.

The fibre optic cable distribution network for the Permitted Developments will be extended through shallow trenching to the Proposed Development.

Surface Water and Foul Drainage Infrastructure and Water Supply

Welfare facilities (canteens, toilets etc.) will be required for the construction staff.

A temporary connection to the mains water supply has been established for construction of Buildings B and C and this will be re-established at the new construction compound location. The water demand during the construction phases is will not be significant enough to affect existing pressures. A temporary connection to the foul water drainage network has been established for construction of Buildings B and C and this will be re-established at the new compound location and will be used for the construction of Buildings B and C and the Proposed Development. Consultation with Irish Water has confirmed that the foul water drainage network has sufficient available capacity for the wastewater discharges from the welfare facilities for the short-term construction phases. Approval for temporary connections to the water supply and foul water drainage network will be sought from IW by the contractor.

If any stormwater collects in the excavations during construction, it will need to be discharged to sewer. Any discharge water will be treated using a siltbuster or similar to removed suspended solids prior to discharge as outlined in the project Construction Environmental Management Plan (CEMP).

14.5.2 Operational Phase

Power and Electrical Supply

The Proposed Development will have a peak operational power demand of 36MW for Buildings F and G, and 1.08MW for Building E, with an overall peak operational demand for all three buildings of 73.1MW. The Proposed Development in conjunction with the Permitted Developments and future indicative development, will have a peak operational power demand of 219.7MW per year.

A connection agreement to supply the Proposed Development is in place with EirGrid. The new substation and transmission line is designed to support power demand for the existing, permitted and Proposed Developments as well as the future indicative data center.

Full details on energy efficiency and sustainability are provided in the Energy Statement included as part of this planning application.

In the event of a loss of power supply to the site (i.e., temporary grid blackout), the diesel/renewable diesel powered back-up generators will be activated. Subject to availability, it is expected that fuel for the proposed development will renewable diesel.

Building F and Building G will each have 18 back-up diesel generators and one house generator whilst Building E will have one back-up diesel generator. These generators are designed to automatically activate and provide power to the Proposed Development pending restoration of mains power. An uninterruptible power supply (UPS) system is also provided for the short-term transition from mains power to back-up generators. Based on the Operator's experience, the back-up generators will rarely be used other than for routine testing. The scheduled testing programme for the generators is described in Section 9.2.3.1 of Chapter 9.

Telecommunications

The fibre optic cable distribution network installed for the Permitted Development will be extended to the Proposed Developments. There is sufficient capacity available in the network for the Permitted and Proposed Developments.

Surface Water Drainage

The proposed surface water network will be divided into two catchments(ref: Chapter 7, section 7.6.3). Catchment 1 will incorporate the Buildings G and F and the future indicative datacentre, which are all north of existing Building D. Catchment 2 will incorporate Building E and car park and its associated hardstand areas.

Rainwater runoff from yards and the proposed road network in Catchment 1 will be directed to through the new surface water drainage network for the Proposed Development to the existing permitted attenuation pond which has a capacity of 4,450m^3. Rainwater runoff from the roof of Building E, yards, road network and car parking area in Catchment B will flow to storm water bio retention area (with a capacity of 140m^3) located to the west of Building E.

The proposed drainage design includes hydrocarbon interceptor systems to ensure the quality of surface water discharge is controlled prior to attenuation and discharge offsite. Flow off site will be managed by attenuation of run-off water and controlled discharge (via a hydrobrake) to stormwater sewer. The attenuated storm water will be discharged offsite via the existing hydrobrake flow control device at a controlled rate of (65.5 l/s) to the existing storm water system along the R121 to the south-east of the overall site. A shut off valve is included in the design to ensure that discharges from the overall landholding can be shut off in the event of a fire or other form of significant surface water contamination event.

Rainwater runoff from roof areas of Buildings F and G will be directed to a rainwater harvesting system at each building which will provide cooling water for the air handling (cooling) units (AHUs). The rainwater will be treated in a filtration and Ultraviolet (UV) disinfection system and will be stored in water storage tanks. The rainwater harvesting system will overflow to the stormwater network when there is no demand from the water storage tanks. The rainwater harvesting system is described in detail in Section 4.73 of the *Energy Statement* prepared by Ethos, which is included with the planning application documents.

SUDs have been incorporated into the drainage design for the Proposed Development including permeable paving, bio-retention areas as well as the wetland to the west of Building H.

Further detail on the surface water drainage system and the basis of its design is provided in the *Engineering Services Report* prepared by CS Consulting Group, which accompanies the planning application. Surface water drainage is presented in drawing A104CSC-XX-00-DRC 0002-0003 provided with planning.

Foul Drainage.

Domestic effluent arising from occupation of the data centre buildings will be collected in newly constructed foul drainage network within the subject site and discharged to the foul drainage network on the R121 to the south-east of the overall site, via the foul drainage network for the Permitted Developments.

Due to topographical variance on site, the foul effluent generated at the proposed Buildings F and G shall be collected in a new pumping station to the east of Building G, which shall pump the collected foul wastewater to the existing pumping station within the overall site. The wastewater shall then be pumped to a further existing internal manhole, before ultimately discharging by gravity to the IDA foul drainage network, via an existing manhole to the south-east of the overall development site.

Foul effluent generated at the proposed Building E will discharge to an existing on-site foul manhole.

There are no requirements for new foul connections outside of the overall landholding. The wastewater discharged from the site will ultimately discharge to the municipal Waste Water Treatment Plant (WWTP) at Ringsend.

The overall wastewater discharge associated with the Proposed Development is in accordance with the discharge rates outlined in the PCE submitted for the Permitted Development in 2016, subject to an adjustment for increase in staff numbers. In preparation for this application, another PCE was submitted to IW by CS Consulting Group on the 14th July 2022 to address the adjustments to the flow rates required due to the adjusted staff numbers for the Proposed Development. A copy of the Confirmation of Feasibility (ref.CDS22004011) (CoF) is included in the Engineering Report provided with planning.

Further detail in relation to wastewater emissions is presented in the *Engineering Services Report* prepared by CS Consulting Group, which accompanies the planning application. Foul water drainage is presented in drawing A104CSC-XX-00-DRC 0005-0006 provided with planning.

Water Supply

Water is required for cooling equipment, cleaning, general potable supply for drinking and sanitary facilities. Calculations for the water requirement are provided in the *Engineering Services Report* prepared by CS Consulting Group, and drawings A104-CSC-XX-00-DR-C-0006 and 0007 which accompanies the planning application.

Each of the proposed buildings F and G will have water storage (over ground and underground tank storage) sufficient to provide the annual industrial water supply need, which will be filled from rain water harvesting and mains water as required. These tanks shall be refilled prior to the summer cooling season.

The total domestic and cooling water requirement for the Proposed Development is 3008m^3 per annum. However, having the benefit of rainwater harvesting and on-site cooling water storage (fed by rainwater harvesting) will reduce yearly demand.

To reduce both energy and water use in its data centres, the Operator utilises direct evaporative cooling systems, which predominately utilises outside air to cool servers. This means that for more than 95% of the year it uses no water to cool its facilities. For the remaining 5% of time during high temperatures, cooling is undertaken by adiabatic cooling which requires water supply. The Proposed Development is projected to utilise as little as c. 1110m^3 water annually for cooling (Building E is projected to use 62 m^3 cooling water annually and Buildings F and G are projected to use 524 m^3 cooling water each, per annum). Furthermore, the proposed buildings are designed to harvest up to 95% of the annual cooling water requirements through rainwater harvesting, reducing the water requirement from the mains supply when rainwater is available. Additionally the Proposed Development includes 2170 m^3 of on site water storage (overground and underground storage tanks). This proposed on site water storage will be designed to maximise the storage and utilisation of rainwater for up to 95% of

cooling water needs. Hence providing a reduction in use of mains supply for cooling water. If the water storage is required to be topped up from mains water, it will be during low demand periods and mitigate impacts of the proposed demand to the Dublin Water Supply Area as per the requirements of the Confirmation of Feasibility from Irish Water (ref.CDS22004011).

Further detail in relation to water supply is presented in the *Engineering Services Report* prepared by CS Consulting Group, which accompanies the planning application.

14.6 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

14.6.1 Construction Phase

Power and Electrical Supply

The power requirements for the construction phase is a combination of generator supply and already agreed connection to electrical supply for the construction compound.

The extension of the power supply to the Proposed Development will be within the overall landholding and will not require any offsite connections. If the works are not carried out in a proper manner, there is potential for the construction work to cause accidental damage to the e infrastructure for the Permitted Developments. As the connection works are entirely within permitted and proposed site boundaries, these would not have any potential offsite impact.

Telecommunications

Telecommunications including fibre required during the construction phase will be provided via a mobile connection.

The extension of the existing telecommunications the Permitted Developments to accommodate the Proposed Development will be entirely within the overall landholding and will not require any offsite connections. As the connection works are entirely within permitted and proposed site boundaries and excavations required and shallow this would not have any potential offsite impact.

Surface Water Infrastructure and quality

Connection with the offsite mains will be undertaken in accordance with the requirements of IW as outlined in the (COF Oct 19th 2022). If the works are not carried out in a proper manner, there is potential for the construction work to cause accidental damage to the drainage infrastructure for the Permitted Developments. As these works are entirely within the permitted and proposed site boundaries, it not anticipated that this would have any offsite impact but it could cause a temporary impact to the storm sewer within the Permitted Developments.

As detailed in Chapter 7, there are no likely potential impacts on surface water quality for the Proposed Development for the construction phase as there is no direct pathway to surface water bodies. Following sediment removal stormwater will discharge to municipal drainage.

Foul Drainage Infrastructure

Welfare facilities (canteens, toilets etc.) will be required for the construction crew. Portable toilets will be provided onsite for construction staff.

The foul drainage network installed for the Permitted Developments, will be extended to proposed Buildings B and C. If the works are not carried out in a proper manner, there is potential for the construction work to cause accidental damage to the drainage infrastructure for the Permitted Developments. As these works are entirely within the permitted and proposed site boundaries, it not anticipated that this would have any offsite impact but it could cause a temporary impact to the foul sewer within the Permitted Developments.

Water Supply

Welfare facilities (canteens, toilets etc.) will be required for the construction staff.. The demand during the construction phase is not expected to be significant enough to affect existing pressures.

It is proposed to utilise the watermain that will serve the Permitted Developments in order to serve the Proposed Development. If the works are not carried out in a proper manner, there is potential for the construction work to cause accidental damage to the water supply infrastructure for the Permitted Developments. As the connection works are entirely within permitted and proposed site boundaries, it not anticipated that this would have any potential offsite impact.

14.6.2 Operational Phase

Land Take

The Proposed Development is located within the Masterplan Lands and is zoned for High Technology development. As such it is no longer in use as agricultural land. As such there is no potential for impact on land use as a result of the Proposed Development.

Power and Electrical Supply

As detailed in Section 14.5.2, the Proposed Development will have a maximum operational power demand of 37.1 MW for Buildings F and G, and 1.2MW for Building E, with an overall maximum operational demand for all three buildings of 75.4MW. The power requirements for the Proposed Development will be provided from the existing 220kV GIS substation on site and a connection agreement to supply the Proposed Development is in place with EirGrid. The Operator has recently signed a supply agreement for renewable diesel (also referred to as hydrotreated vegetable oil or HVO). Subject to availability, it is expected that fuel for the proposed development will renewable diesel.

Telecommunications

Consultation has confirmed that here is sufficient capacity available in the network to accommodate the Proposed Development as such, there is no likely impact on the telecommunication network capacity.

Surface Water Infrastructure

The design has incorporated attenuation within the design to ensure there is no potential for off site flooding as a result of increased hardstand on site. If this was not included in the design there could be a potential impact in off site flooding.

It is proposed to collect the surface water runoff from the proposed Buildings and discharge as attenuated flow to the surface water drainage network via the surface water drainage network for the Permitted Developments. The allowable discharge rates for the overall landholding of c. 26.14 hectares is 126.3l/s, as set out in the Engineering Planning Report which accompanies the planning application. The surface water infrastructure has been designed such that that the calculated runoff rate will not be exceeded, as addressed in Section 14.7.2, Chapter 7 (Hydrology) and the Engineering Services Report prepared by CS Consulting Group. The proposed attenuated discharge rate from the overall landholding will be 65.5 l/s.

Surface runoff from the roof of Building E, yards, road network and car parking area in Catchment B will flow to a wetland area with a storage volume of 140m^3, located to the west of Building E.

Foul Drainage Infrastructure

It is proposed to collect the foul sewerage from the Proposed Development and discharge to the IW foul drainage infrastructure via the foul drainage network for the Permitted Development. The wastewater discharged from the site will ultimately discharge to the Ringsend WWTP. If insufficient capacity is available in the public infrastructure, there is potential for increased levels of pollution in receiving waters, however, this will not arise as there is sufficient capacity and IW have confirmed feasibility of the connection as addressed in Sections 14.5.2 and 14.7.2.

Water Supply

The water supply will be sourced from mains water supply that serves the existing site. If capacity is not available this would result in insufficient pressure in the public watermains network to accommodate the demand existing customers in the area may experience a drop in water pressure below the service level required. This will not arise as there is additional storage incorporated in the design, use of rainwater harvesting and IW have confirmed feasibility of the connection addressed in Sections 14.5.2 and 14.7.2.

14.7 REMEDIAL AND MITIGATION MEASURES

14.7.1 Construction Phase

Construction of the Proposed Development will require connections to water supply and drainage infrastructure, power and telecommunications but will not require any connections outside the permitted and proposed site boundaries of the overall landholding.

Ongoing consultation with IDA, FCC, Irish Water, Eirgrid, ESB and other relevant service providers within the locality and compliance with any requirements or guidelines they may have will ensure a smooth construction schedule without disruption to local and business community.

Power and Electricity Supply

The power demand for the construction phase will be relatively minor and the connection works are entirely within permitted and proposed site boundaries, so it is not anticipated that this would have any potential offsite impact. As such, no remedial or mitigation measures are required in relation to power supply for the construction phase.

The excavation of trenches within the vicinity of existing electrical services will be carried out by the works contractor in consultation with ESB Networks to ensure there is no impact on existing users by causing disconnections etc..

Telecommunications

The telecommunications will be extended from the Permitted Developments to accommodate the Proposed Development. As these works are entirely within permitted and proposed site boundaries, it not anticipated that this would have any potential offsite impact. No remedial or mitigation measures are required in relation to telecommunications.

To avoid any disconnection to services, the contractor will be obliged to following the telecommunications protocols in laying telecommunications cables.

Surface Water Infrastructure

The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to service in existing surface water sewers. It is not anticipated that there will be any interruptions to service in existing surface water sewers, but should interruptions be required, they will be agreed in advance.

Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration (where existing water in the ground enters the surface water infrastructure) and ex-filtration (where water in the surface water infrastructure escapes into the ground).

Run-off water containing silt will be contained on site and treated (using a siltbuster or temporary on-site settlement ponds/tanks) to ensure adequate silt removal to ensure that there are no interruptions to service in existing surface water drainage network. It is not anticipated that there will be any interruptions to service in existing surface water sewers. Should interruptions to surface water infrastructure be anticipated, they will be agreed in advance.

Foul Drainage Infrastructure

A temporary connection to the foul water drainage network will be required for the welfare facilities for the construction staff. Consultation with IW has confirmed that the foul water drainage network has sufficient available capacity for the wastewater discharges from the welfare facilities for the short-term construction phase.

As the construction works for the new foul drainage network are entirely within the red line boundary, there will be no offsite impact. Foul drainage for the Proposed Development will be in accordance with the relevant standards for design and construction, including the Irish Water Code of Practice for Wastewater Infrastructure, The Building Regulations Technical Guidance Document (TGD) 'Part H' & the Regional Code of Practice for Drainage Works.

Water Supply

Welfare facilities (canteens, toilets etc.) will be required for the construction staff. A temporary connection will be put in place for the construction phase. As the connection works are entirely within the red line boundary, there is no potential offsite impact. The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to service from the existing watermain. It is not anticipated

that there will be any interruptions to service from the existing water main, but should interruptions be anticipated, they will be agreed in advance.

14.7.2 Operational Phase

Power and Electricity Supply

A connection agreement to supply the Proposed Development is in place with EirGrid.

EirGrid has accounted for the Proposed Development and the indicative masterplan in the All-Island Generation Capacity Statement 2017-2026 (published April 2017). The existing, permitted, proposed and future indicative development within the overall landholding were included in the 'material enquiry' cohort noted in the Capacity Statement.

As detailed in Section 2.4 of Chapter 2 (Description of the Development) a number of sustainability measures have been incorporated into the design of the Proposed Development including the installation of an array of photovoltaic panels on the roof of Building G and F. The photo voltaic (PV) array of the solar panels proposed will consist of 285 PV modules, each of 300Wp, yielding a total peak power generated of 85.5kWp to offset the lighting and IT electrical power requirements during the peak summer months for the administration section of the building. The installation exceeds that required for code compliance under Nearly Zero Energy Standard (NZEB). These will feed back into the electrical supply for the administration section of each building, serving lighting, office area general services and office IT equipment.

The Energy Statement also describes how provision will be made in the Proposed Development so that waste heat associated with the facility could be utilised with a future district heating scheme developed by others. Further detail is provided in the Energy Statement which accompanies the planning application.

Telecommunications

Based on consultation with providers, there is sufficient capacity available in the area network for the Proposed Development. Therefore, no remedial or mitigation measures are required in relation to telecommunications.

Surface Water Infrastructure

The surface water drainage system for the Proposed Development incorporates runoff control in the form of attenuation and an outlet flow control device (further detail of the calculations and design is provided in the *Engineering Services Report and planning drawings*), which will restrict discharge from the overall landholding to 65.5 l/s. The permitted discharge rate for the overall landholding is 126.3 l/s. The permitted discharge rate was established by the project engineers for Building A, CSEA. The project engineers for the Proposed Development have established the proposed adjusted runoff rate using the methodology set out in the *Engineering Services Report* which demonstrates that the proposed discharge rate is lower than the permitted rate.

SUDs measures have been incorporated into the design as detailed in Section 2.2.6 including permeable paving, wetland and bio-retention areas as well as the wetland to the west of Building E.

The drainage design for the Proposed Development includes Class 1 full hydrocarbon retention separators downstream of the fuel unloading area and a Class 1 bypass

interceptor upgradient of the detention basin to ensure the quality of surface water discharge is controlled prior to attenuation and discharge offsite.

A shut off valve is included in the design to ensure that site discharges can be shut off in the event of a fire or other form of significant surface water contamination event.

In addition, rainfall which passes through the back-up generator exhaust stacks will discharge to a new Class 2 petrol interceptor before connecting to the foul drainage network for the Proposed Development. This ensures that should a spill occur, water will be treated prior to discharge off site.

Foul Drainage Infrastructure

As discussed in Section 14.4.4 above, IW have provided a CoF for the wastewater requirements for the development (which are detailed in the *Engineering Services Report*, which accompanies the planning application) can be accommodated, subject to application. No remedial or mitigation measures are required in relation to foul drainage infrastructure.

Water Supply

Water storage tanks will be provided as part of the Proposed Development; pumps will supply water to the Proposed Development from the storage tanks. The storage tanks will be used for rainwater harvesting and act as break tanks and buffer demand on the public watermain infrastructure.

As discussed in Section 14.4.5 above, A copy of the Confirmation of Feasibility (ref.CDS22004011) (CoF) is included in the Engineering Report provided with planning which confirms adequate resources are available. No remedial or mitigation measures are required in relation to water supply.

14.8 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

14.8.1 Construction Phase

Power and Electricity Supply

Based on the assessment of predicted impacts in Section 14.6.1, and the applicable remedial mitigation measures proposed in Section 14.7.1, the predicted impact will be ***short-term***, ***neutral*** and ***imperceptible*** for the construction phase.

Telecommunications
The predicted impacts associated with telecommunications for the Proposed Development for the construction phase will be ***short-term***, ***neutral*** and ***imperceptible*** for the construction phase.

Surface Water Infrastructure

Based on the assessment of predicted impacts in Section 14.6.1, and the applicable remedial mitigation measures proposed in Section 14.7.1, the predicted impact will be ***short-term***, ***neutral*** and ***imperceptible*** for the construction phase.

Foul Drainage Infrastructure

Based on the assessment of predicted impacts in Section 14.6.1, and the applicable remedial mitigation measures proposed in Section 14.7.1, the predicted impact will be ***short-term***, ***neutral*** and ***imperceptible*** for the construction phase.

Water Supply

Based on the assessment of predicted impacts Section in 14.6.1, and the applicable remedial mitigation measures proposed in Section 14.7.1, the predicted impact will be ***short-term***, ***neutral*** and ***imperceptible*** for the construction phase.

Predicted Impact – Construction Phase

The implementation of mitigation measures detailed in Section 14.7.1 will ensure that the predicted impacts on the material assets described above will be ***short-term***, ***neutral*** and ***imperceptible*** for the construction phase.

14.8.2 Operational Phase

Power and Electrical Supply

Based on the assessment of predicted impacts Section in 14.6.2, and the applicable remedial mitigation measures proposed in Section 14.7.2, it is predicted that there will be a ***long-term, neutral, not-significant*** effect on power and electrical supply during the operational phase of the Proposed Development.

Telecommunications

Network capacity for the Proposed Development will be readily available via the fibre network installed for the Permitted Developments. There are ***no predicted impacts*** associated with telecommunications for the Proposed Development for the operational phase.

Surface Water Infrastructure

Based on the assessment of predicted impacts Section in 14.6.2, and the applicable remedial mitigation measures proposed in Section 14.7.2, the predicted impact will be ***long-term***, ***neutral*** and ***imperceptible*** for the operational phase.

Foul Drainage Infrastructure

Based on the assessment of predicted impacts in Section 14.6.2, and the applicable remedial mitigation measures proposed in Section 14.7.2, the predicted impact will be ***long-term***, ***neutral*** and ***imperceptible*** for the operational phase

Water Supply

Based on the assessment of predicted impacts in Section 14.6.2, and the applicable remedial mitigation measures proposed in Section 14.7.2, the predicted impact will be ***long-term***, ***neutral*** and ***imperceptible*** for the operational phase

Land Take

The Proposed Development is located within the Masterplan Lands and is zoned for High Technology development. As such it is no longer in use as agricultural land and the impact is considered ***long term, neutral*** and ***Imperceptible.***

Based on the assessment of predicted impacts in Section 14.6.2, the predicted impact will be ***long-term***, ***neutral*** and ***imperceptible*** for the construction phase.

Predicted Impact – Operational Phase

The implementation of mitigation measures detailed in Section 14.7.2 will ensure that the predicted impacts on the material assets will be ***long-term***, ***neutral*** and ***not significant.***

14.9 RESIDUAL IMPACTS

Once operational, the Proposed Development has connection agreement to supply the Proposed Development in place with EirGrid, IW and Fibre providers. As per the assessment of impacts undertaken in this chapter, there will be no significant impact on material assets to the wider economy. The overall predicted residual impact of the Proposed Development can be classed as ***long-term*** and ***not significant*** with respect to material assets.

The cumulative impact is assessed in Chapter 16 of this EIA Report.

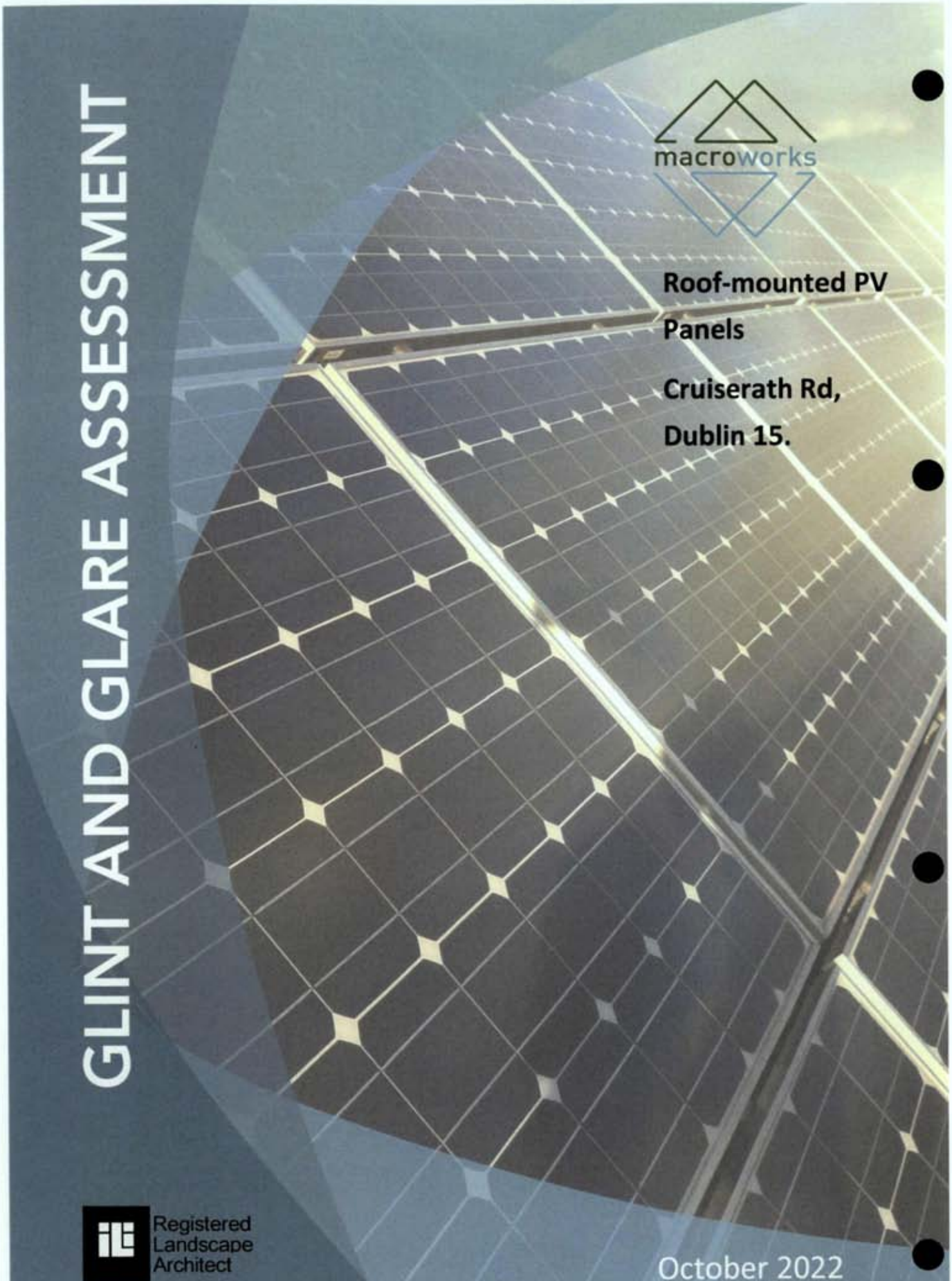
Interactions are addressed in Chapter 17 of this EIA Report

APPENDIX 14.1

GLINT AND GLARE ASSESSMENT

PREPARED BY MACRO WORKS LTD.

GLINT AND GLARE ASSESSMENT



macroworks

Roof-mounted PV Panels

Cruiserath Rd, Dublin 15.

Registered Landscape Architect

October 2022

1 INTRODUCTION

Macro Works Ltd. was commissioned to undertake a glint and glare assessment for roof-mounted photovoltaic (PV) panels on the roof of the permitted, proposed and potential future buildings (A to G) at Cruiserath Rd, Dublin 15 (**Figure 1** refers).

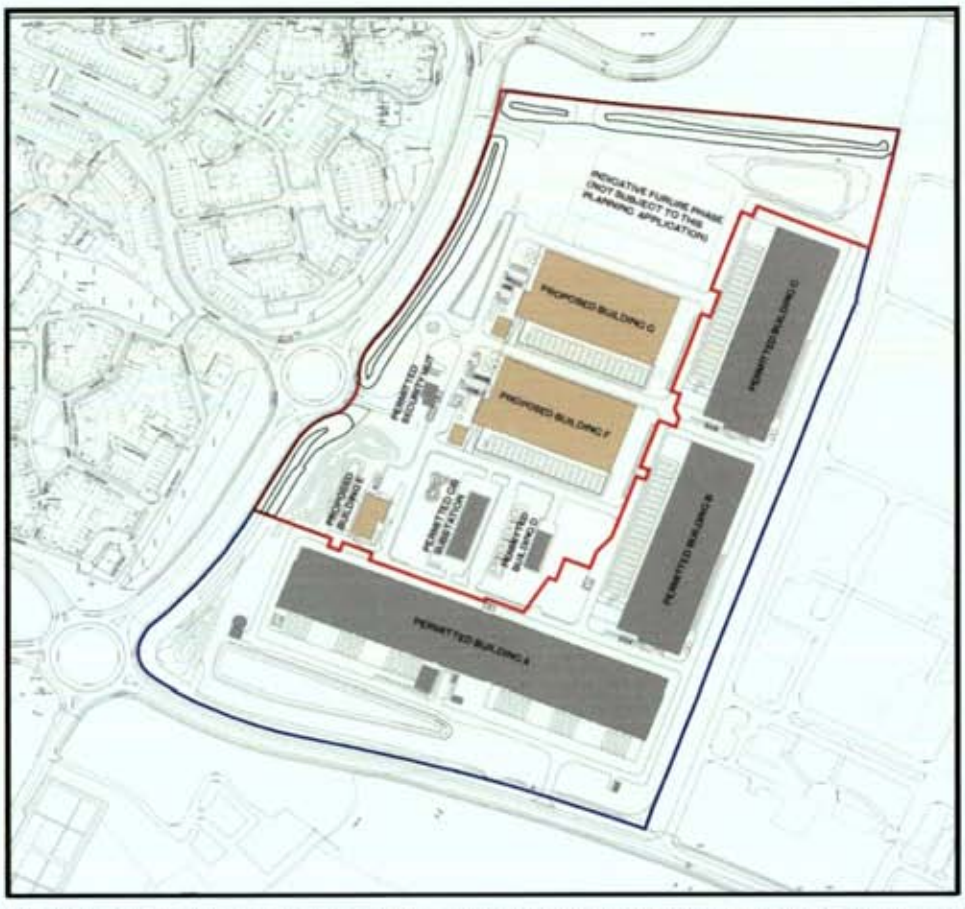


Figure 1: Extract from the Proposed Site Layout Plan (drawing number P-0010), indicating the location of the permitted, proposed and potential future buildings.

The site is bound to the south by the R121 / Cruiserath Road, to the west by the R121 / Church Road and to the north by undeveloped land and Cruiserath Drive (Figure 2 refers). 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).

Figure 2: Aerial view indicating the approximate location of the proposed development (red pin).

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.

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:

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[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

[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.

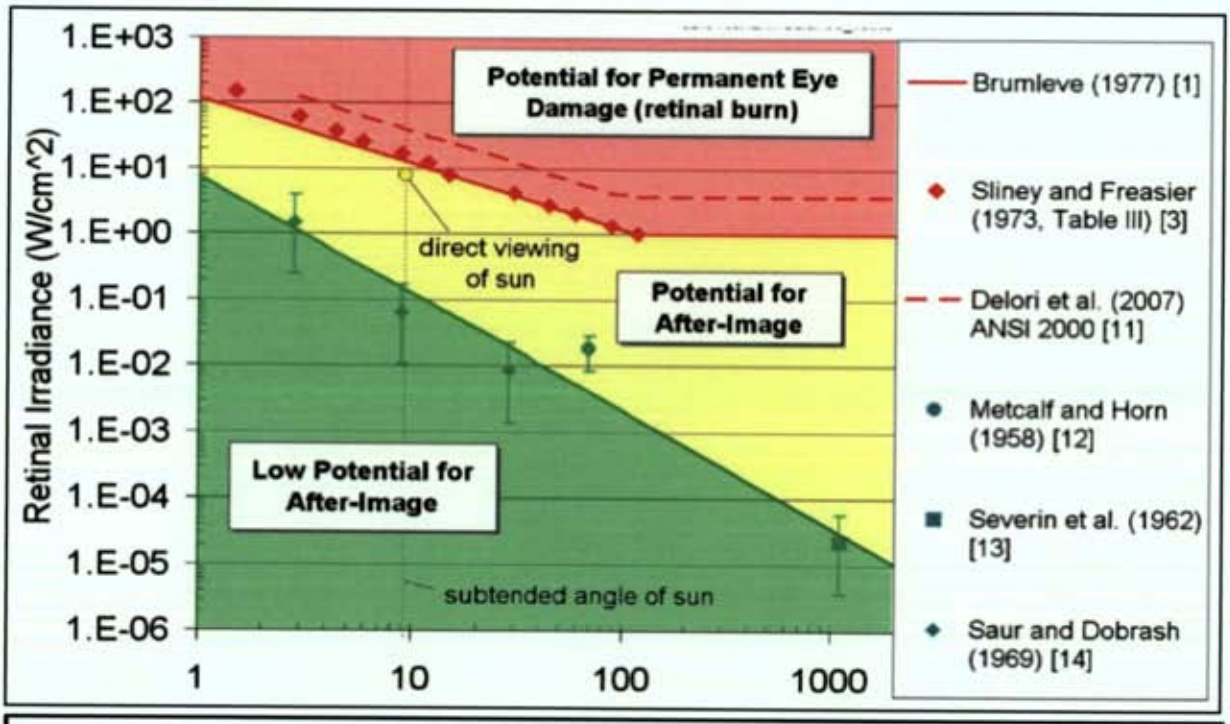
"To obtain FAA approval to revise an airport layout plan to depict a solar installation and/or a "no objection" to a Notice of Proposed Construction Form 7460–1, the airport sponsor will be required to demonstrate that the proposed solar energy system meets the following standards:

- *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 3 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 3 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.



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

5 IDENTIFICATION OF RELEVANT RECEPTORS

Weston Airport is located approximately 9.5km southwest of the of the PV panels (Figure 4 refers). Dublin Airport is an international airport operated by the Dublin Airport Authority. Its nearest runway is located approximately 6km northeast of the PV panels (Figure 4 refers).

Figure 4: Aerial view (Google Earth Pro) showing the site location (red pin) relative Weston Airport and Dublin Airport.

5.1 AIR TRAFFIC CONTROL TOWERS

The Air Traffic Control Tower (ATCT) at Weston Airport has a structural elevation approximately 15m AGL and will be referenced as '3-ATCT' in this report. 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 5 refers). All three ATCTs were analysed for potential impacts.

Figure 5: Location of the Air Traffic Control Towers at Dublin Airport (red centre icons).

5.2 RUNWAYS

Weston Airport hosts one operational runway with two potential approach paths; 07 and 25. Dublin Airport hosts two operational runways 10/28 and 16/34. A 3rd runway 10L/28R is under construction 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 6 refers). The two runway approaches at Weston Airport and all 6 runway approaches at Dublin Airport will be assessed (which includes the recently proposed northern runway - approaches 10L and 28R).

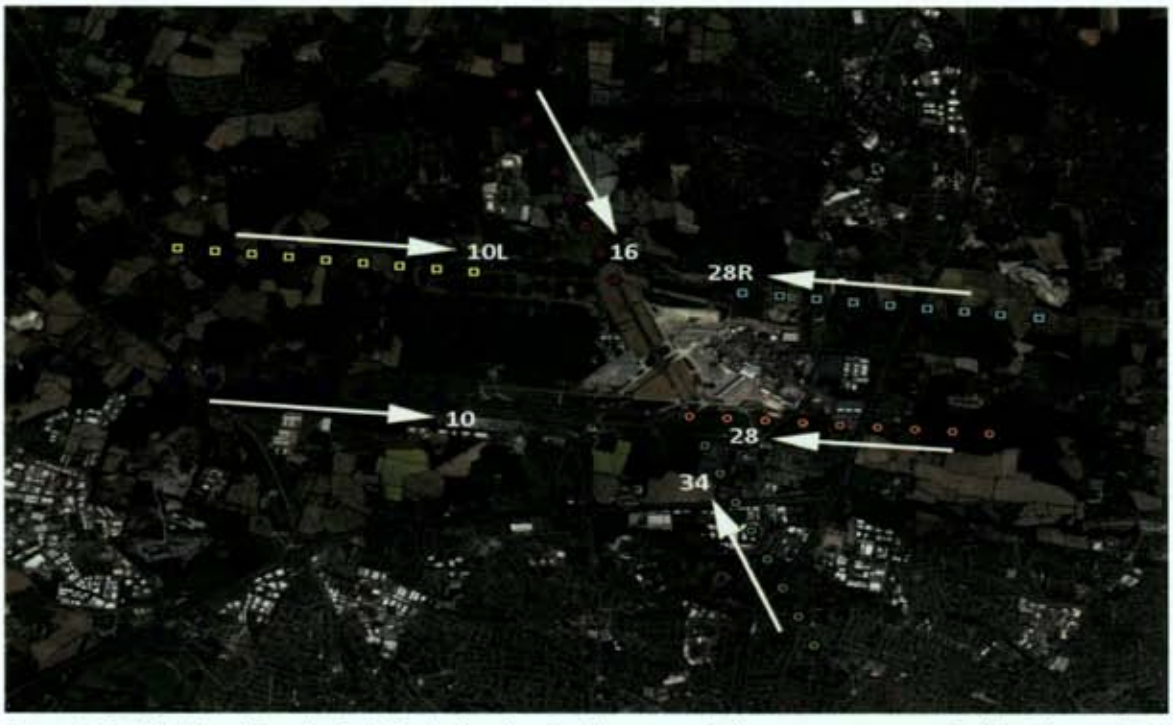


Figure 6: Aerial view (Google Earth Pro) showing 2 mile approach lines to runways at Dublin Airport (at ¼ mile intervals) as assessed by SGHAT. Includes the proposed northern runways 10L and 28R.

6 RESULTS

6.1 RUNWAY APPROACHES

The SGHAT results are contained in Appendix A and show that of the six runway approaches analysed at Dublin Airport and the two runway approaches at Weston Airport, runway approach 34 at Dublin Airport has 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 are contained in Appendix A and show that there is **no potential for glint and glare to occur at the ATCTs in Dublin Airport or Weston 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 or Weston Airport aviation receptors identified as a result of the roof-mounted solar PV panels at Cruiserath Rd, Dublin 15.

APPENDIX A:

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

FORGESOLAR GLARE ANALYSIS

Project: **Dublin Airport SGHAT**
Site configuration: **Cruiserath**
Analysis conducted by Luis Dominguez (luis@macroworks.ie) at 12:43 on 08 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)	PASS	Receptor(s) marked as ATCT do not receive 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

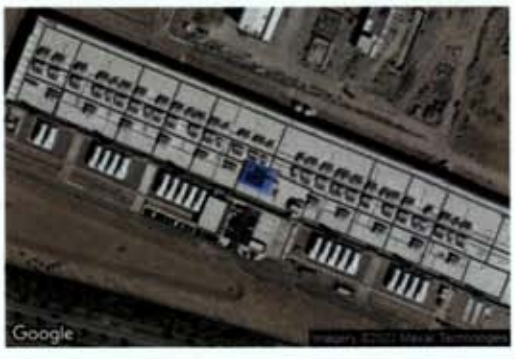
SITE CONFIGURATION

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: 73708.12200
Methodology: V2

PV Array(s)

Name: Building A
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 201.0°
Rated power: -
Panel material: Smooth glass without 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	53.413757	-6.382491	85.90	9.58	95.48
2	53.413696	-6.382240	85.90	9.58	95.48
3	53.413585	-6.382316	85.90	9.32	95.22
4	53.413646	-6.382568	85.90	9.32	95.22
5	53.413757	-6.382491	85.90	9.58	95.48

Name: Building B
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 291.0°
Rated power: -
Panel material: Smooth glass without 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	53.413799	-6.379792	85.75	13.45	99.20
2	53.413716	-6.379849	85.75	13.45	99.20
3	53.413619	-6.379453	85.75	13.01	98.76
4	53.413702	-6.379396	85.75	13.01	98.76
5	53.413738	-6.379542	85.75	13.11	98.86
6	53.413771	-6.379520	85.75	13.11	98.86
7	53.413826	-6.379745	85.75	13.47	99.22
8	53.413793	-6.379768	85.75	13.47	99.22
9	53.413799	-6.379792	85.75	13.52	99.27

Name: Building C
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 291.0°
Rated power: -
Panel material: Smooth glass without 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	53.415567	-6.378578	85.75	13.45	99.20
2	53.415484	-6.378635	85.75	13.52	99.27
3	53.415387	-6.378239	85.75	13.01	98.76
4	53.415470	-6.378182	85.75	13.01	98.76
5	53.415506	-6.378328	85.75	13.11	98.86
6	53.415539	-6.378306	85.75	13.11	98.86
7	53.415594	-6.378531	85.75	13.48	99.23
8	53.415561	-6.378554	85.75	13.48	99.23
9	53.415567	-6.378578	85.75	13.52	99.27

Name: Building E1
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 201.0°
Rated power: -
Panel material: Smooth glass without 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	53.417703	-6.380159	85.00	19.56	104.56
2	53.417655	-6.379965	85.00	19.56	104.56
3	53.417441	-6.380111	85.00	19.56	104.56
4	53.417489	-6.380306	85.00	19.56	104.56
5	53.417703	-6.380159	85.00	19.56	104.56

Name: Building E2
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 201.0°
Rated power: -
Panel material: Smooth glass without 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	53.417720	-6.379858	85.00	19.56	104.56
2	53.417436	-6.378700	85.00	19.56	104.56
3	53.417367	-6.378748	85.00	19.56	104.56
4	53.417651	-6.379905	85.00	19.56	104.56
5	53.417720	-6.379858	85.00	19.56	104.56

Name: Building F1
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 201.0°
Rated power: -
Panel material: Smooth glass without 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	53.416859	-6.380924	85.00	19.56	104.56
2	53.416811	-6.380729	85.00	19.56	104.56
3	53.416597	-6.380876	85.00	19.56	104.56
4	53.416645	-6.381071	85.00	19.56	104.56
5	53.416859	-6.380924	85.00	19.56	104.56

Name: Building F2
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 201.0°
Rated power: -
Panel material: Smooth glass without 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	53.416876	-6.380622	85.00	19.56	104.56
2	53.416592	-6.379465	85.00	19.56	104.56
3	53.416523	-6.379512	85.00	19.56	104.56
4	53.416806	-6.380670	85.00	19.56	104.56
5	53.416876	-6.380622	85.00	19.56	104.56

Name: Building G1
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 201.0°
Rated power: -
Panel material: Smooth glass without 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	53.415978	-6.381528	85.00	19.56	104.56
2	53.415930	-6.381334	85.00	19.56	104.56
3	53.415716	-6.381481	85.00	19.56	104.56
4	53.415764	-6.381675	85.00	19.56	104.56
5	53.415978	-6.381528	85.00	19.56	104.56

Name: Building G2
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 201.0°
Rated power: -
Panel material: Smooth glass without 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	53.415995	-6.381227	85.00	19.56	104.56
2	53.415711	-6.380069	85.00	19.56	104.56
3	53.415642	-6.380117	85.00	19.56	104.56
4	53.415925	-6.381274	85.00	19.56	104.56
5	53.415995	-6.381227	85.00	19.56	104.56

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

Name: Weston 07 Runway
Description: None
Threshold height: 15 m
Direction: 63.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	53.350770	-6.493330	47.50	15.20	62.70
Two-mile	53.337644	-6.536538	56.30	175.10	231.40

Name: Weston 25 Runway
Description: None
Threshold height: 15 m
Direction: 243.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	53.354037	-6.482623	46.80	15.20	62.00
Two-mile	53.367163	-6.439411	31.60	199.10	230.70

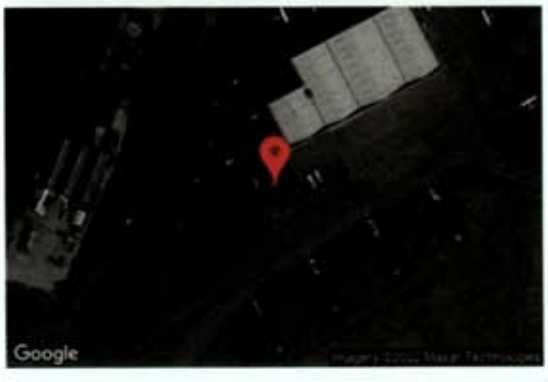
Discrete Observation Receptors

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
3-ATCT	3	53.355640	-6.489488	49.40	15.00

Map image of 1-ATCT

Map image of 2-ATCT

Map image of 3-ATCT



GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt	Orient	"Green" Glare	"Yellow" Glare	Energy
	(°)	(°)	min	min	kWh
Building A	10.0	201.0	18	0	-
Building B	10.0	291.0	0	0	-
Building C	10.0	291.0	0	0	-
Building E1	10.0	201.0	97	0	-
Building E2	10.0	201.0	99	0	-
Building F1	10.0	201.0	77	0	-
Building F2	10.0	201.0	75	0	-
Building G1	10.0	201.0	54	0	-
Building G2	10.0	201.0	54	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual 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	474	0
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-ATCT	0	0

Results for: Building A

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	18	0
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

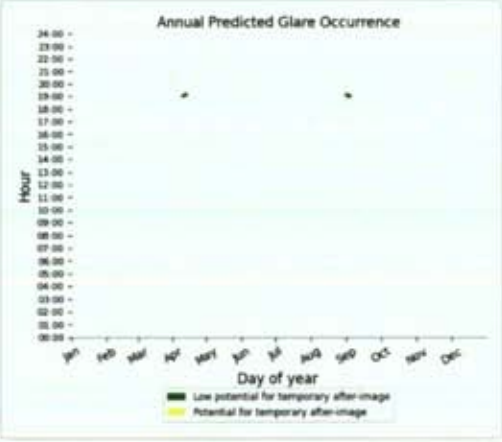
Flight Path: 28 Runway

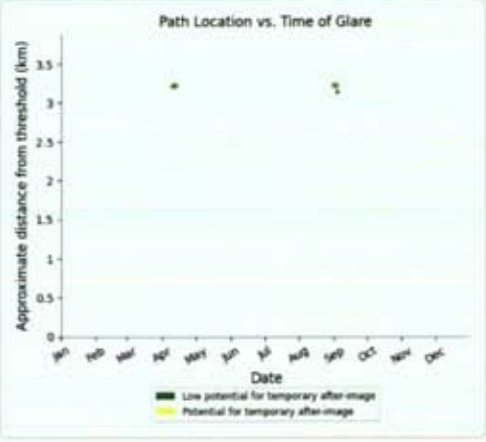
0 minutes of yellow glare
0 minutes of green glare

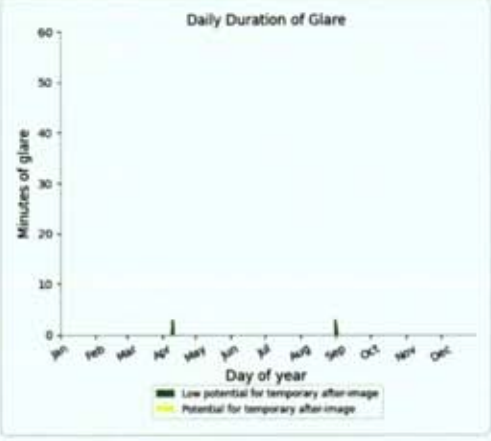
Flight Path: 34 Runway

0 minutes of yellow glare

18 minutes of green glare







Flight Path: Weston 07 Runway

0 minutes of yellow glare

0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: Building B

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
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

Flight Path: Weston 07 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: Building C

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
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

Flight Path: Weston 07 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: Building E1

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	97	0
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

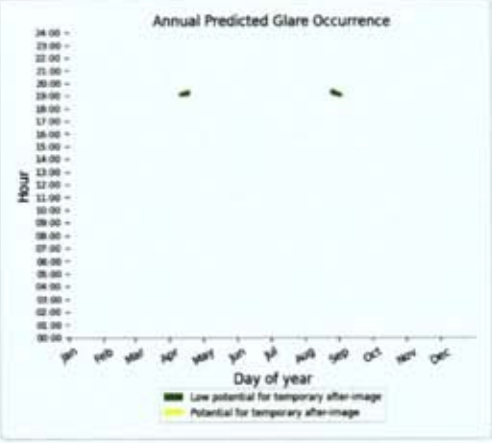
0 minutes of yellow glare
0 minutes of green glare

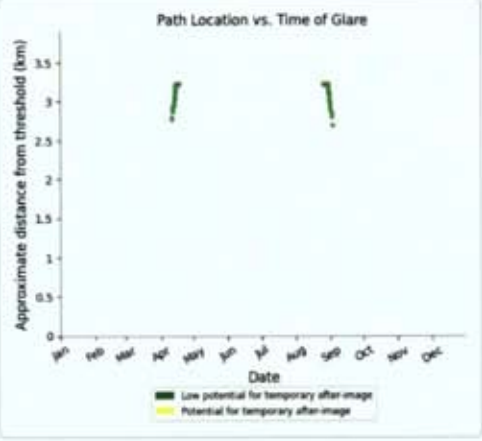
Flight Path: 28 Runway

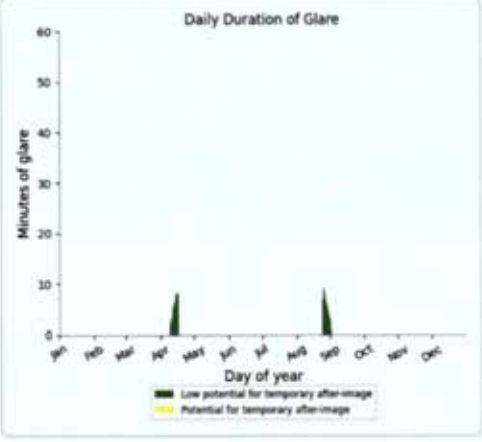
0 minutes of yellow glare
0 minutes of green glare

Flight Path: 34 Runway

0 minutes of yellow glare
97 minutes of green glare







Flight Path: Weston 07 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: Building E2

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	99	0
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

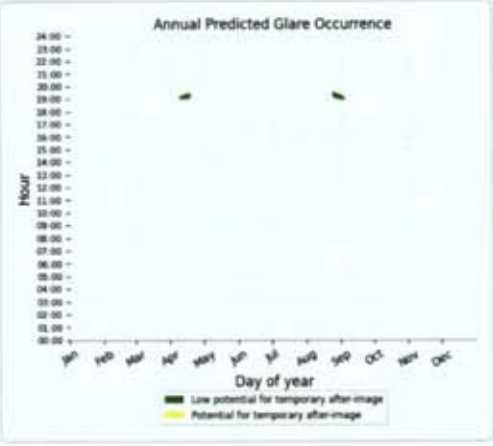
0 minutes of yellow glare
0 minutes of green glare

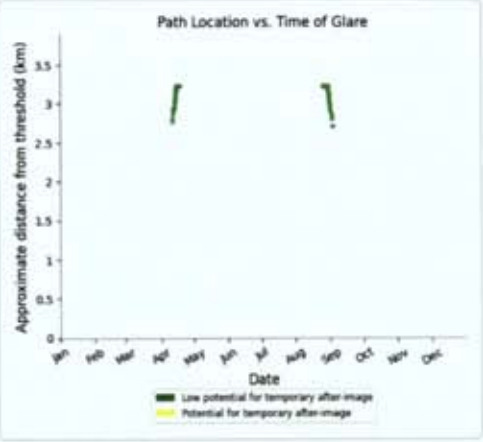
Flight Path: 28 Runway

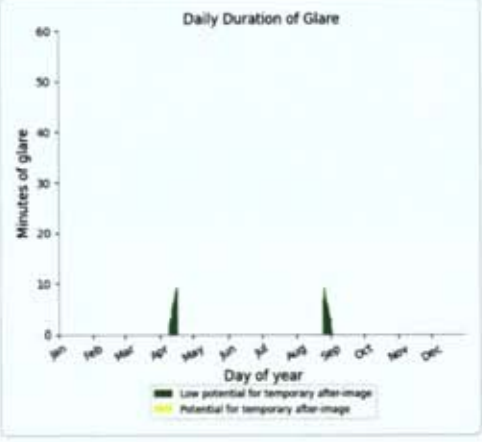
0 minutes of yellow glare
0 minutes of green glare

Flight Path: 34 Runway

0 minutes of yellow glare
99 minutes of green glare







Flight Path: Weston 07 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: Building F1

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	77	0
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

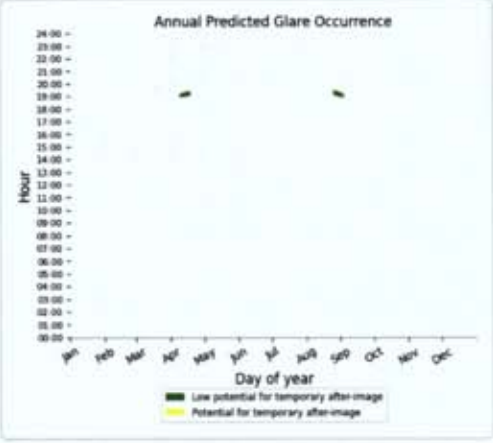
0 minutes of yellow glare
0 minutes of green glare

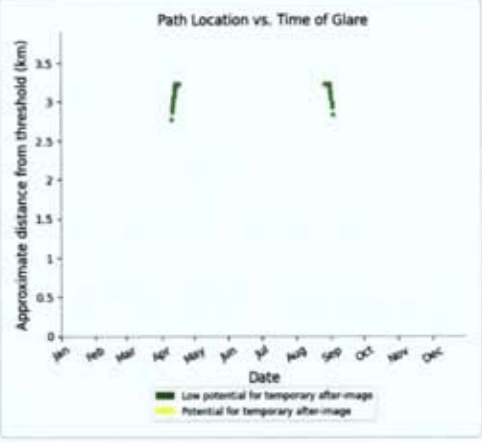
Flight Path: 28 Runway

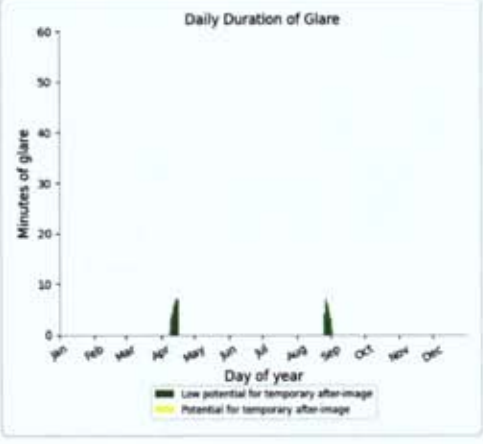
0 minutes of yellow glare
0 minutes of green glare

Flight Path: 34 Runway

0 minutes of yellow glare
77 minutes of green glare







Flight Path: Weston 07 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: Building F2

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	75	0
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

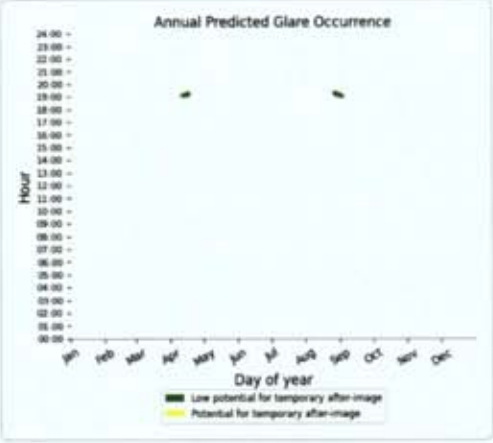
0 minutes of yellow glare
0 minutes of green glare

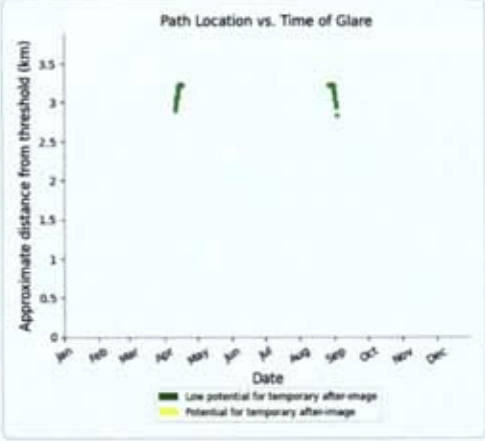
Flight Path: 28 Runway

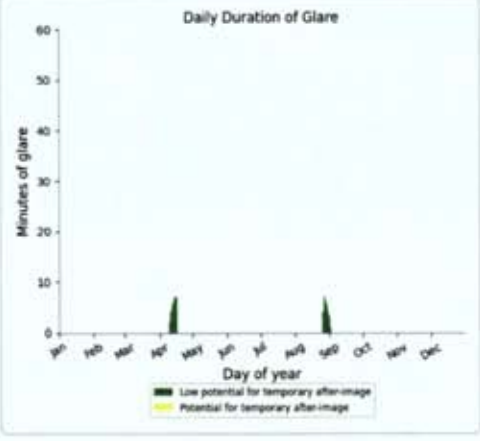
0 minutes of yellow glare
0 minutes of green glare

Flight Path: 34 Runway

0 minutes of yellow glare
75 minutes of green glare







Flight Path: Weston 07 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: Building G1

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	54	0
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

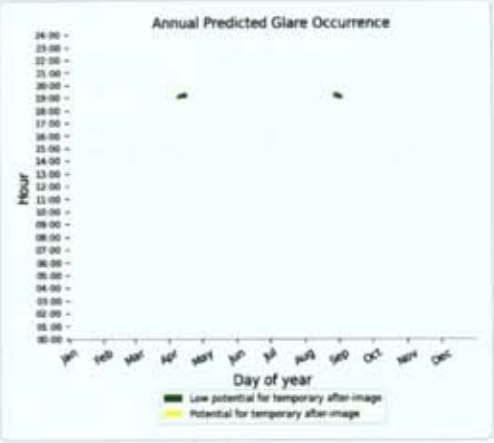
0 minutes of yellow glare
0 minutes of green glare

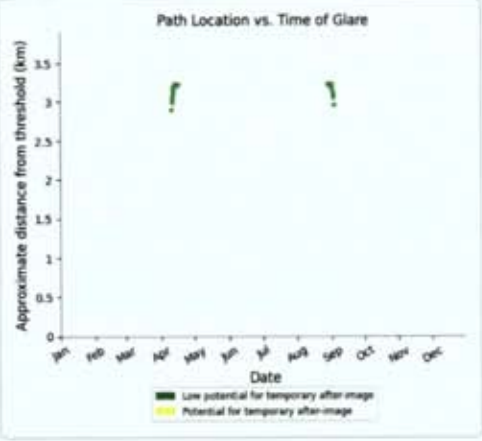
Flight Path: 28 Runway

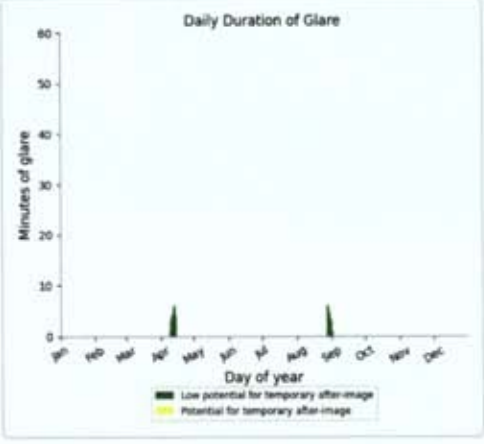
0 minutes of yellow glare
0 minutes of green glare

Flight Path: 34 Runway

0 minutes of yellow glare
54 minutes of green glare







Flight Path: Weston 07 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: Building G2

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	54	0
Weston 07 Runway	0	0
Weston 25 Runway	0	0
1-ATCT	0	0
2-ATCT	0	0
3-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

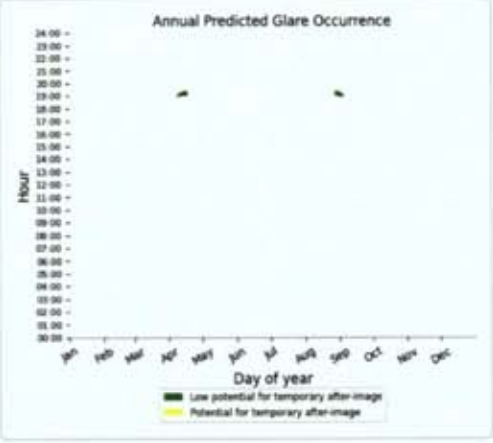
0 minutes of yellow glare
0 minutes of green glare

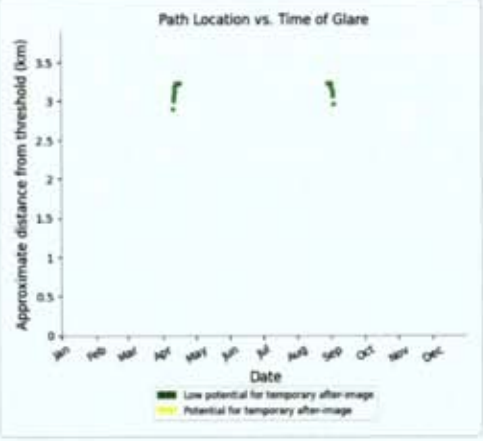
Flight Path: 28 Runway

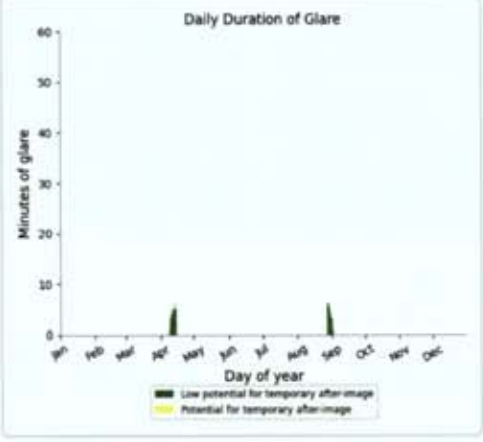
0 minutes of yellow glare
0 minutes of green glare

Flight Path: 34 Runway

0 minutes of yellow glare
54 minutes of green glare







Flight Path: Weston 07 Runway

0 minutes of yellow glare
0 minutes of green glare

Flight Path: Weston 25 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

Point Receptor: 3-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.

15.0 WASTE MANAGEMENT

15.1 INTRODUCTION

This Chapter of the EIAR comprises an assessment of the likely impact if any, of the Proposed Development on the waste generated from the development as well as identifying proposed mitigation measures to minimise any associated impacts.

A site-specific Resource Waste Management Plan (RWMP) has been prepared by CS Consulting Group to deal with waste generation during the excavation and construction phases of the Proposed Development and has been included as Appendix 15.1. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021).

The Chapter has been prepared in accordance with European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017), the EPA EIA Report Guidelines 2022 and the EU Commission Notice on changes and extensions to projects, 2021.

These documents will ensure the management of wastes arising at the Development Site in accordance with legislative requirements and best practice standards.

15.2 METHODOLOGY

The assessment of the impacts of the Proposed Development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This Chapter is based on the Proposed Development, as described in Chapter 2 (Description of the Proposed Development) and considers the following aspects:

- Legislative context;
- Construction phase (including site preparation and excavation);
- Operational phase; and
- Decommissioning Phase

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction phases of the Proposed Development have been calculated and are included in Section 15.4 of this chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar

previous developments, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the Proposed Development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 15.6.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 6 of this EIAR (Land, Soils, Geology and Hydrogeology).

Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 15.1).

Figure 15.1 *Waste Hierarchy (Source: European Commission)*

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 15.2).

Figure 15.2 *Circular Economy (Source: Repak)*

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, Waste Action Plan for a Circular Economy – *Waste Management Policy in Ireland, was published in 2020* and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, *A Resource Opportunity, in 2012.*

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021). The guidance documents, Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the *Eastern Midlands Regional (EMR) Waste Management Plan 2015 – 2021, BS 5906:2005 Waste Management in Buildings – Code of Practice*, the Fingal County Council (FCC) Fingal County Council Segregation, Storage and Presentation of Household and Commercial. Waste Bye-Laws, 2020, the EPA National Waste Database Reports 1998 – 2019 and the EPA National Waste Statistics Web Resource.

Terminology

Note that the terminology used herein is consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
b) the adverse impacts of the generated waste on the environment and human health; or
c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Waste Framework Directive sets out a non-exhaustive list of disposal operations.

15.3 RECEIVING ENVIRONMENT

In terms of waste management, the receiving environment is largely defined by FCC as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the EMR Waste Management Plan 2015-2021 (currently under review, to be replaced in 2022) and the Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland.

The EMR Waste Management Plan sets out the following targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 55% of managed municipal waste by 2025; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

Ireland achieved 84 per cent material recovery of such waste in 2019, and therefore surpassed the 2020 target and is currently surpassing the 2025 target. The National Waste Statistics update published by the EPA in November 2021 identifies that Ireland's current against "Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)" was met for 2020 at 51% however they are currently not in line with the 2025 target (55%).

The Fingal County Development Plan 2017 – 2023 (2017) set out objectives for the FCC area which reflect those sets out in the regional waste management plan.

In terms of physical waste infrastructure, FCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the EMR Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, municipal waste landfills, material recovery facilities and waste transfer stations. The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

15.4 CHARACTERISTICS OF THE DEVELOPMENT

The Proposed Development will comprise three data centres and associated ancillary development within an existing data centre campus. The Proposed Development is described in detail in Chapter 2 (Description of the Proposed Development). The aspects relevant to this chapter are described in the following sections.

15.4.1 Demolition Phase

There will be no demolition required to facilitate the Proposed Development.

15.4.2 Construction Phase

During the construction phase, waste produced will include surplus steel and metal materials and broken/off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials are also likely to be generated. The appointed Contractor will be contractually required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

Site preparation, excavations and levelling works required to facilitate construction of foundations, access roads and the installation of services will generate soils/stones. As detailed in Chapter 2 (Description of the Development), subject to grant of planning permission, construction work will be undertaken on a phased basis, with Building E commencing construction first, followed by Building F and then Building G. The project engineers, CS Consulting, have estimated that c. 5,835m^3 will be generated during the construction of Building E, c. 15,178m^3 from the construction of Building F and c. 19,659m^3 from the construction of Building G. Topsoil will be reused on site for landscaping, where practicable. The surplus of excavated material, envisaged to be

35,625m^3 will be removed off-site by a permitted haulier. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

If any material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Regulation 15 (By-products) (Previously Article 27 classification (European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011) and referred to as Article 27 in this chapter) of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020. EPA agreement will be obtained before re-using the soils/stones as a by-product offsite. For more information in relation to the envisaged management of by-products, refer to the RWMP prepared by CS Consulting Group which is included as Appendix 15.1.

As detailed in Chapter 6 (Land, Soils, Geology and Hydrogeology) a site investigation was undertaken by IGSL supervised by AWN at the site in March 2016 as part of an initial due diligence assessment. 19 no. investigation locations (6 no. trials pits and 13 no. boreholes) were completed across the overall landholding. As there have been minimal changes to this part of the overall landholding since this investigation, the findings and results can be considered to be still valid. Borehole and trial pit logs are presented in Appendix 6.2 of Chapter 6. Apart from a localised and minor amount of plastic encountered at a shallow level (1.6 – 1.8mbgl) in one borehole (BH8), natural overburden material was encountered with no evidence of any area of contamination across the Proposed Development site. A review of the site investigation data for this and adjacent recent developments at the first and second phase of the data centre developments at the Proposed Development site (southern and eastern boundaries), Mallinckrodt, Alexion and BMS showed natural overburden to be present with no evidence of any areas of waste disposal present. Therefore, the plastic encountered at this one location is localised and is likely derived from past agricultural activities at the site.

Any surplus material that requires removal from site for offsite reuse, recovery and/or disposal and any potentially contaminated material (in the unlikely event that it is encountered), should be segregated, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled *'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* using the *HazWasteOnline* application (or similar approved classification method). If the material is to be disposed of to landfill, it will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC* and landfill specific criteria for Polycyclic Automatic Hydrocarbons (PAHs). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste including potential pollutant concentrations and leachability. It is likely that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase.

Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the RWMP prepared by CS Consulting Group which is included as Appendix 15.1. Estimates of the main waste types likely to be generated during the construction phase of the Proposed Development are provided in Table 4 of the RWMP and are summarised in Table 15.1.

Table 15.1 *Estimated off-site reuse, recycling and disposal estimates for construction waste (Source: RWMP prepared by CS Consulting Group)*

Waste Type	Predicted Tonnes Produced	Recycling and Recovery		Backfilling or Disposal	
		Tonnes	%	Tonnes	%
Concrete, Brick, Tile & Gypsum	1170	527	45%	644	55%
Bituminous Mixtures	220	141	64%	79	36%
Metal	370	370	100%	0	0%
Segregated Wood, Glass & Plastic	50	47	93%	4	7%
Other Mixed C&D Waste	760	106	14%	654	86%
Total	2,570	1,190	46.3%	1,380	53.7%

It should be noted that until final materials and detailed construction methodologies have been confirmed it is difficult to predict with a high level of accuracy the construction waste that will be generated from the construction of the Proposed Development as the exact materials and quantities may be subject to some degree of change and variation during the construction process. However, the above estimates are considered to be the worst-case scenario.

An outline Construction Environmental Management Plan (OCEMP) has been prepared by CS Consulting Group and is included with the planning application documentation. The appointed contractor(s) will be required to prepare an updated / detailed Construction Environmental Management Plan (CEMP) and RWMP prior to commencement of construction which may refine the above waste estimates.

15.4.3 Operational Phase

An Operational Waste Management Plan (OWMP) will be developed prior to commencement. The plan will seek to ensure the facility contributes to the targets outlined in the EMR Waste Management Plan 2015 – 2021. Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the Proposed Development are summarised below.

Segregation of Waste Materials Onsite

All waste materials will be segregated into appropriate categories and will be stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site. The proposed development includes dedicated waste storage areas (WSA) at each building for segregation and collection of waste

Table 15.2 below summarises the anticipated management strategy to be used for typical wastes to be generated at the data storage facilities.

Table 15.2 *Anticipated Onsite Waste Management*

Waste Type	Hazard Y/N	On-site Storage/Treatment Method (anticipated)	Method of Treatment or Disposal (offsite)
Packaging Waste	N	Segregated bins/skips	Recycle
Office Waste	N	Segregated bins/skips	Recycle
General Non-Hazardous Waste	N	Segregated bins/skips	Recovery
Empty Containers	N	Segregated bins/skips	Disposal to landfill
Canteen/Kitchen Waste	N	Segregated bins for compost, mixed recyclable and general waste	Compost food waste. Recycle mixed dry recyclable waste. Recovery of other general waste
Non-hazardous WEEE	N	Segregated bins for waste electric and electronic equipment	Recovery
Landscaping waste	N	Composting bins	Composting
UV & Fluorescent Tubes	Y	Specialised container in waste storage area	Recovery
Waste Oil	Y	Oil drum in external waste storage area	Recovery
Waste sludge from oil separator	Y	Storage tank connected to oil separator	Recovery or disposal
(Wet) Batteries	Y	Specialised container in waste storage area	Return to supplier
(Dry) Batteries	Y	Specialised container in waste storage area	Recovery

Management of Wastes Moving Offsite

All waste leaving site will be recycled or recovered, with the exception of those waste streams where appropriate recycling facilities are currently not available.

All waste leaving the site will be transported by suitably permitted contractors and taken to suitably licensed or permitted facilities. All waste leaving the site will be recorded and copies of relevant documentation will be maintained. It is anticipated that waste collections from the Proposed Development will be co-ordinated with the waste collections from the permitted data centres on the overall site, where possible, to minimise vehicles movements to/from the site.

Hazardous Waste

Hazardous waste may be generated from batteries, contaminated chemical drums and other packaging. If the packaging contains residues of or if it is contaminated by dangerous substances, it may be classed as a hazardous waste (depending on the volume and concentration of contaminants). If the drums are found to be unsuitable for re-use, they will be classed as a waste. Any waste classed as hazardous will be stored in a designated area (suitably bunded, where required) and will be removed off site by a licensed hazardous waste contractor(s).

Waste sludge from the hydrocarbon interceptors will be pumped out/removed as required by a suitably permitted/licenced contractor, to be treated off site as a hazardous waste.

15.4.4 Decommissioning Phase

At decommissioning phase of the Proposed Development, a decommissioning, demolition or refurbishment plan will be prepared to ensure no nuisance occurs at nearby sensitive receptors as a result of the decommissioning phase.

15.5 POTENTIAL IMPACTS OF THE DEVELOPMENT

This section details the potential waste impacts associated with the Proposed Development.

15.5.1 Construction Phase

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction (Refer to the RWMP for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored in the construction site compound or adjacent to it, on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Proposed Development site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative***.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be ***long-term, significant*** and ***negative***.

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Development Site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative***.

There is a quantity of soil and stone which will need to be excavated to facilitate the Proposed Development (i.e. c. 40,671m^3). Where possible, the topsoil will be reused onsite for landscaping. Any surplus material will need to be removed off-site. It is currently anticipated that c. 35,625m^3 of excavated material will require removal from site for offsite reuse, recovery and/or disposal. Based on the 2016 Site Investigation, it is unlikely that any contamination will be identified during the excavation works. However, visual and olfactory inspections of the excavated material is required to ensure that any potentially contaminated materials are identified, segregated, classified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, not significant*** and ***negative***.

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The knock-on effect of litter issues is the presence of vermin within the development and the surrounding areas.

All waste contractors collecting waste from the site must hold a valid collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices.

Construction wastes will be taken to suitably registered/permitted/licenced waste facilities for processing and segregation, recycling, recover and/or disposal. There are numerous licensed waste facilities in the Dublin and Meath regions which can accept hazardous and non-hazardous waste materials and acceptance of waste from the Proposed Development would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of construction waste materials at facilities in the region and, where possible, waste will be segregated into recyclable and recoverable materials. The majority of construction materials are either recyclable or recoverable.

Recovery and recycling of construction waste has a positive impact on sustainable resource consumption, for example where waste timber is mulched into a landscaping product or waste asphalt is recycled for use in new pavements. The use of recycled materials, where suitable, reduces the consumption of natural resources.

Reuse of excavated material offsite will reduce consumption of natural quarry resources.

The opportunities for waste materials to be reused off-site will provide positive impacts in the resourcing of materials for other developments and reduce the requirement for raw material extraction.

The potential effect of construction waste generated from the Proposed Development is considered to be ***short-term, slight negative.***

15.5.2 Operational Phase

The nature of the development means that the generation of waste materials during the operational phase is an unavoidable impact. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion into recycled products (e.g. paper mills and glass recycling).

Dedicated waste storage areas are provided for storage of waste pending collection by nominated waste contractors.

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The knock-on effect of litter issues is the presence of vermin within the development and the surrounding areas.

Waste collection vehicles will be required to service the development on a regular basis to remove waste.

All waste contractors collecting waste from the site must hold a valid collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO) and waste will only be brought to suitably registered/permitted/licenced facilities. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices.

The potential impact of operational waste generation from the development is considered to be ***long-term, negative*** and ***not significant***.

15.5.3 Do Nothing Scenario

If the Proposed Development was not to go ahead there would be no additional construction or operational waste generation at the site until such time as an alternative development consistent with the land use zoning is granted permission and constructed.

15.6 REMEDIAL AND MITIGATION MEASURES

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concept of the 'waste hierarchy' is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal.

15.6.1 Construction Phase

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

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the EPA, *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)* and is included with planning application documents. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP in agreement with FCC and in compliance with any planning conditions, or submit an addendum to the RWMP to FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

The project engineers, CS Consulting Group, have estimated that c. 40,671m^3 of soils/stones will be generated from the excavations required to facilitate construction. The main contractor will endeavor to ensure that surplus material is reused on site, where practical. Where surplus material is not required for reuse onsite, it will be reused or recovered off-site insofar as is reasonably practicable. Where there is no suitable reuse or recovery option available, it will be disposed of at an authorised facility. It is currently anticipated that c. 35,625m^3 of excavated material will require removal from site for offsite reuse, recovery and/or disposal.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
    - Concrete rubble (including ceramics, tiles and bricks);
    - Plasterboard;
    - Metals;
    - Glass; and
    - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

For any excess soils/stones requiring removal from site, any nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, which requires removal off-site. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the *EC (Waste Directive) Regulations (2011)* (Regulation 15 of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997 to 2009* and the *EMR Waste Management Plan (2015 - 2021)*. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

15.6.2 Operational Phase

The following mitigation measures will be implemented during the operational phase of the Proposed Development:

All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

In addition, the following mitigation measures will be implemented:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
  - Dry Mixed Recyclables;
  - Organic food/green waste;
  - Mixed Non-Recyclable Waste;
  - Batteries (non-hazardous and hazardous);
  - Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment;
  - Cleaning chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.); and
- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly labelled with the approved waste type to ensure there is no cross contamination of waste materials;
- All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997* and the *EMR Waste Management Plan (2015 - 2021)*. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

15.7 PREDICTED IMPACTS OF THE DEVELOPMENT

This section describes the predicted impact of the Proposed Development following the implementation of the remedial and mitigation measures.

15.7.1 Construction Phase

A carefully planned approach to waste management as set out in Section 15.6.1 and adherence to the RWMP during the construction and demolition phase will ensure that the impact on the environment will be ***short-term, neutral*** and ***imperceptible***.

15.7.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 15.6.2 will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and

recovery is achieved, the predicted impact of the operational phase on the environment will be ***long-term, neutral*** and ***imperceptible***.

15.8 RESIDUAL IMPACTS

Adherence to the mitigation measures outlined in Section 15.6.1 and 15.6.2 will ensure that there are no significant impacts on resource or waste management from the Proposed Development. The management of waste during the construction phase in accordance with the Resource and Waste Management Plan (RWMP) and during the operational phase in accordance with the mitigation measures in Section 15.6.2 will meet the requirements of regional and national waste legislation and promote the management of waste in line with the priorities of the waste hierarchy. The residual impact will be ***neutral*** and ***imperceptible***.

The cumulative impact assessment is addressed Chapter 16 of this EIA Report.

Interactions are addressed in Chapter 17 of this EIA Report.

15.9 REFERENCES

- Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
- Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2012.*
- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate and associated legislation includes:
    - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended.
    - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended.
    - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I No. 821 of 2007) as amended.
    - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended.
    - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
    - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended.
    - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
    - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
    - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended.
    - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended.
    - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
    - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended.
    - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended.
    - European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
    - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
    - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
- Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
- Department of Environment, Communities and Local Government (DoECLG), *A Resource Opportunity - Waste Management Policy in Ireland* (2012).
- FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* (2002).
- BS 5906:2005 Waste Management in Buildings – Code of Practice
- Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015).
- Environmental Protection Agency (EPA), *National Waste Statistics Web Resource – Progress to EU Targets* (October 2018)
- Dublin City Council (DCC), *Dublin City Develoment Plan 2016-2022 (2015)*
- EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015)

- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

APPENDIX 15.1

RESOURCE AND WASTE MANAGEMENT PLAN

PREPARED BY CS CONSULTING GROUP

CS CONSULTING

GROUP

DUBLIN | LONDON | LIMERICK

Resource and Waste Management Plan for Construction of

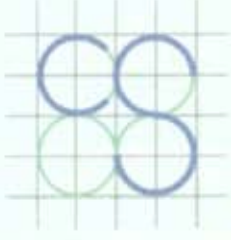
Proposed Data Centre Development at

Cruiserath, Blanchardstown, Co. Dublin

Client: Universal Developers LLC

Job No. A104

November 2022



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GROUP

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RESOURCE AND WASTE MANAGEMENT PLAN FOR CONSTRUCTION

PROPOSED DATA CENTRE DEVELOPMENT, CRUISERATH, BLANCHARDSTOWN, CO. DUBLIN

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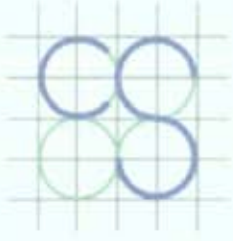
BS 1192 FIELD	A104-CSC-ZZ-XX-RP-C-0004-P3

Job Ref.	Author	Reviewed By	Authorised By	Issue Date	Version No.
A104	LJ	GF	OS	14.11.2022	P3
A104	LJ	GF	OS	20.09.2022	P2
A104	LJ	GF	OS	25.07.2022	P1
A104	LJ	GF	OS	23.06.2022	P0



CS CONSULTING

GROUP

1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Universal Developers LLC to prepare a Resource and Waste Management Plan (RWMP) for the management of construction waste, to accompany a planning application for a proposed data centre development at Cruiserath, Blanchardstown, Co. Dublin.

The purpose of this RWMP is to ensure that waste generated during the construction phase of the development shall be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 to 2013, and the *Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021* are complied with. It shall also ensure that optimum levels of waste reduction, re-use and recycling are achieved.

2.0 GOVERNMENT POLICY

2.1 National Level

The Irish Government issued a policy statement in September 1998 titled *Changing Our Ways*, which identified objectives for the prevention, minimisation, reuse, recycling, recovery, and disposal of waste in Ireland. The target for Construction and Development waste in this policy document is to recycle at least 50% of construction and demolition waste within a five-year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. by 2013).

In response to the *Changing Our Ways* document, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report titled *Recycling of Construction and Demolition Waste*, which concerned the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of construction and demolition waste.

The most recent national policy document was published in July 2012, titled *A Resource Opportunity - Waste Management Policy in Ireland*. This document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. The document sets out a number of actions in relation to C&D waste and commits to undertaking a review of specific producer responsibility requirements for C&D projects over a certain threshold.

The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002, as one of the recommendations of the Forum for the Construction Industry in the Task Force B4 final report. The NCDWC subsequently produced *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* in July

2006 in conjunction with the then Department of the Environment, Heritage and Local Government (DoEHLG). This document was subsequently revised and reissued by the Environmental Protection Agency (EPA) in 2021 as the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*.

The Guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. Section 3 of the Guidelines identifies the following thresholds above which there is a requirement to prepare a bespoke Resource & Waste Management Plan (RWMP) for a proposed development:

- New residential development of 10 dwellings or more.
- Retrofit of fewer than 20 dwellings.
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area of 1,250m^2 or more.
- Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area of 2,000m^2 or more.
- Demolition projects generating in total 100m^3 or more of C&D waste.

This development therefore requires a bespoke RWMP by virtue of constituting a new commercial/industrial development with a total floor area in excess of 1,250 m^2.

These Guidelines have been followed in the preparation of this document and include the following elements:

- Predicted construction and demolition wastes.
- Procedure to prevent and minimise wastes.
- Options for the reuse/recycling/recovery/disposal of construction and demolition wastes.

- Provision of training for Waste Manager and site crew.
- Details of proposed record keeping system.
- Details of waste audit procedures and plan.
- Details of proposed consultation with relevant bodies (i.e., waste recycling companies, Fingal County Council, etc.).

Other guidelines followed in the preparation of this report include *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*, published by FÁS and the *Construction Industry Federation* (CIF) in 2002. These guidance documents are considered to define best practice for construction and demolition projects in Ireland and describe how projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

The Environmental Protection Agency (EPA) issues an annual "*National Waste (Database) Report*" that details the levels of waste generation and the rates of recycling, recovery, and disposal of various waste streams (including C&D wastes).

2.2 Regional Level

The proposed development is located in the Local Authority area of Fingal County Council (FCC). A *Waste Management Plan* for the Dublin Region (comprising Dublin City Council, Fingal County Council, South Dublin County Council, and Dún Laoghaire-Rathdown County Council) was in place from 2005-2015, with periodic revisions. This was superseded by the *Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021*, which was launched in May 2015 and remains the most recent regional Waste Management Plan. The Eastern-Midlands Region comprises Dublin City Council, Dún Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow County Councils.

The Plan provides a framework for the prevention and management of waste in a sustainable manner in these 12 Local Authority areas.

The *Eastern-Midlands Region Waste Management Plan 2015-2021* reflects changing National policy as set out in *A Resource Opportunity: Waste Management Policy in Ireland* and changes being enacted by the Waste Framework Directive (WFD) (2008/98/EC). The Plan sets out the strategic targets for waste management in the region and also specifies a mandatory target of 70% of C&D wastes to be prepared for reuse, recycling, and material recovery (excluding soil and stones) by 2020, in line with the requirements of the Waste Directive.

Beyond this, the three overall performance targets of the *Eastern-Midlands Region Waste Management Plan 2015-2021* are as follows:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan.
- Achieve a recycling rate of 50% of managed municipal waste by 2020.
- Reduce to 0% the direct disposal of unprocessed municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Plan's implementation is led by the Eastern-Midlands Regional Waste Office based in Dublin City Council.

Under the Waste Framework Directive (2008/98/EC), member states must achieve 70% of material recovery of non-hazardous, non-soil and stone C&D waste by 2020. Ireland achieved 84% material recovery of such waste in 2019, and therefore surpassed the 2020 target. This represents an improvement on the recovery rate of 71% achieved in 2016 and 77% achieved in 2018. One of the primary objectives of the *Eastern-Midlands Region Waste Management Plan 2015-2021* is to achieve more sustainable

waste management practices in the C&D sector. This requires the following actions:

- The development company must employ best practice at the design, planning and construction stage to ensure waste prevention and recycling opportunities are identified and implemented.
- Waste Collectors are required to introduce source-separation of recyclables and introduce graduated charges to incentivise better site practices.

Local Authorities shall ensure the voluntary industry code is applied to development control, to regulate the collection and treatment of waste to meet the Plan objectives and shall also work to develop markets for recycled materials.

The Fingal Development Plan 2017–2023 sets out a number of policies and objectives for the Fingal area, in line with the objectives of the regional Waste Management Plan. The following Development Plan objectives are of relevance to construction of the proposed development:

- Objective WM02: *Facilitate the implementation of national legislation and national and regional waste management policy having regard to the waste hierarchy.*
- Objective WM03: *Implement the provisions of the Eastern Midlands Region Waste Management Plan 2015-2021 or any subsequent Waste Management Plan applicable within the lifetime of the Development Plan. All prospective developments in the County will be expected to take account of the provisions of the Regional Waste Management Plan and adhere to the requirements of that Plan.*
- Objective WM04: *Facilitate the transition from a waste management economy to a green circular economy to enhance employment and increase the value recovery and recirculation of resources.*

- Objective WM05: *Prevent and minimise the generation of waste in accordance with the Eastern Midlands Region Waste Management Plan 2015-2021 (or any subsequent plans).*
- Objective WM07: *Promote the increased re-use of waste in accordance with the Eastern Midlands Region Waste Management Plan 2015-2021 (or any subsequent plan).*
- Objective WM08: *Promote and encourage the establishment of re-use, preparing for re-use and repair activities in accordance with the Eastern Midlands Region Waste Management Plan 2015-2021 (or any subsequent plan).*
- Objective WM09: *Promote increased recycling of waste in accordance with the Eastern Midlands Region Waste Management Plan 2015-2021 (or any subsequent plan).*
- Objective WM14: *Promote the recovery (including recovery of energy) from waste in accordance with the Eastern Midlands Region Waste Management Plan 2015 -2021 (or any subsequent plan).*
- Objective WM18: *Ensure that construction and demolition Waste Management Plans meet the relevant recycling/recovery targets for such waste in accordance with the national legislation and regional waste management policy.*
- Objective WM20: *Implement the provisions of the National Hazardous Waste Management Plan 2014-2020 or any subsequent plan within the lifetime of the development plan.*

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No 20 of 2011). Sub-ordinate and associated legislation include:
  - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011 (S.I. No. 323 of 2011).
  - Waste Management (Collection Permit) Regulations 2007 (S.I No. 820 of 2007) as amended 2008 (S.I. No. 87 of 2008) and 2016 (S.I. No. 24 of 2016).
  - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended 2008 (S.I. No. 86 of 2008), 2014 (S.I. No. 310 and S.I. No. 546 of 2014) and 2015 (S.I. No. 198 of 2015).
  - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004) and 2010 (S.I. No. 350 of 2010).
  - Waste Management (Packaging) Regulations 2014 (S.I. No. 282 of 2014).
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997).
  - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015).
  - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014).
  - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015).
  - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015).
  - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015).

- Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000).
- Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007).
- Waste Management (Movement of Hazardous Waste) Regulations 1998 (S.I. No. 147 of 1998).
- The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988).
- European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011).
- European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015).

- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended 2010 (S.I. No. 30 of 2010) and 2015 (S.I. No. 310 of 2015)
- Environmental Protection Act 1992 (S.I. No. 7 of 1992) as amended by the Protection of the Environment Act 2003 (S.I. No. 27 and S.I. No. 413 of 2003) and amended by the Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended by the Protection of the Environment Act 2003 (S.I. No. 27 of 2003) as amended.

These Acts and subordinate Regulations transpose the relevant European Union Policies and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Acts 1996 - 2011 and associated Irish legislation, is the principle of 'Duty of Care'. This implies that the waste producer is responsible for waste from the time it is generated through until its legal reuse, recycling, recovery, or disposal (including its method of reuse, recycling, recovery, or disposal). As it is not practical in

most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of 'Polluter Pays' whereby the waste producer is liable to be prosecuted for pollution incidents that may potentially arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g., for the transportation and the disposal/recovery/recycling of waste).

It is therefore imperative that the project developer ensure that the waste contractors engaged by the Main Contractor are legally compliant with respect to waste transportation, reuse, recycling, recovery, and disposal. This includes the requirement that a contactor handle, transport, and reuse/recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor; these are issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended), or a waste licence or Industrial Emissions (IED) Licence granted by the Environmental Protection Agency (EPA). The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered, and/or disposed of at the specified site.

3.0 SITE LOCATION AND PROPOSED DEVELOPMENT

3.1 Site Location

The site of the proposed development is located on the lands at Cruiserath, Blanchardstown, Co. Dublin. The area of the present application boundary extends to approx. 13.14ha and is located in the administrative jurisdiction of Fingal County Council (FCC). This proposed development is the next phase of the masterplan strategy for the Data Centre Campus that was granted planning permission in 2017 under FCC planning reg. ref. FW17A/0025 (An Bord Pleanála ref. PL06F.248544).

Figure 1 – Location of proposed development site
(map data & imagery: EPA, OSM Contributors, Google)

The location of the proposed development site is shown in Figure 1 above; the indicative extents of the development site, as well as relevant elements of the surrounding road network, are shown in more detail in Figure 2.

The application site is bounded generally to the west by the R121 regional road (Church Road), to the north by vacant lands and by the Carlton Hotel on Cruiserath Drive, and to the east and south by the remaining areas of the Data Centre Campus masterplan area and by the neighbouring Bristol Myers Squibb facility.

Figure 2 – Site extents, access, and environs
(map data & imagery: OSM Contributors, Google)

3.2 Existing Land Use

The application site is largely greenfield. A Gas Insulated Switchgear (GIS) building with associated electrical infrastructure (permitted under ABP ref. VA06F.306834) is located within the southernmost portion of the application site, and an area of approx. 16,000m² at the centre of the site currently serves as a construction compound (including car parking) for the 2no. data centre buildings now under construction on the eastern portion of the masterplan site (permitted under FCC reg. ref. FW19A/0087).

3.3 Description of Proposed Development

The proposed development consists of the following:

- Construction of three data centre buildings (Data Centre E, Data Centre F, and Data Centre G), with a gross floor area (GFA) of c. 1,425 sq.m, c. 20,582 sq.m, and c. 20,582 sq.m respectively, each over two levels (with Data Centre F and G each including two mezzanine levels);
- Data Centre F and G will be located in the north-western portion of the overall landholding, with a primary parapet height of c. 19.8 metres and each will accommodate data halls, associated electrical and mechanical plant rooms, a loading bay, maintenance and storage space, office administration areas, with plant and solar panels at roof level;
- Data Centre E (which will be ancillary to Data Centre F and G) will be located within the south-western portion of the overall landholding, with a primary parapet height of c. 13.1 metres and will accommodate data halls, associated electrical and mechanical plant rooms, a loading bay, maintenance and storage space, office administration areas, with plant at roof level;
- Emergency generators and associated flues will be provided within compounds adjoining each of the three data centre buildings (1 no. for Data Centre E, 19 no. for Data Centre F, and 19 no. for Data Centre G);
- The development includes one diesel tank and two filling areas to serve the proposed emergency generators;
- Provision of ancillary structures including two MV buildings, water storage tanks and three bin stores;
- Construction of access arrangements and internal road network and circulation areas, footpaths, provision of car parking (105 no. spaces),

motorcycle parking (12 no. spaces) and bicycle parking (56 no. spaces), hard and soft landscaping and planting (including alteration to a landscaped berm to the north of proposed Data Centre E), lighting, boundary treatments, and all associated and ancillary works including underground foul and storm water drainage network, and utility cables.

3.4 Construction Programme

Figure 3 – Projected construction programme
(map data & imagery: OSM Contributors, Google)

Subject to a successful grant of planning permission, it is intended for works to commence in Q1 2023 and to progress on a phased basis over a six-year period. The proposed development comprises 3no. data centre buildings; **Figure 3** and **Table 1** give the approximate extents of these (including ancillary structures and associated parking areas), as well as their projected construction commencement and completion dates.

Table 1 – Development Construction and Commissioning Timelines

Building Ref.	Gross Floor Area	Construction Commencement	Construction Completion
E	1,425m²	Q2 2023	Q3 2024
F	20,582m²	Q1 2024	Q3 2026
G	20,582m²	Q1 2025	Q3 2028

Construction activity related to the proposed development is projected to reach a peak in the year 2026, when Building G is undergoing final fit-out and Building F is under construction.

3.5 Vehicular Access to and from Site during Construction

An existing temporary entrance to the masterplan site is present on the R121 regional road (Church Road), at the north-west corner of the application site. This is configured as a left-in/left-out priority-controlled junction and is located on a dual carriageway. This access shall serve as the access for traffic related to construction of the proposed development.

Heavy construction traffic arriving and departing – including vehicles removing waste material or importing construction materials – shall be restricted to the following designated routes in the vicinity of the site:

- to/from Junction 2 on the M2 motorway, in the north, via the Cherryhound Tyrellstown Link Road; or
- to/from the closest junctions on the M3 motorway and N3 national road, in the south, via Damastown Avenue (L3022).

Figure 4 – Construction traffic access to site
(map data imagery: OSM Contributors, Google)

4.0 CONSTRUCTION SITE SET-UP

Please refer to the Outline Construction and Environmental Management Plan submitted under separate cover with this planning application for details on construction site set-up.

5.0 WASTE MANAGEMENT ORGANISATION

5.1 Responsibility for Construction Phase Waste Management

A suitably competent and experienced representative of either the client or the lead contractor shall be nominated as Construction Waste Manager for the project. The function of the Waste Manager is to communicate effectively the aims and objectives of the Waste Management programme for the project to all relevant parties and contractors involved in the project, for the duration of construction works on site.

5.2 Responsibility for Operational Phase Waste Management

Upon completion of the development, its facilities management entity shall prepare an Operational Waste Control Strategy for the development, which shall detail specific operational arrangements.

5.3 Appointed Waste Contractor(s) and Disposal Locations

One or more C&D waste contractors shall be appointed by the principal construction contractor, prior to commencement of any site clearance and construction activity. Companies that specialise in C&D waste management will be contacted to determine their suitability for engagement.

Where waste contractor(s) are engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility COR/permits/licences are held. In addition, information regarding individual waste materials will be obtained where possible, including the feasibility of recycling each material, the costs of recycling/reclamation, the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.

The appointed C&D waste contractor(s) shall determine the most suitable licenced facilities to which C&D waste materials shall be transferred for recycling, recovery, or disposal.

6.0 CONSTRUCTION WASTE GENERATED BY THE PROPOSED DEVELOPMENT

6.1 Construction Waste Classification

Waste generated during construction at a typical site includes the following:

- Concrete, bricks, tiles, and cement
- Wood
- Glass
- Plastics
- Bituminous mixtures, coal tar, and tarred products
- Metals (including their alloys)
- Soil and stones
- Insulation materials (possibly including asbestos-containing materials)
- Gypsum-based construction material
- Materials containing mercury
- PCB-containing materials (e.g., sealants, resin-based floorings, capacitors, etc.)
- Waste electrical and electronic equipment
- Oil wastes and waste of liquid fuels
- Batteries and accumulators
- Packaging (paper/cardboard, plastic, wood, metal, glass, textile, etc.)

The EPA issued the European Waste Catalogue (EWC) in January 2002 and this system is used to classify all wastes and hazardous wastes according to a consistent EU-wide system. The EWC classification for typical waste materials to be expected to be generated during construction of the subject development is given in **Table 2** below.

Table 2 - European Waste Catalogue

Waste Material	EWC Code
Non-Hazardous	
Concrete, bricks, tiles, ceramics	17 01
Wood, glass and plastic	17 02
Bituminous mixtures, coal tar and tarred products	17 03
Metals (including their alloys)	17 04
Soil, stones and dredged spoil	17 05
Gypsum-based construction material	17 08
Hazardous	
Electrical and Electronic Components	16 02
Batteries	16 06
Wood Preservatives	03 02
Liquid Fuels	13 07
Soil and stones containing dangerous substances	17 05 03
Insulation materials containing asbestos	17 06 01
Other insulation materials consisting of or containing dangerous substances	17 06 03
Construction materials containing asbestos	17 06 05
Construction and demolition waste containing mercury	17 09 01
Construction and demolition waste containing PCBs	17 09 02
Other construction and demolition wastes containing dangerous substances	17 09 03

Table 3 shows the breakdown of construction waste types produced on a typical site, based on data from EPA National Waste Reports.

Table 3 – Composition of C&D Waste in Ireland - 2019

Waste Type	Proportion
Soil & Stones	84.8%
Concrete, Brick, Tile & Gypsum	6.9%
Bituminous Mixtures	1.3%
Metal	2.2%
Segregated Wood, Glass & Plastic	0.3%
Other Mixed C&D Waste	4.5%
Total	**100%**

Table 4 presents the EPA statistics on the final treatment methods of construction and demolition waste streams in Ireland for the year 2019.

Table 4 – Final Treatment of C&D Waste in Ireland - 2019

Waste Type	Final Treatment Proportion			
	Recycling	Energy Recovery	Backfilling	Disposal
Soil & Stones	0%	0%	91%	9%
Concrete, Brick, Tile & Gypsum	45%	0%	52%	2%
Bituminous Mixtures	64%	0%	36%	0%
Metal	100%	0%	0%	0%
Segregated Wood, Glass & Plastic	39%	54%	7%	0%
Other Mixed C&D Waste	13%	1%	60%	26%
Total	**6.8%**	**0.2%**	**84.0%**	**9.0%**

The development's predicted waste generation is given in **Table 5**. These estimated construction waste quantities are based on the total cumulative gross floor area of the 3no. proposed data storage facility buildings, which stands at 42,589m².

Table 5 – Predicted Waste Generation (excluding soil & stones)

Waste Type	Predicted Tonnage Produced	Recycling and Recovery		Backfilling or Disposal	
		Tonnage	%	Tonnage	%
Concrete, Brick, Tile & Gypsum	1170	527	45%	644	55%
Bituminous Mixtures	220	141	64%	79	36%
Metal	370	370	100%	0	0%
Segregated Wood, Glass, Plastic	50	47	93%	4	7%
Other Mixed C&D Waste	760	106	14%	654	86%
Total	**2,570**	**1,190**	**46.3%**	**1,380**	**53.7%**

Approximately 40,671m³ of excavated spoil material (soil and stones) will be generated in the course of the proposed development's construction, as a result of site reprofiling and localised excavation for road and building foundations. The nature of the site and the proposed development present

relatively little opportunity for the reuse or backfilling of this material onsite; it is estimated that approximately 5,046m³ of this shall be reused onsite as fill material. The remaining 35,625m³ (approx.) of this spoil shall require removal from site and disposal at a suitable licenced facility. The removal of this material is expected to require approx. 3,000 HGV trips to/from the site; this material transfer shall however be conducted throughout the site's development and therefore will not result in pronounced peaks in HGV traffic.

6.2 Construction Waste Management and Mitigation Measures

The following measures are proposed to ensure effective management of construction waste at the development site, to maximise recycling of construction waste, and to minimise the environmental impact of construction waste.

- On-site segregation of all waste materials into appropriate categories, including:
  - top-soil, sub-soil, bedrock;
  - concrete, bricks, tiles, ceramics, plasterboard;
  - asphalt, tar, and tar products;
  - metals;
  - dry recyclables (e.g. cardboard, plastic, timber).
- All waste material shall be stored in skips or other suitable receptacles in a designated waste storage area on the site.
- Wherever possible, left-over material (e.g. timber cut-offs) and any suitable demolition materials shall be reused on or off site.
- All waste leaving the site shall be transported by a suitably licensed/permitted contractor and taken to a licensed/permitted facility.

- All waste leaving the site shall be recorded and copies of relevant documentation retained.

These measures are intended to ensure that the waste arising from construction of the proposed development is dealt with in compliance with the provisions of the Waste Management Acts 1996 (as amended), the Litter Act of 1997 (as amended), and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021, achieving optimum levels of waste reduction, re-use and recycling.

6.3 Predicted Impacts of the Proposed Development

Waste materials shall be generated during the construction of the proposed development, including the initial site clearance and excavation. Careful management of these, including segregation at source, shall help to ensure maximum recycling, reuse and recovery is achieved, in accordance with current local and national waste targets. It is possible, however, that a certain amount of waste shall still need to be disposed of at landfill.

Given the provision of appropriate facilities, environmental impacts (e.g., litter, contamination of soil or water, etc.) arising from waste storage are expected to be minimal. Particular attention must be given to the appropriate management of any construction waste containing contaminated or hazardous materials. The use of suitably licensed waste contractors shall ensure compliance with relevant legal requirements and appropriate off-site management of waste.

In summary, with a high level of due diligence carried out at the site, it is envisaged that the environmental impact of the construction phase of the proposed development shall be of small scale and short duration, with respect to waste management.

6.4 Waste Management Options

6.4.1 Waste Management Options for Excavated Materials

The Waste Management Hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling/recovery, energy recovery (i.e., incineration) and, least favoured of all, disposal. Onsite excavation is required to facilitate the new construction works, so the preferred option (prevention and minimisation) cannot be pursued for the excavation phase.

The next option (beneficial reuse) may be appropriate for some of the excavated material, subject to environmental testing and classification of the material as hazardous or non-hazardous in accordance with the EPA Waste Classification. Clean material may be used as fill material in other construction projects or as engineering fill for waste licensed sites. Beneficial reuse of surplus material as engineering fill may be subject to further testing to determine whether materials meet the specific engineering standards for their proposed end use (e.g., in respect of sulphate content, pyrites, etc.).

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (as amended). Article 27 requires that certain conditions be met and that by-product decisions are communicated to the EPA via their online notification form.

Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27.

If the material is deemed to be a waste, then removal and reuse/recycling/recovery/disposal of the material will be carried out in accordance with:

- the Waste Management Acts 1996 (as amended),
- the Waste Management (Collection Permit) Regulations 2007 (as amended), and
- the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended).

The volume of waste to be removed will dictate whether a COR, permit or licence is required by the receiving facility. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

It is anticipated that soil and stone excavated at the site will be below the inert threshold for acceptance of waste at landfill, although environmental soil sampling during site investigation works will be required to confirm this. Inert non-hazardous soils would be suitable for acceptance at inert landfills in the region, but acceptance would be subject to the approval of the waste facility operator.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. This would require off-site treatment at a suitable facility or disposal abroad via the Transfrontier Shipment of Wastes (TFS).

6.4.2 Waste Management Options for other Construction & Demolition Wastes

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain waste types is not practical, off-site segregation will be carried out. Skips and

receptacles will be used to facilitate segregation at source as much as possible. All waste receptacles leaving site will be covered or enclosed. An appointed waste contractor will collect and transfer the waste off-site as receptacles are filled. There are numerous waste contractors in the Dublin Region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring reuse, recycling, recovery or disposal off-site will be transferred to a facility holding the appropriate COR, permit or licence, as required.

Written records will be maintained by the contractor detailing the waste arising during the construction phase, the classification of each waste type, the contact details and waste collection permit number of all waste contactors who collect waste from the site, and the end destination details for all waste removed and disposed of off-site.

Dedicated storage containers will be provided for hazardous wastes which may arise, such as batteries, paints, oils, chemicals etc., as required. The containers used for storing hazardous liquids will be appropriately bunded or will be stored on suitably sized spill pallets.

The management of the main waste streams from the construction phase is detailed as follows:

- Bedrock

  Site investigation results indicate that some bedrock will require excavation in localised areas of the site during construction works. This excavated material will be tested and its suitability for reuse on-site will be investigated. Where the material is deemed to be not suitable for on-site reuse or where there are no opportunities for reuse of excavated bedrock on-site, it will be removed off-site for appropriate reuse, recovery or disposal. If the rock is to be reused on another site as a by-product (and not as a waste), this

will need to be done so in accordance with Article 27 of the EC (Waste Directive) Regulations 2011.

- Concrete Blocks, Bricks, Tiles & Ceramics

  The majority of concrete blocks, bricks, tiles, and ceramics generated as part of the C&D works are expected to be clean, inert material and should be recycled where possible. Clean concrete can be crushed and reused as a sub base in road construction, subject to performance testing.

- Hard Plastic

  Hard plastic is a highly recyclable material, and all clean recyclable plastic will be segregated and removed from site for recycling, where possible.

- Timber

  Timber that is uncontaminated (i.e., free from paints, preservatives, glues, etc.) will be placed into a dedicated skip and recycled off-site. Clean timber is typically recycled as chipboard.

- Metals

  Metals will be segregated into mixed ferrous, stainless steel, copper, and cabling, etc. where practical and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

- Plasterboard

  There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the C&D phases will be segregated from other materials where possible and stored in a separate skip, pending collection for recycling.

- Glass

  Any glass materials from windows or other fixtures will be segregated for recycling, where possible.

- Waste Electric and Electronic Equipment (WEEE)
  WEEE will be stored in dedicated covered cages, receptacles or pallets pending collection for recycling off-site.
- Other Recyclables
  Where any other recyclable wastes such as cardboard and soft plastic are generated, these will be segregated at source into dedicated skips and removed off-site.
- Non-Recyclable Waste
  C&D waste which is not suitable for reuse or recycling, such as polystyrene, some plastics, and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team to determine whether recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.
- Other Hazardous Wastes
  On-site storage of any hazardous wastes produced (e.g., chemicals, oils, and/or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public, and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

It should be noted that a construction contractor has not yet been appointed and, until the contractor is in place, it is not possible to provide information on the preferred destinations of each waste stream. Prior to commencement of site clearance, excavation and

construction activities and removal of any waste off-site, details of the proposed end destination of each waste stream will be provided to FCC.

6.5 Tracking and Documentation Procedures for Off-Site Waste Transfer

All waste will be documented prior to leaving the site. Waste will be weighed by the waste contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the contractor.

All movement of waste and the use of waste contractors will be undertaken in accordance with the Waste Management Acts 1996 (as amended), Waste Management (Collection Permit) Regulations 2007 (as amended), and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project Waste Manager will maintain a copy of all waste collection permits on-site.

If waste is being transported to another site, a copy of the Local Authority COR, waste permit, or EPA Waste/IED Licence for that site will be provided to the nominated project Waste Manager. If the waste is being shipped abroad, a copy of the TFS document will be obtained from DCC (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (permits, licences, etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on site.

7.0 COST IMPACTS OF WASTE MANAGEMENT

An outline of the cost impacts associated with different aspects of waste management is provided below. The total cost of the management of the construction waste material will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs. These costs will be used to inform waste management for subsequent stages of the project.

7.1 Reuse

By salvaging material for reuse on site, there will be a reduction in the transport and off-site recycling/recovery/disposal costs associated with the requirement for a waste contractor to take the material away to landfill.

Clean and inert excavated material which cannot be reused on site may be used as capping material for landfill sites, or for the reinstatement of quarries, etc. This material is often taken free of charge for such purposes, reducing final waste disposal costs.

7.2 Recycling

Salvageable metals will earn a rebate which can be offset against the costs of collection and transportation of the skips. Clean uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will typically charge less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

7.3 Disposal

C&D waste materials not suited to reuse, recycling, or recovery shall generally be disposed of at landfill. This entails costs for both material transport and disposal, with no return or rebate. This therefore represents the

most costly option, providing an incentive to minimise the quantities of waste materials disposed of in this way.

8.0 TRAINING PROVISIONS

A Waste Manager shall be appointed to ensure commitment, operational efficiency and accountability during the excavation and construction phases of the project. The main contractor or project managers for the overall development should ensure that each contractor engaged throughout the project has a suitable person nominated as a point of contact for waste management.

8.1 Waste Manager Training and Responsibilities

The nominated Waste Manager will be given responsibility and authority to select a waste team if required (i.e., members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site). The Waste Manager will have overall responsibility to oversee, record, and provide feedback to the Project Manager on everyday waste management at the site associated with project works. Authority will be given to the Waste Manager to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers, and sub-contractors to prioritise waste prevention and material salvage.

The Waste Manager will be trained in how to set up and maintain a record keeping system, how to perform an audit, and how to establish targets for waste management on site. The Waste Manager will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site, and be knowledgeable in how to implement the provisions of this RWMP.

8.2 Site Crew Training

Training of the site crew is the responsibility of the Waste Manager and, as such, a site induction waste management brief will be organised. A basic

awareness course will be held for all site crew to outline the RWMP and to detail the segregation methods of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness, and manual handling.

This basic course shall describe the materials to be segregated, the storage methods, and the location of the waste storage areas. A sub-section on hazardous wastes shall be incorporated into the training programme, and the particular dangers of each hazardous waste type shall be explained.

9.0 RECORD KEEPING

Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling, recovery or disposal. A recording system will be put in place to record the C&D waste arisings on site. A copy of the Waste Collection Permits, CORs, Waste Facility Permits, and Waste/IED Licences will be maintained on site at all times.

The Waste Manager or delegate will record the following;

- Waste taken for reuse off-site
- Waste taken for recycling
- Waste taken for disposal

For each movement of waste off-site, a signed docket will be obtained by the Waste Manager from the waste contractor, detailing the weight and type of the material and the source and destination of the material. This will be carried out for each material type removed from site.

The system will allow the comparison of these figures with the targets established for the recovery, reuse and recycling of construction waste (as presented in **Table 5**, page 22) and to assess compliance with these targets.

10.0 OUTLINE WASTE AUDIT PROCEDURE

10.1 Responsibilities for Waste Audit

The appointed Waste Manager shall be responsible for auditing the site during the project.

10.2 Review of Record and Identification of Corrective Actions

A review of all the records for the waste generated and transported on or off-site should be undertaken mid-way through the project. If waste movements are not accounted for, the reasons for this should be established in order to see whether and/or why the record keeping system has not been maintained. The waste records will be compared with the established reuse/recovery/recycling/disposal targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved. Where appropriate, options for increasing segregation of bonded or integrated demolition materials will be explored.

Waste management costs will also be reviewed. Upon completion of the project, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total reuse, recycling, recovery and disposal figures for the project.

11.0 CONSULTATION WITH LOCAL AUTHORITY

Once the main contractor has been appointed and prior to removal of any waste materials off-site, details of the proposed destination of each waste stream will be provided to Fingal County Council (FCC) for their approval.

FCC will also be consulted, as required, throughout the excavation and construction phases in order to ensure that all available waste reduction, reuse, and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

16.0 CUMULATIVE EFFECTS

16.1 INTRODUCTION

This chapter of the EIA Report considers the likely cumulative effects on the environment of the Proposed Development with the existing, Permitted Developments and future indicative developments within the overall landholding and the cumulative effects with developments in the locality (including planned and Permitted Developments).

The cumulative effects are analysed in this chapter in accordance with the requirements of the EPA EIA Report Guidelines 2022. Cumulative effects are defined in the aforementioned Guidelines as "*the addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects*".

As described in Chapter 2 (Description of the Proposed Development), the Proposed Development will comprise three new data centres and associated ancillary development on the Subject Site. This chapter considers the potential cumulative effect of the Proposed Development (Buildings E, F and G) with the existing permitted data centre Building A, which is fully operational and Building D (a substation) which is constructed, the two permitted data centres to the east of the subject site (Buildings B and C) which are under construction and the indicative future development of one further datacentre on the northernmost portion of the subject site. It should be noted that the potential cumulative effect of the Proposed Development with the indicative future development, has been assessed to take account, as far as practically possible, of potential later phases of the masterplan.

Buildings B and C are currently being constructed on a phased based with Building B due to be completed in Q2 2024 and Building C due to be completed in Q2 2025. The proposed Buildings E, F and G will also be built on phased basis to meet customer demand. Building E is due to commence construction in Q2 2023, with completion in Q2 2024. Building F is due to commence construction in Q1 2024, with Building G due to commence construction in Q1 2025, subject to customer demand. Based on these target dates, three data centre buildings could be under construction concurrently. However, where up to three data centre buildings are under construction concurrently, due to the phased nature of the works, it is likely that one of the buildings would be at commissioning stage, another at the super-structure stage of construction whilst the other would be in the earlier stages of construction.

As detailed in Section 2.8 of Chapter 2, at the time of writing this EIA Report, the Operator is aware that a separate planning application has been made for the provision of a 220kV GIS substation on lands at Kilshane Road, Kilshane, Finglas and underground 220kV transmission line which will connect to a spare bay in the existing Cruiserath 220kV GIS substation (Building D) on the Proposed Development site. The application is a Strategic Infrastructure (SID) application made directly to ABP by others. This connection is not required for or related to the Proposed Development. As stated in Section 2.2.6, the power requirements for the existing, permitted and Proposed Development within the overall landholding will be provided from the existing GIS substation on the site and a connection agreement to supply the Proposed Development is already in place with EirGrid. This SID application is a separate undertaking by others, which is connecting into the spare bay in the existing GIS substation, in order to enable the continued strengthening and development of the transmission grid in the wider area. The SID will simply result in the Kilshane development being connected into the national transmission grid at Cruiserath, with the existing, permitted and Proposed Developments on the overall landholding continuing to take power from the grid. Nonetheless, it is anticipated that the construction

of the future Kilshane transmission line in the vicinity of and on the Proposed Development site, will temporarily overlap with the construction of the permitted and Proposed Developments on the site. As such, the cumulative effects of the construction phase of these projects have been considered in this chapter, in as far as is practically possible, having regard to information available on the planned SID application. There will be no cumulative environmental effects during the operational phase of the transmission line (i.e. once the ducting is installed and the ground re-instated) and therefore no cumulative effects with the Proposed Development.

The potential cumulative effects are considered in Sections 16.2 – 16.12 below. For each environmental aspect considered, the cumulative impact assessed is for the Proposed Development (as described in Chapter 2) and for notable (large scale or significant environmental emissions) planned and Permitted Developments as described above. A full listing of notable developments are included in Chapter 3 Appendix 3.1 .

16.2 POPULATION AND HUMAN HEALTH

The likely cumulative effect of the Proposed Development in conjunction with existing, planned and Permitted Developments on population and human health is assessed in a number of chapters within the EIAR by considering cumulative noise (Chapter 8 Noise and Vibration), air quality (including dust generation) (Chapter 9: Air Quality and Climate), construction traffic (Chapter 13 Traffic), visual effects (Chapter 11 Landscape and Visual Impacts), These cumulative effects are discussed within this chapter under the relevant chapter heading.

Construction

There is a cumulative ***short term***, ***slight, positive*** impact on local business activity during the construction phase due to the increased presence of up to 400 no. construction workers for the Proposed Development along with employment on other planned and Permitted Developments using local facilities. The cumulative development will have indirect positive effects on the local economy and employment in terms of construction material manufacture, maintenance contracts, equipment supply and landscaping etc.

The companies involved in the construction of the Permitted Developments within the Masterplan have engaged with the community and provided funding to local clubs and organisations which has long term positive effects on local community. This initiative will be continued for the Proposed Development if granted permission.

Operation

During operation, the cumulative development will result in an ***imperceptible, positive*** impact as a result of increased employment opportunities (c. 104 for the Proposed Development alone) in the North Blanchardstown area.

16.3 LAND, SOILS, GEOLOGY HYDROGEOLOGY AND HYDROLOGY

Construction

Contractors for the Proposed Development and future development will be contractually required to operate in compliance with a Construction Environmental Management Plan (CEMP), in the same way as is on going for the Permitted Development which is under construction. The outline CEMP (provided with planning documentation) requires no discharges to soil, ground which exceed European Communities Environmental

Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016) or discharge to surface water which exceed (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019). Other developments outside of the Permitted Development, Proposed Development and future indicative development on the overall site will also have to incorporate similar measures to protect soil and water quality in compliance with legislative standards for receiving water quality. As a result, the cumulative potential for change in soil quality or the natural groundwater regime is considered to be ***neutral and imperceptible.***

Operation

During operation, all developments are required to manage groundwater and surface water discharges in accordance with European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016) and (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019). As such, there will be no cumulative impact to water quality.

Overall, there will be an increase in hard stand area as a result of cumulative development. However, as the area where recharge to ground is reduced as a result of development is small compared to the overall bedrock aquifer (c. 1,309 km^2 in size), there will be no perceptible cumulative impact on the underlying aquifer resource or groundwater flow regime .

The operation of the Proposed Development is concluded to have a ***long-term, imperceptible significance with a neutral impact*** on soil and water quality.

16.4 BIODIVERSITY

The Permitted Development (as outlined in Table 4 of Appendix 8.1 *Report for the purposes of Appropriate Assessment Screening)* have been granted with conditions relating to sustainable development by the consenting authority, in compliance with the relevant Local Authority Development Plan and in compliance with the Local Authority requirement with regard to the Habitats Directive. The Proposed Development will also be required to meet the Requirements of the Habitats Directive.

Construction

During construction, of the Proposed Development and Permitted Development, there will **short term, negative, not significant** cumulative impact on local biodiversity due to the loss of existing vegetation (as any remaining greenfield is turned into hardstand as required for development). As there is no source-pathway-receptor linkage, there will be no cumulative impact on any European sites (refer to Chapter 8 and AA screening).

Operation

Once operational, the Proposed Development and Permitted Development are required to implement a landscape strategy in line with the requirements of the Local Authority Development Plan. This will enhance and strengthen the existing native floral species, while retaining existing trees where feasible.

With the employment of appropriate landscaping, the cumulative impact is considered to be ***neutral, imperceptible*** and ***long-term effect*** on biodiversity.

16.5 AIR QUALITY AND CLIMATE

The cumulative air quality assessment was undertaken in order to quantify the impact of the Proposed Development (Building E, Building F and Building G), Permitted Developments (Building A, Building B and Building C) and the existing baseline level of pollutants on ambient air quality concentrations. The assessment also included NO_2 emissions from the licenced emission points at the IE licenced facilities of Bristol Myers Squibb (BMS) (IE Licence No. P0552-03) and Alexion Pharma International (IE Licence No. P1030-01). BMS is directly adjacent to the east of the Proposed Development site and Alexion is located approximately 50m to the south-east of the Proposed Development. As both the BMS and Alexion facilities are within 1km of the Proposed Development and also have emissions of NO_2 there is the potential for cumulative impact in relation to air emissions therefore they have been included within the modelling assessment. In addition to the assessment of the Proposed Development and the existing Permitted Developments and neighbouring BMS and Alexion facilities, a further cumulative scenario has been modelled to assess the combined impact from the Proposed Development and the back-up diesel generators associated with a potential future data centre building to the north of Building G.

In relation to the climate cumulative impact, the IEMA guidance (2022) states that when considering the cumulative assessment, all global cumulative GHG sources are relevant to the effect on climate change. As a result, the effects of GHG emissions from specific cumulative projects therefore in general should not be individually assessed. This is due to the fact that there is no basis for selecting any particular (or more than one) cumulative project that has GHG emissions for assessment over any other. Cumulative effects of the Proposed Development and Permitted Developments on site (Building A, B, C and Building D) in addition to the potential indicative future development on the wider site have been considered as part of this assessment.

Construction Phase

Air Quality

According to the IAQM guidance (2014), should the construction phase of the Proposed Development coincide with the construction phase of any other large scale Permitted Developments within 350m of the site then there is the potential for cumulative construction dust emissions impacting nearby receptors. A review of recently Permitted Developments was conducted as part of this assessment (See Chapter 3) and any large scale developments with the potential for overlapping construction phases were identified, specifically the Permitted Developments on the wider site (Buildings, A, B, C and Building D) and indicative future development located to the north of the Proposed Building F and Kilshane grid connection project (ABP SID Ref VC06F.313090 and FW22A/0204 Kilshane Energy) (see Chapter 3).

Based on the phased approach employed for construction at the site (as per Chapter 2), and the implementation of dust management measures as outlined in the CEMP and Section 9.6.1 of Chapter 9, there is minimal potential for cumulative impact on air quality from simultaneous construction of the nearby Permitted Developments, the proposed Kilshane grid connection project (ABP SID Ref VC06F.313090 and FW22A/0204 Kilshane Energy) and the indicative future development with the Proposed Development.

Best practice mitigation measures (as per Section 9.6.1 of Chapter 9) will be implemented for the construction phase of the Proposed Development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The