Response to Request for Further Information

PA.Reg.Ref.SD22A/0460

Unit 1, M50 Business Park

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to be 'open for consideration'. This means, that both the existing warehouse use and data repository could be granted permission provided that these do not detract from the zoning objective which is *'to provide for enterprise and employment related uses'*.

In the event that the development is considered to be space extensive, responses to EDE7 Objectives 2 and 3 are provided in the table below.

Policy Objective	Applicant Response
EDE7 Objective 2: To require that space extensive enterprise demonstrates the following:	
The appropriateness of the site for the proposed use having regard to EDE7 Objective 1;	Section 2.2.2 of this report addresses the appropriateness and shows that the development would not be located adjacent to high frequency or high capacity public transport and will not give rise to environmental impacts. If the Council is minded to consider the proposed development as a data centre, which is open for consideration under the EE zoning objective, then it is considered that the applicants have provided ample information as part of the initial application stage, specifically in the Environmental Impact Assessment Screening report by AWN and the Planning Report by MacCabe Durney Barnes and of this response to further information, specifically under section 2.2.2 above, to demonstrate that it does not detract from the EE zoning objective which is *'to provide for enterprise and employment related uses'* and it does not compromise labour intensive opportunities on zoned lands adjacent to public transport.
Strong energy efficiency measures to reduce their carbon footprint in support of national targets towards a net zero carbon economy, including renewable energy generation	Energy efficiency measures are outlined in the Energy Statement and summarized below: The building will achieve a Building Energy Rating (BER) of A3 or higher in compliance with the Building Regulations and Technical Guidance Document (TGD) Part L and nZEB "Nearly Zero – Energy Buildings" requirements. The office areas will utilise high efficiency variable refrigerant flow (VRF) Air Conditioning. Roof mounted PV Panels will generate on site renewable electricity and reduce overall power demand on the grid. The electricity distribution system proposed for the site supplies all electrical rooms where stepdown transformers are deployed to provide 415V electricity to all loads. This distribution system is chosen as it represents the safest, most efficient and most economical method for site wide electricity distribution. External and internal lighting utilise low energy LED luminaires, combined with presence detection controls and daylight detection to minimize hours of operation and thus keep energy usage to a minimum. Section 3 of the Energy Statement describes the mechanical design elements. The proposed cooling system allows for compressor-less cooling for the majority of the year with compressor assistance occasionally

Policy Objective	Applicant Response
	required to cater for periods of higher temperatures. The mechanical system has various modes of operation to provide efficient and reliable cooling. The mechanical system is monitored and controlled by an electronic control system which responds to reduce fan speeds and pump speed to maintain the operating point at the minimum necessary to meet environmental conditions. Significant power savings are achievable with this design. For example, a reduction in fan speed of 20%, reduces the power consumed by the fan by 50%, while a reduction in fan speed of 50%, reduces the power consumed by the fan by 87.5%. High efficiency direct drive fans which facilitate demand control are lighter in weight and typically require 10-20% less power than a traditional centrifugal fans.
Maximise on site renewable energy generation to ensure as far as possible 100% powered by renewable energy, where on site demand cannot be met in this way, provide evidence of engagement with power purchase agreements in Ireland (PPA)	At the outset, it should be noted that a PV solar array of 22kWP will be installed on the roof of the premises. The Energy Statement submitted as part of the original application states that it will power lighting as appropriate, the office area general services and office IT equipment. As stated in the Planning report submitted with the initial planning application, the urban context of the proposed development makes the location inappropriate for large scale renewable generation (e.g. windfarms) on site. However, the proposed development, as well as AWS's wider operations in Ireland, is consistent with this policy objective. AWS was the first organisation in Ireland to sign unsubsidised Corporate Power Purchase Agreements (CPPAs)[1]. AWS has committed to offtake 100% of the power from its renewable energy projects in the country without relying on additional public funding (e.g. the Public Service Obligation (PSO)). As set out in the Planning Report, "Amazon has committed to offtake 100% of the power from renewable wind projects in Cork, Donegal, and Galway. Amazon does not own these projects, but their commitment to purchasing the power and environmental attributes from these projects enable them to be built. In total, these three wind projects are projected to add 229 megawatts of renewable energy to the Irish grid, reducing carbon emissions by 366,000 tonnes of CO2 each year, and producing enough renewable energy to power 185,000 Irish homes, per annum. These three wind projects make Amazon the largest single corporate buyer of renewable energy in the country. "

[1] Amazon's first operational wind farm in Ireland delivers clean energy to the grid: https://www.aboutamazon.eu/news/amazon-web-services/amazons-first-operational-wind-farm-in-ireland-delivers-clean-energy-to-the-grid#:~:text=Amazon%20is%20the%20first%20company,on%20other%20local%20energy%20users.

Policy Objective	Applicant Response
Sufficient capacity within the relevant water, wastewater and electricity network to accommodate the use proposed	In relation to the water connection, Irish Water have stated the development is feasible without upgrade from Irish Water. The Confirmation of Feasibility (Appendix H of the Engineering Services Report) was submitted with the initial application. A connection agreement from the ESB was also secured. For further details please see Appendix I of this report.
Measures to support the just transition to a circular economy	The proposed development reuses the existing warehouse structure, ground bearing floor slabs and foundations. Reuse is the second pillar of the reduce, reuse, recycle pillars at the core of the Circular Economy. A "Resource & Waste Management Plan" was submitted with the planning application documents as Appendix E of the EIA Screening Report. This plan provides the information necessary to ensure that the management of Construction & Demolition (C&D) waste at the site is undertaken in accordance with the current legal and industry standards including the Waste Management Act 1996 as amended and associated Regulations, Environmental Protection Agency Act 1992 as amended, Litter Pollution Act 1997 as amended and the Eastern-Midlands Region Waste Management Plan 2015 – 2021. In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible.
Measures to facilitate district heating or heat networks where excess heat is produced;	The development is not of a scale that it would produce sufficient excess heat to be suitable for district heating. The peak power consumption of the proposed development is 1300kW (1.3MW). It will produce between 25kW and 170kW of recoverable heat. This is approximately equal to the heating load for between 1 and 8 domestic households. There is currently no district heating network in the Ballymount area. We would not expect this to be a viable option for a third party energy provider to develop, due to low heat availability from the proposed development.
A high-quality design approach to buildings which reduces the massing and visual impact;	Please refer to the Landscape and Visual Impact Assessment which was submitted with the initial application. We note that the Planning Authority has not considered that the development would give rise to landscape and visual impacts as part of their assessment of the initial application.
A comprehensive understanding of employment once operational;	The data repository facility will be co-located with an office comprising open plan workstations, individual offices and meeting rooms with capacity for 22 full time employees. Once operational the proposed development comprising the office and warehouse spaces will have capacity for a total of 24 full time employees.

Policy Objective	Applicant Response
A comprehensive understanding of levels of traffic to and from the site at construction and operation stage;	Please refer to section 5.8 Traffic and Transportation of the Environmental Impact Assessment Screening Report for a Proposed Data Repository Facility, Unit 1 M50 Business Park, Ballymount Avenue, Dublin 12 prepared by AWN submitted as part of the initial application.
Provide evidence of sign up to the Climate Neutral Data Centre Pact.	We refer to section 5.1 of the Planning Report: The operator, AWS, is a founding member and signatory of the Climate Neutral Data Centre Pact. The Pact was launched in January 2021. It now includes 78 companies and 22 associations committed to ensuring the design and operation of data centres across Europe meet ambitious sustainability criteria. The Climate Neutral Data Centre Pact establishes a Self-Regulatory Initiative which has been developed in co-operation with the European Commission. It supports the European Green Deal, which aims to make Europe the world's first climate neutral continent by 2050. The Self-Regulatory Initiative sets ambitious goals that will facilitate Europe's essential transition to a greener economy. It commits signatories to ensuring their data centres are climate neutral by setting ambitious measurable targets for 2025 and 2030 in the following areas: • Prove energy efficiency with measurable targets; • Purchase 100% carbon-free energy; • Prioritise water conservation; • Reuse and repair servers; • Look for ways to recycle heat. The Climate Neutral Data Centre can be viewed here: https://www.climateneutraldatacentre.net/signatories/
EDE7 Objective 3: To ensure that landscaping and site layout in space extensive developments provides for demonstrated biodiversity measures and that landscape and biodiversity measures integrate into the green infrastructure network, in accordance with the Green Infrastructure Strategy set out in Chapter 4 of this Plan.	
	Please refer to the landscape submission that accompanied the initial application. Further details on green infrastructure and biodiversity are provided in the landscape rationale provided in response to item 4.1 in section 5.2 of this report.

3. ITEM 2

3.1 FI Request – Government Statement on the Role of Data Centres

The Planning Authority notes that the Government published a statement titled "Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy -July 2022". The document sets out that while fully acknowledging the vital role Data Centres play in the modern economy, in the short term, there is only limited capacity for further data centre development, as the key state bodies, regulators and the electricity sector work to upgrade our infrastructure, connect more renewable energy and ensure security of supply. The proposed is a change of use from warehouse to data repository facility indicated that the applicants have a signed connection agreement from a utility provider. The applicant is requested to submit details of the agreement to the Planning Authority to confirm the assumed energy consumption associated with the development.

3.2 Applicant's Response

The site is located adjacent to an existing ESB Network (ESBN) substation, constructed under Planning Register Reference P.A.Reg.Ref.S96A/0491. This substation and the existing distribution network in the area have sufficient capacity to accommodate the proposed development and no infrastructure upgrades are required by ESBN. An extension is required to the customer side of the substation to meet the Applicant's operational requirements and this will not affect the existing ESBN substation.

ESBN are licensed to build, operate, maintain and develop the electricity network in the Republic of Ireland. ESBN are the Distribution System Operator (DSO) and are the designated authority responsible for the operation of the Distribution network. ESBN were granted the Distribution System Operator Licence by the Commission for the Regulation of Utilities (CRU). The CRU is Ireland's independent energy & water regulator with a range of economic, customer and safety functions.

The DSO License (DOC-291111-BJK), sets out that ESBN, as the Licensee shall:

> Part 1 Terms of the Licence:
> *2 (b) operate and ensure the maintenance of and develop, as necessary, a safe, secure, reliable, economical and efficient electricity Distribution System, taking into account exchanges with other interconnected systems, with a view to ensuring that all reasonable demands for electricity are met and having due regard for the environment;* (emphasis added)

In order to validate project viability, at due diligence stage the Applicant submitted an application for connection to EBSN on 13th July 2021 - prior to the design stage for the project commencing. ESBN confirmed capacity was available for the proposed project and a connection agreement for the proposed development was executed on 06-Apr-2022. Connection agreements are commercially confidential however as part of this FI response, we attach a redacted extract from the connection agreement between ESBN and Amazon Data Services Ireland Ltd. (ADSIL), the operator, which confirms there is a connection agreement in place for the site.

The total peak power consumption is given in the planning application documents. As stated in Section 3.7 of the Planning Report, *"There is an existing connection agreement in place with ESB to supply power for the proposed development, which has a total peak power demand of 1.3 MW."* As the connection agreement was sought prior to the design stage commencing, the connection agreement provides more than the 1.3MW required by the

design. Subject to a grant of permission, the applicant intends to negotiate a reduction in power (0.4MW) provided by the agreement to match the design requirements – freeing up capacity on the distribution system, reducing system use charges and making capacity available for other distribution system users/applicants. Grid capacity is available as confirmed by the DSO and the applicant will offer back unused capacity to alleviate constraints which fully aligns with the sixth principle of the Governments Statement on Data Centres which notes the Government's preference *"for data centre developments that make efficient use of our electricity grid, using available capacity and alleviating constraints."*.

It should be noted that the peak power demand figure (1.3MW) is the maximum theoretical power demand of the proposed development. The maximum theoretical power draw assumes all IT systems, supporting electrical & mechanical system along with office accommodation are operating at 100% power load on the hottest day of the year. This is a conservative maximum power demand figure and the building will draw less power for the majority of the year. Annual power consumption depends on factors such as business demand and weather conditions.

4. ITEM 3

4.1 FI Request – Tape Media Storage

A significant amount of plant is indicated to serve the data repository facility. The applicant is requested to provide detailed plans, elevations and sectional drawings outlining the following:

(i) design details what this plant tape media storage space would consist of and

(ii) exactly how the tape media would be stored.

(iii) What is the potential energy consumption associated with the storage used.

4.2 Applicant's Response

The plant proposed as part of the development is illustrated on the drawing No. J2139-KTA-22-XX-DR-A-2003 – Proposed site plan submitted as part of the initial application. In response to the specific items above, please see below.

(i) Design details of what this plant tape media storage space would consist of

The proposed Data Repository Facility will be used to house tape media which is used as a medium for storage of customer data. A common form of tape media which is familiar to most people is cassette tapes, although the tape media technology to be utilised in the proposed Data Repository Facility is more advanced. The tape media is stored and organized inside one of two tape storage libraries within the building. The tape libraries are fully enclosed within the building, location annotated as "Tape Media Storage" on the proposed ground floor plan (Drawing No. J2139-KTA-22-XX-DR-A-2004).

The plans and elevations submitted as part of the initial application to South Dublin were prepared in accordance with the Planning and Development Regulations 2001, as amended, specifically in accordance with article 23(1). The application, when it was made, was deemed valid by the Planning Authority as it had duly complied with the regulations, meaning the drawings, the details presented and the scale, were acceptable. The applicants are of the view that any outstanding queries relating to what *'tape media storage space would consist and... exactly how the tape media would be stored'* are adequately described in the suite of documents submitted as part of the initial application, namely the architectural drawings, planning report and energy statement and as supplemented by the suite of documents submitted as part of this Further Information response, specifically this further information report. This Further Information Report greater clarity on what tape storage consists of..

(ii) How would the tape media be stored?

The tape media drives are stored in racks which have a similar appearance to server racks. A generic image of a server rack is shown in figure 1 below. The racks are arranged in rows or aisles within the tape media libraries to allow for circulation of personnel and fire escape routes. To prevent degradation of the tape media, the

temperature and humidity conditions inside the tape libraries are controlled and maintained by mechanical and electrical plant.

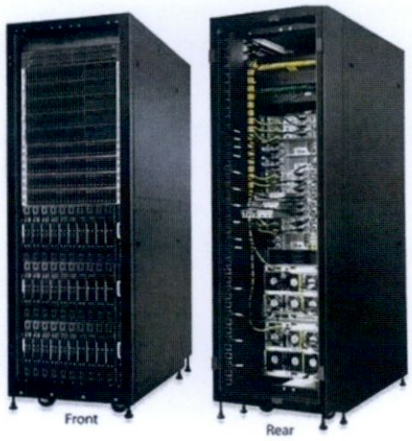

Figure 1: Typical Server Rack

As can be seen from the documentation submitted at initial application, the proposed development is supported by three areas of external plant – refer to Drawing J2139-KTA-22-XX-DR-A-6518 RevP1 submitted with the application, which includes:

- Condenser units,
- Emergency back-up generator,
- Sprinkler tank and pumphouse
- Transformer.

(iii) Power Consumption associated with tape media storage

Tape media will be utilized in the proposed Data Repository Facility to store customer data. This method of data storage is specifically for data archiving of information, and retrieval by customers is typically occasional. This form of data storage consumes significantly less power than a typical data centre which stores data on Servers and hard disk drives (HDDs). It therefore follows that using tape storage can play a role in reducing the CO2 emissions associated with data storage. "IDC estimates that globally, migrating more archival and cold data from HDDs to tape can reduce CO2 emissions by 43.7%, or 664 million tons, by 2030"[2]. A research paper commissioned by Fuijifilm & IBM titled "Improving Information Technology Sustainability with Modern Tape Storage.[3]" compared storage on HDD's to an all tape solution and an active archive that moved 60% of the HDD resident data to tape. In moving to tape, carbon emissions were reduced by 57% and electronic waste was reduced by 48%. In addition, if all the data was archival/cold and is transferred to tape, carbon emissions are reduced by 95%.

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[2] Tape Storage Council Report: Market Outlook 2022. Accessible here: https://tapestorage.org/wp-content/uploads/Tape-Storage-Council-Market-Outlook-2022_Final.pdf

[3] Accessible here: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiR8N_mnaT-AhXMWMAKHVOaBRYQFnoECBYQAQ&url=https%3A%2F%2Fasset.fujifilm.com%2Fwww%2Fsg%2Ffiles%2F2021-09%2Fd9c014a35ae86bdc41d78abf6e693bb1%2FImproving_IT_Sustainability_with_Tape_BJC.pdf&usg=AOvVaw29klLkh_jXiJPKUlpQTWYk

As stated in Section 3.7 of the Planning Report submitted with the planning application for the proposed development, "There is an existing connection agreement in place with ESB to supply power for the proposed development, which has a total peak power demand of 1.3 MW." It should be noted that the peak power demand figure (1.3MW) is the maximum theoretical power demand of the proposed development. The maximum theoretical power draw assumes all IT systems, supporting electrical & mechanical system along with office accommodation are operating at 100% power load on the hottest day of the year. This is a conservative maximum power demand figure and the building will draw less power for the majority of the year. Annual power consumption depends on factors such as business demand and weather conditions.

5. ITEM 4

5.1 FI Request: Item 4.1 – Landscape Design Proposals

There are concerns with the lack of information submitted in relation to the landscape scheme for the proposed development. The applicant is requested to provide detailed landscape design for the proposed development including Landscape Design Statement/Rationale and detailed GI Plan. The applicant shall provide a fully detailed landscape plan with full works specification, that accords with the specifications and requirements of the Council's Public Realm Section. The applicant shall provide the following additional information:

i. The applicant shall submit a comprehensive Landscape Design Rationale, the objective of this report is to describe the proposed landscape and external works as part of this proposed housing development.

ii. The applicant is requested to submit a fully detailed Planting Plan to accompany the landscape proposals for the entire development. The applicant should propose native species where possible to encourage biodiversity and support pollinators within the landscape.

iii. The landscape Plan shall include hard and soft landscape details; including levels, sections and elevations, detailed design of SUDs features including swales and integrated/bio-retention tree pits.

iv. Significantly reduce the impacts of the development on existing green infrastructure within and adjacent to the proposed development site

v. Demonstrate how natural SUDS features can be incorporated into the design of the proposed Development.

vi. Submit green infrastructure proposals and a green infrastructure plan that will mitigate and compensate for the impact of the proposed development on this existing site and show connections to the wider GI Network. These proposals should include additional landscaping, SUDS measures (such as permeable paving, green roofs, filtration planting, above ground attenuation ponds etc) and planting for carbon sequestration and pollination to support the local Bat population.

5.2 Applicant's Response

Items covering landscape and green infrastructure have been addressed by Macroworks.

5.2.1 Response to Landscape RFI Item 4.1 (i)

A comprehensive design rational is included in appendix 2 – Landscape design rationale & landscape specification, management and maintenance schedule.

5.2.2 Response to Landscape RFI Item 4.1 (ii)

As per the landscape drawing J2139-MAC-22-XX-DR-L-0001 submitted as part of the initial application, it is proposed to plant a mix of native tree and native understorey planting along the existing tree line along the north/northwest boundary of the site. All included planting is to be native species and has been selected in line with the All Ireland Pollinator Plan. The proposed tree planting will be provided in the form of Heavy Standards (12-14cm girth), whilst the native understorey planting are to be provided as feathered whips – see Table 1 below. All planting and locations of planting is to be confirmed on-site with the project landscape architect.

Table 1: Proposed Planting

Plant Name	Height	Girth	Root	Density	Flowers (All Ireland Pollinator Plan)
Trees					
Sorbus acuparia	3-4m	12-14cm	RB	1.5m centres	White flowers May-June
Betula pendula	3-4m	12-14cm	RB	1.5m centres	-
Prunus avium	3-4m	12-14cm	RB	1.5m centres	White flowers April
Understory Planting					
Corylus avellana	90-120cm	-	-	750-900mm centres	Flowers Feb-April
Ilex aquifolium	90-120cm	-	-	750-900mm centres	Flowers Sept-Nov
Crataegus monogyna	90-120cm	-	-	750-900mm centres	White flowers May-June

5.2.3 Response to Landscape RFI Item 4.1 (iii)

Refer to drawing J2139-MAC-22-XX-DR-L-0002 for section drawings.

5.2.4 Response to Landscape RFI Item 4.1 (iv & vi) & 4.4

The landscaping proposals aim to retain as much of the existing landscape structure of the site as possible, whilst also maximising any opportunities for enhancing the local biodiversity. As part of the updated landscaping proposals, it is proposed to retain some of the existing trees along the north/north-western boundary of the site that had been previously identified as for removal. Furthermore, this area of planting, which forms part of one of the principal green corridors through the site and surrounding landscape, will be enhanced as necessary and where possible with additional native tree and understorey plantings, further bolstering the network of green infrastructure within the site and surrounding landscape (see figure 1 below). Furthermore, existing areas of shrub plantings and grassed areas will be retained along the western, southern and eastern site boundaries. It is also proposed to include drifts of pollinator friendly native wild flower seed mix throughout some of the existing grassed areas within the site.

As part of the proposed landscaping measures it is also proposed to include additional tree planting on the roadside verge to fill any existing gaps that are present. These are to be agreed with SDCC Parks Departments and will be chosen with regard SDCC 'Living With Trees' document.

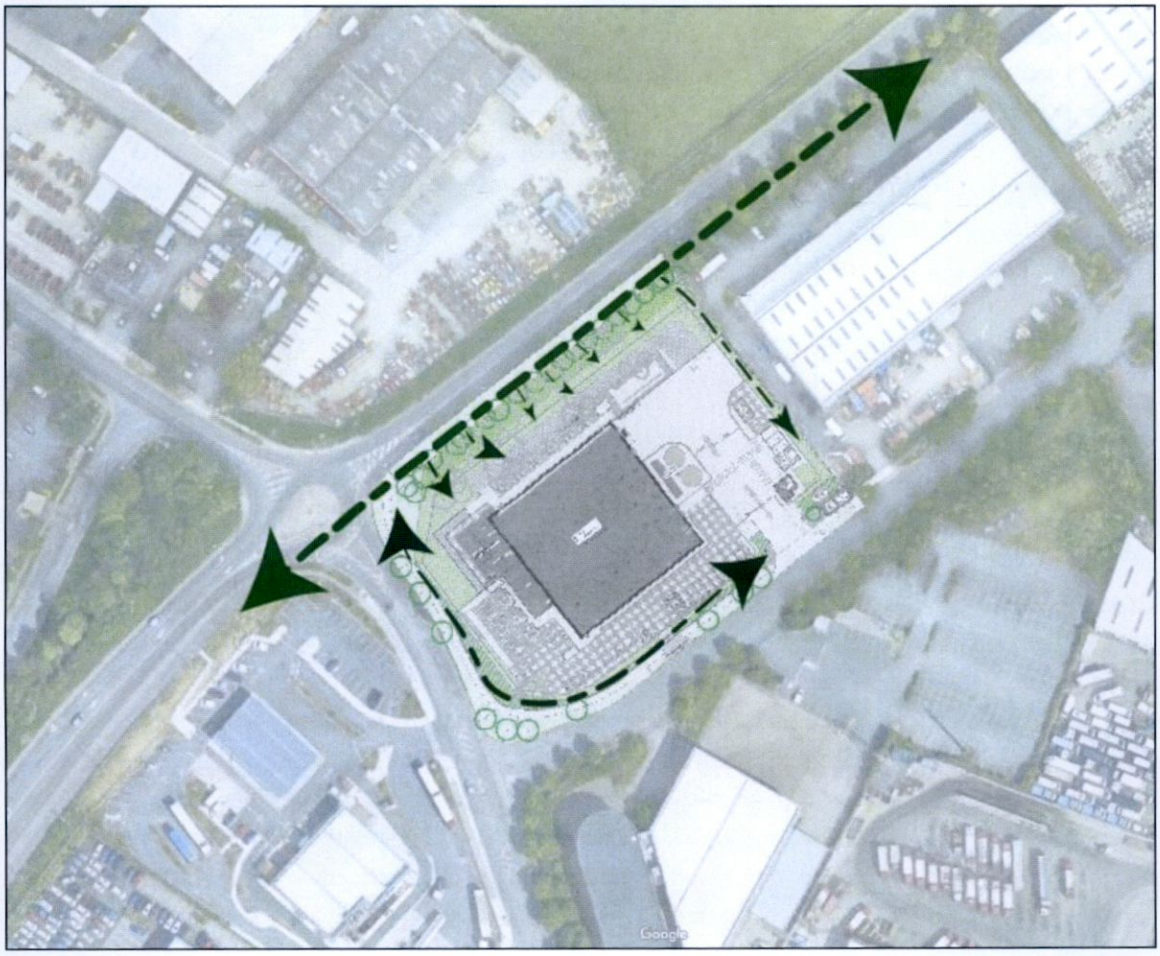

Figure 2: Retention and enhancement of green infrastructure line within and surround the site.

As noted in the current SDCC CDP, the EU defines Green Infrastructure (GI) as:

> *"a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation"*

In terms of green infrastructure interventions within the proposed development site, up to 43.6% of the site areas will be retained/utilised for green infrastructure measures (see figure 2 below). This can be broken down in to the following areas:

- 25.48% - Green Infrastructure Measures 1 – Retention of areas of existing vegetation, bolstering and enhancement of planted areas with additional native pollinator friendly stock, retention of grassed areas and seeding of drifts of native pollinator friendly wild grass seeding of local provenance.
- 18.14% - Green Infrastructure Measures 2 – Permeable Green Infrastructure: Permeable paving in car parking areas and at surrounding building access.

As part of the current County Development Plans Chapter 5 – Green Infrastructure, Policy GI5 Objective 4 states; *"To implement the Green Space Factor (GSF) for all qualifying development comprising 2 or more residential units and any development with a floor area in excess of 500 sq m. Developers will be required to demonstrate how they*

can achieve a minimum Green Space Factor (GSF) scoring requirement based on best international standards and the unique features of the County's GI network. Compliance will be demonstrated through the submission of a Green Space Factor (GSF) Worksheet (see Chapter 12: Implementation and Monitoring, Section 12.4.2)."

In this instance, the site's zoning (EE) requires a GSF of 0.5. The proposed development has achieved a score of 0.34 (see figure 3 below). Nevertheless, it is not considered that the GSF is entirely appropriate for this development type, as the current green space factor guidance note refers to "New residential and commercial development". In this instance, the proposed development represents the retrofit of an existing commercial/industrial development. Indeed, as noted above, despite the slight intensification of development on this site, over 43% of the site is utilised for green infrastructure measures.

Furthermore, the highest rating factors in the GSF tool relate to enhancement of rivers and water bodies. There are no watercourses or open bodies of water on the site, which puts the proposed development at a major disadvantage in achieving the score outlined for the EE zoning. As a theoretical exercise, a calculation has been undertaken in which all trees within the site were retained, the remaining green areas of the site were planted with trees and underplanted with understorey species, and the areas of permeable paving were also included. This theoretical calculation achieved a final GI score of 0.47, which is still considered a 'fail' for this land use zoning. It should be noted that this theoretical example is not compatible with the existing or proposed development and would preclude the site from any useful operation. This exercise was only done to assess the feasibility of achieving a GSF of 0.5 in practice for the site. It is considered near impossible to achieve the target set out based on the current site context, which comprises an existing development. It is submitted that the achieved GSF score of 0.34 is a positive result for the proposed development and every effort has been made to retain as much of the existing landscape structure of the site as possible, whilst also maximising any opportunities for enhancing the local biodiversity.

It is also worth noting that a proposed development in a similar context along Calmount Road (planning ref: SD22A/0099) failed to meet the GSF for the same land use zoning. The permitted site represented a green field site with little in the way of existing constraints (i.e. existing development), whereas the proposed development is relatively constrained in terms of space. Indeed, despite the proposed developments' site constraints, a higher GSF score was achieved for the proposed development. As noted in the landscape architect report (CFI) for the permitted development, "a target for green cover on any site of c.30% would be a reasonable aim in line with emerging norms across Europe". It is worth reiterating that the proposed development achieves over 43% of the site utilised for green infrastructure, well above European emerging norms.

Thus, whilst the proposed development does not meet the GSF for this land use zoning, it is considered to be in line with a large majority of the most relevant GI policies and objectives outlined in the current County Development Plan.

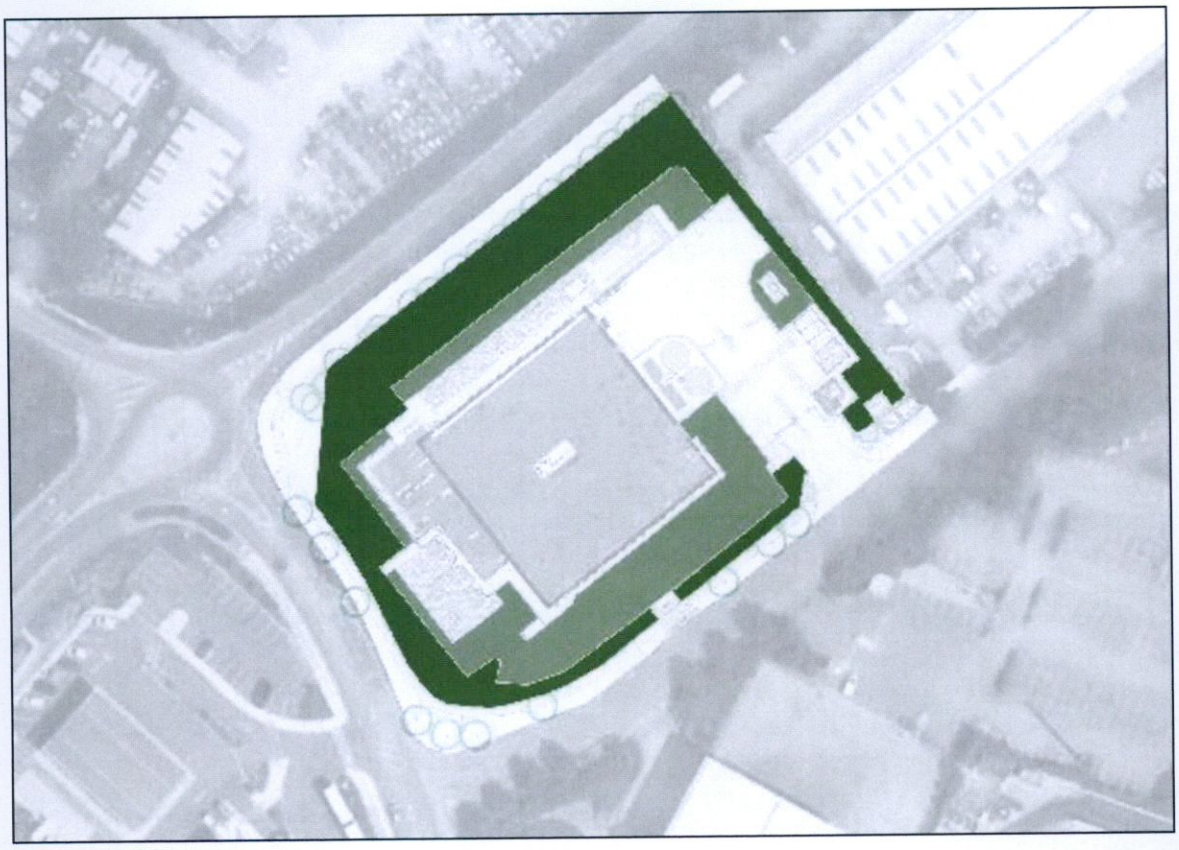

Figure 3: Areas of the site included for Green Infrastructure measures (Dark Green = Retention of existing vegetation and grassland, bolstering/enhancement of existing vegetation, Light Green = Permeable Paving)

The table below presents the design response to relevant Green Infrastructure Policies outlined in the current South Dublin County Development Plan in Chapter 5 – Green Infrastructure.

Table 2: SDCC County Development Plan – Chapter 5 Green Infrastructure Policies and design response

South Dublin County Development Plan - Chapter 8: Green Infrastructure, Policies & Objectives	Design Response
GI1 Overarching: Protect, enhance and further develop a multifunctional GI network, using an ecosystem services approach, protecting, enhancing and further developing the identified interconnected network of parks, open spaces, natural features, protected areas, and rivers and streams that provide a shared space for amenity and recreation, biodiversity protection, water quality, flood management and adaptation to climate change	The existing GI networks with and surrounding the site will be retained and enhanced as part of the landscape proposals.
GI1 Objective 1: To establish a coherent, integrated and evolving GI Network across South Dublin County with parks, open spaces, hedgerows, trees including public street trees	The updated landscaping proposal aims to further retain existing tree planting along the northern and north-western boundary of the site. This will also be enhanced with additional native pollinator friendly planting where

South Dublin County Development Plan - Chapter 8: Green Infrastructure, Policies & Objectives	Design Response
and native mini woodlands (Miyawaki-Style), grasslands, protected areas and rivers and streams and other green and blue assets forming strategic links and to integrate and incorporate the objectives of the GI Strategy throughout all relevant land use plans and development in the County.	possible. Grassed areas will also be retained and managed as per the All Ireland Pollinator Plan. Drifts of native wildflower seeding of local provenance will also be seeded in these grassed areas.
GI1 Objective 4: To require development to incorporate GI as an integral part of the design and layout concept for all development in the County including but not restricted to residential, commercial and mixed use through the explicit identification of GI as part of a landscape plan, identifying environmental assets and including proposals which protect, manage and enhance GI resources providing links to local and countywide GI networks.	As above – permeable paving will also be included as part of the proposed development.
GI1 Objective 7: To develop linked corridors of small urban 'Miyawaki' native mini-woodlands, a minimum of 100 sq m in size, to capture carbon and encourage biodiversity in suitable existing built-up areas, in low grade parkland, and other areas of zoned lands where deemed suitable and appropriate.	Whilst some tree removal is required along the existing areas of mature planting along the north/northwest boundary of the site, further retention of trees has been included as part of the updated landscaping proposals. Furthermore, it is proposed to bolster this area of woodland as per the 'Miyawaki' method with additional native tree and understorey plantings.
GI1 Objective 8: To increase over the lifetime of this plan the percentage of land in the County, including residential, managed for biodiversity including supporting the delivery of the objectives of the County Pollinator Plan and to continue to investigate the potential for the use of low-mow methods during the lifetime of the Plan.	As part of the landscape proposals in is intended to bolster the existing woodland/mature planting north of the site with additional pollinator friendly plantings. Furthermore, existing grassed areas to be retained and seeded with drifts of wildflower seeding will be managed in accordance with the All Ireland Pollinator Plan.
GI2 Objective 1: To reduce fragmentation and enhance South Dublin County's GI network by strengthening ecological links between urban areas, Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional network by connecting all new developments into the wider GI Network.	As per the updated landscaping proposals, It is proposed to retain all boundary vegetation that forms part of existing ecological corridors in so far as possible. Where vegetation is to be removed to facilitate the footprint of the proposed development, additional planting will be included to offset any loss. All planting proposed will be of native stock with a focus on pollinator friendly plantings.
GI2 Objective 2: To protect and enhance the biodiversity and ecological value of the existing GI network by protecting where feasible (and mitigating where removal is unavoidable) existing ecological features including tree stands, woodlands, hedgerows and watercourses in all new developments as an essential part of the design and	See response of GI2 Objective 1 above

South Dublin County Development Plan - Chapter 8: Green Infrastructure, Policies & Objectives	Design Response
construction process, such proactive approach to include provision to inspect development sites post construction to ensure hedgerow coverage has been protected as per the plan.	
GI2 Objective 3: To retrospectively repair habitat fragmentation and provide for regeneration of flora and fauna where weaknesses are identified in the network through the implementation of new GI interventions.	See response of GI2 Objective 1 above
GI2 Objective 4: To integrate GI, and include areas to be managed for biodiversity, as an essential component of all new developments in accordance with the requirements set out in Chapter 12: Implementation and Monitoring and the policies and objectives of this chapter.	Due to the nature of the site, which comprises an existing development, there is limited scope for any notable areas of additional plantings/areas managed for biodiversity. Nonetheless, it is proposed to retained as much existing vegetation and grassed areas in so far as possible. Furthermore, existing grassed areas north and west of the site will be retained and bolstered with drifts of native pollinator friendly wildflower seeding. All grassed/wildflower areas will be managed in line with techniques outlined in the All Ireland Pollinator Plan.
GI2 Objective 7: To enhance the biodiversity value of publicly owned hard infrastructure areas by incorporating the planting of new trees, grasses and other species, thereby integrating this infrastructure into the overall GI network.	As part of the proposed landscaping measures it is also proposed to include additional tree planting on the roadside verge to fill any existing gaps that are present. These are to be agreed with SDCC Parks Departments and will be chosen with regard SDCC 'Living With Trees' document.
GI4 Objective 1: To limit surface water run-off from new developments through the use of Sustainable Drainage Systems (SuDS) using surface water and nature-based solutions and ensure that SuDS is integrated into all new development in the County and designed in accordance with South Dublin County Council's Sustainable Drainage Explanatory Design and Evaluation Guide, 2022.	It is proposed to remove a large proportion of the existing concrete slab that surrounds the existing building and replace it with permeable paving systems. Furthermore, whilst in is not possible to integrate green roofs on the main building, it is proposed to incorporate green roof systems on the proposed bike store and bins stores.

Green Space Factor Tool
South Dublin County Council

Comhairle Contae Átha Cliath Theas
South Dublin County Council

User input indicated by Orange fields

User Input	
Zoning lookup	Minimum GI Score
EE	0.5

1. Enter Development Site Area m² HERE▶		8640	
Surface Type (see tab for detailed descriptions)	Factor	Proposed Surface Area m²	Factor Values
1. Short Lawn	0.3	0	0
2. Tall Lawn (wild, not mown)	0.5	1193	596.5
Permeable Paving	0.3	0	0
Vegetation		0	0
4a. Vegetation-Shrub below 3m	0.4	936	374.4
4b. Vegetation-Shrub / Hedgerow above 3m	0.5	0	0
4c. Vegetation-Pollinator friendly perennial planting	0.5	0	0
4d. Vegetation-Preserved hedgerow	1.2	0	0
Trees		0	0
5a. New trees	0.6	20	12
5b. Preserved trees	1.2	825	990
7. SuDS intervention (rain garden, bioswale)	0.6	1569	941.4
Green Roof		0	0
9a. Green Roofs - Intensive green roof (substrate is 200-1200mm in depth)	0.7	0	0
9b. Green Roofs - Extensive green roof (substrate is 80-200mm in depth)	0.6	35	21
10. Green wall	0.4		0
11. Retained Open Water	2	0	0
12. New open water	1.5	0	0
Total Equivalent Surface Area of Greening Factors		4,578.00	

Green Factor Numerator	2935.30

Minumum Required GI score	Final GI score	Result
0.5	0.34	Fail

Figure 4: SDCC Green Space Factor Tool and score for EE land use zoning

5.2.5 Response to Landscape RFI Item 4.1 (v)

With regard to the existing site context, much of the hard-surfaced areas of the site are contained in large concrete slabs that are not highly porous. The proposed development involves the removal of large areas of this

reinforced concrete slab for a more permeable alternative. As per the landscape drawing J2139-MAC-22-XX-DR-L-0001, the car parking areas to the south/southeast of the main building, in addition to access laneways and other areas within the site, will be finished with permeable paving, allowing the rainwater to infiltrate through the soil and reduce the rainwater run off to surrounding drains. This will result in a notable improvement in the sites drainage (refer to CSEA Consulting Engineers for technical data). Due to the existing site constraints and constraints posed by the proposed development, such as underground services and offsets from security fencing, no trees/tree pits are proposed within the main site compound. All additional planting, such as the bolstering of the existing tree line to the north of the site, will be located outside of the main site security fence in areas that do not require tree pits.

The renovation of the existing warehouse and ancillary office will include re-roofing of both of these. The primary structures are to be retained but unfortunately these do not have the capacity to support the additional weight that would be imposed by a green roof. We have however reviewed the proposed bin store and bicycle shelter and will introduce green roofs to both of these. The proposed green roof structures will include low maintenance, drought-tolerant planting that is nectar-rich for butterflies, bees, moths and other invertebrate wildlife.

5.3 FI Request: Item 4.2 – Ecological Impact Assessment / Ecology Report

The applicant is requested to submit Ecological Impact Assessment/Ecology Report which includes a detailed survey for the presence of invasive species within the subject site (as listed on the third schedule of the European Communities (Birds and Natural Habitats Regulations 2011). If invasive species are found to be present within the subject site that the applicant shall submit a site-specific Invasive Species Management Plan.

5.4 Applicant's Response

An Ecological Impact Assessment (EcIA) has been previously prepared for the proposed development by Moore Group (dated December 2022) was included as **Appendix B** (ii) of the *Environmental Impact Assessment Screening Report for a Proposed Data Repository Facility, Unit 1 M50 Business Park, Ballymount Avenue, Dublin 12* submitted with the Planning Application documents for the proposed development. During the preparation of the EcIA a habitats survey was undertaken. A standard habitats survey is inclusive of a detailed survey for the presence of invasive species. As set out in Section 2.2.2 of the EcIA: *"Habitats were surveyed on the 6 July and 25 August 2022 by conducting a study area walkover covering the main ecological areas identified in the desktop assessment. The survey dates are within the optimal botanical survey period."* The results of the habitat survey are set out in Section 4.2 of the EcIA and confirmed that: *"There were no invasive species recorded at the proposed development site."*

As there are no invasive species found to be present within the subject site at the time of the surveys, a site-specific Invasive Species Management Plan is not required.

5.5 FI Request: Item 4.3 – Sustainable Drainage Systems (SuDS)

(A) The applicant should demonstrate compliance with the SDCC SUDS Design Guide 2022, and Policies GI3, GI4, GI5, IE3, SM2, SM7, and sections 4.3.1, 12.7.6, 12.11.1, and 12.11.3. of the South Dublin County Development Plan 2022 - 2028 in relation to sustainable drainage systems.

(B) In relation to SUDs, the applicant is requested to submit plans showing how surface water shall be attenuated to greenfield run off rates and showing what SuDS (Sustainable Drainage Systems) are proposed.

(C) SUDs Management - The applicant is requested to submit a comprehensive SUDS Management Plan to demonstrate that the proposed SUDS features have reduced the rate of run off into the existing surface water drainage network. A maintenance plan should also be included as a demonstration of how the system will function following implementation.

(D) Natural SUDS features should be incorporated into the proposed drainage system for the development such as bio-retention/constructed tree pits, permeable paving, green roofs, filtration planting, filter strip etc. In addition, the applicant should demonstrate how the proposed natural SUDS features will be incorporated and work within the drainage design for the proposed development. The applicant is requested to refer to the recently published 'SDCC Sustainable Drainage Explanatory, Design and Evaluation Guide 2022' for acceptable SUDS tree pit details.

(E) The applicant is requested to submit a report to show surface water attenuation calculations for proposed development. Show on a report and drawing what surface water attenuation capacity each SuDS (Sustainable Drainage System) system has in m^3. Show in report what surface water attenuation capacity is required for proposed development. Show what different surface types, areas in m2 are proposed such as, green roofs, permeable paving, buildings, roads and their respective run off coefficients. Submit a drawing showing the treatment train of SuDS and proposed natural flow controls for each SuDS system.

5.6 Applicant's Reponse

The points raised above are addressed in the order they appear:

(A) The existing site is located in the Urban Fringe/Periurban area of the Green Infrastructure (GI) network of the County. Although the site is not partially or wholly within the Riparian Corridors, urbanisation disrupts the land-water linkages. Surface water runoff from existing hardstanding areas are collected in a sealed system of pipes and gullies and outfalls via a bypass petrol interceptor to the existing M50 Business Park drainage network. There is no existing provision for surface water attenuation and the proposed will reduce the discharge from the site from 332.78 l/s to 1.73 l/s a reduction of 99% during the 1 in 100 year event.

Policy reference GI3, GI4 and GI5:

Policy GI3: Sustainable Water Management

Protect and enhance the natural, historical, amenity and biodiversity value of the County's watercourses. Require the long-term management and protection of these watercourses as significant elements of the County's and Region's Green Infrastructure Network and liaise with relevant Prescribed Bodies where appropriate.

Accommodate flood waters as far as possible during extreme flooding events and enhance biodiversity and amenity through the designation of riparian corridors and the application of appropriate restrictions to development within these corridors.

Figure 5: SDCC Development Plan2022-2028: Policy GI3

Policy GI4: Sustainable Drainage Systems
Require the provision of Sustainable Drainage Systems (SuDS) in the County and maximise the amenity and biodiversity value of these systems.

Figure 6: SDCC Development Plan2022-2028: Policy GI4

Policy GI5: Climate Resilience
Strengthen the County's GI in both urban and rural areas to improve resilience against future shocks and disruptions arising from a changing climate.

Figure 7: SDCC Development Plan2022-2028: Policy GI5

The proposed development's surface water management strategy (as outlined in the RPT-22_112-004 SuDS Management Plan) sees the provision of SuDS in order to mimic the natural hydrological cycle through a series of components to form a management train. In addition to this, surface water attenuated flows have been provisioned such that the Greenfield runoff rate is maintained during the 1 in 100 year critical storm event, inclusive of the climate change allowance, to ensure improved resilience against future shocks and disruptions. This reduces the flood risk within the site and decreasing the likelihood of flood risk elsewhere by reducing the outflow from the site by 99%.

Policy reference IE3:

Policy IE3: Surface Water and Groundwater
Manage surface water and protect and enhance ground and surface water quality to meet the requirements of the EU Water Framework Directive.

Figure 8: SDCC Development Plan 2022-2028 Policy IE3

With regard to the existing site context, much of the hardstanding areas of the site are contained in roofs, concrete yard slabs and asphalt parking areas which are impermeable. The proposed development involves the complete removal the impermeable asphalt car parking area which is to be replaced with a permeable paving surface. As outlined in the RPT- 22_112-004 SuDS Management Plan, SuDS has been provisioned such that it reduces the rate of surface water run-off and improves water quality.

Policy reference SM2 and SM7; and Section 12.7.6 of SDCC Development Plan 2022-2028:

Policy SM2: Walking and Cycling
Re-balance movement priorities towards sustainable modes of travel by prioritising the development of walking and cycling facilities and encouraging a shift to active travel for people of all ages and abilities, in line with the County targets.

Figure 9: SDCC Development Plan 2022-2028 Policy SM2

Policy SM7: Car Parking and EV Charging

Implement a balanced approach to the provision of car parking with the aim of using parking as a demand management measure to promote a transition towards more sustainable forms of transportation, while meeting the needs of businesses and communities.

Figure 10: SDCC Development Plan 2022-2028 Policy SM7

12.7.6 Car Parking Design and Layout

On-Street Parking

In urban areas, car parking should be predominantly on-street with communal (that is, undesignated) spaces for the purposes of:

- → **Traffic Calming:** On-street parking increases driver caution by visually narrowing the vehicular carriageway and reducing forward visibility;
- → **Efficiency:** On-street parking allows for a greater turnover of spaces and caters for visitors;
- → **Pedestrian Comfort:** The need for vehicular crossovers and the temptation for drivers to kerb mount and block footpaths is significantly reduced;
- → **Streetscape:** Extensive parking to the immediate front of dwellings (where landscaping could be provided) will dominate the appearance of the houses and detract from the visual qualities of the area.

On-street parking should be designed in such a manner as to promote visual amenity, green infrastructure, carbon sequestration and sustainable drainage (SuDS) by applying the following requirements:

- → Provision of landscaping integrated into the design of all car parking, to include planting of native trees and pollinator-friendly species;
- → Provision of not more than two parallel or five perpendicular spaces between trees / planting bays;
- → Use of permeable paving, where appropriate.

The layout of on-street spaces shall be designed in accordance with the Design Manual for Urban Roads and Streets and the *National Cycle Manual* (where provided adjacent to cycle paths / lanes).

In-Curtilage Parking

In-curtilage car parking will be considered to the front of the house for lower density residential development (40 dwellings per hectare or below), subject to:

- → Sufficient measures to promote a self-regulating street environment;
- → Adequate plot widths to enable the planting of materials which have a low-level screening effect;
- → The provision of conveniently located on-street parking for visitors.

Figure 11: Section 12.7.6 of the SDCC CDP 2022-2028

Widening of Driveways to Accommodate In-Curtilage Parking
Proposals to widen driveways to accommodate in-curtilage parking will be considered having regard to the following:

- A width of 3.5m between gate pillars shall not normally be exceeded. This is for reasons of pedestrian safety and visual amenity and to retain on-street parking spaces;
- Proposals to widen driveways that would result in the removal of, or damage to, a street tree will not generally be permitted and where permitted must be mitigated;
- Where a hard surface is proposed to accommodate parking in a front garden area, permeable paving shall be used, in the interest of sustainable drainage.

Parking in Town, District and Shopping Centres and Large Commercial / Residential Development

- Parking arrangements for specific user requirements including disabled drivers, motorcycles and scooters will be required in town and district centres, shopping centres, public transport nodes and other destinations;
- Payment systems will be required for car parks associated with major shopping centres and other large commercial developments where new facilities or major extensions to existing facilities are proposed;
- For residential densities of 40-50 dwellings per hectare and within town and village centres, a combination of on-street parking and supplementary off-street parking will be required;
- For large commercial developments or residential developments of over 50 dwellings per hectare, large areas of off-street parking will be required as follows:

Parking Courts: To ensure surface parking does not dominate the urban landscape, parking courts that are highly visible from the public domain, should be restricted in size (with no more than 40 spaces per court) and should be well landscaped. Where larger areas of surface parking are proposed they should be located behind buildings, and / or in the centre of blocks, so that they are obscured from view.
Basements: To ensure a safe and secure environment, basement car parks should be well lit and well ventilated. Basement car parks that protrude above the ground level as a street interface will generally not be acceptable in town and village centres due to their visually obtrusive and inactive nature. A protrusion of up to 1.2m may be acceptable in residential areas provided the facade is screened with planting and it does not inhibit levels of passive surveillance from residences or the formation of 'own door' access from the street.
Multi-Storey Car Parks: To ensure that an attractive interface is created large areas of blank facade should be avoided. In town and village centres car park structures should be wrapped with or placed over retail and commercial units. Upper storeys should be suitably treated to ensure they make a positive contribution to the public domain.

Figure 12: Section 12.7.6 of the SDCC CDP 2022-2028 (continued)

In order to encourage a shift to active travel for people of all ages and abilities walking and cycling have been prioritised through the provisions of footpaths, walkways and crossings throughout the sit. In addition, dedicated cycle parking has been provided in the scheme. Whilst a balanced approach has been applied for the provision of car parking, which includes sustainable EV charging designated facilities in accordance with the requirements of the development plan. Please refer to drawing 22_112-CSE-00-XX-DR-C-2020 Proposed Site Layout and Levels Plan for further details regarding the above proposals.

Section 4.3.1 of SDCC Development Plan 2022-2028:

4.3.1 Components of the GI Network

GI networks are spatially defined in terms of several common components. Core Areas serve as anchors within a GI network. They are the point of origin and destination for wildlife and are sites at which essential ecological processes occur. Corridors represent the physical links that tie the network of Core Areas together. They typically align with water courses or linear open spaces and allow for the migration of species between Core habitats. Stepping Stones are smaller areas of green space. They provide alternative routes for the movement of species within the overall network and contribute to local biodiversity. The spatial arrangement of these different components and their relationship to one another comprises a spatial GI network. In the context of South Dublin County these Core Areas and Corridors provide connections not just within the County itself but also to the adjoining Local Authorities of Dublin City Council, Fingal County Council, Wicklow County Council, Kildare County Council and Dún Laoghaire-Rathdown County Council.

The key components and features of the County's spatial GI framework are detailed below:

- **Major Core Areas:** within the County include the Dublin Mountains, within the Wicklow Mountains National Park, and the parks located along the Liffey Valley providing strong GI links with adjoining counties. Other **Core Areas:** include major parks and public green spaces, such as Waterstown Park and Lucan Demesne within the Liffey Valley, and Tymon Park and Corkagh Park. The Liffey Valley Special Amenity Order Area extends protection within the Liffey Valley from Chapelizod to Lucan. These core areas are important centres of biodiversity in their own right and also serve as important recreational assets for South Dublin residents and visitors;

- A network of overlapping and multi-functional GI **Corridors:** connects the County's core areas with the Dublin Mountains (Dublin and Wicklow), Liffey Valley, Kildare rural hinterland and the broader regional GI network. These corridors largely comprise of watercourses and their associated riparian zones, such as the River Liffey, Dodder, and Camac as well as the Grand Canal. Two additional emerging potential corridors along the urban fringe have been identified, adjoining the boundary with County Kildare (greenbelt / green space potential) and the M50

Figure 13: Section 4.3.1 of the SDCC Development Plan 2022-2028.

Corridor. Corridors also include the extensive network of hedgerows and trees that exist across the County. The key corridors pass through the neighbouring administrative areas of Dún Laoghaire-Rathdown, Dublin City, Fingal, Kildare and Wicklow. As such the GI Strategy will have regard to the need for cross-boundary communication and collaboration for their effective management;

→ The Strategic County GI Corridors are further supported by a number of Local GI Corridors, as demonstrated in Figure 4.4. Each strategic corridor is described separately within Table 4.1, along with associated objectives. Appendix 4 provides further detail around the Local GI Corridors;

→ The County's GI network contains a number of smaller, discrete green spaces that are dispersed throughout its built-up area. These include local-scale greens and parks and other green spaces. These spaces serve as **Stepping Stones** for species to move throughout the broader network of corridors and core areas and contribute to a range of additional local benefits around recreation and stormwater management;

→ The urban centres and suburban areas of the County contain localised GI features including urban trees, smaller open spaces and water management features such as SuDS. The GI Strategy seeks to enhance such features and ensure they are connected to the broader GI network.

This strategy seeks to ensure that all new development contributes to the overall GI network of the County. It provides measures to protect and enhance existing GI attributes in the County providing for connections to local Stepping Stones (creating Stepping Stones) and ultimately providing links to the GI Corridors and Core areas of the County and Region. This contributes to strong climate change mitigation and adaptation in South Dublin County allowing us to meet national and regional targets referenced in section 4.0.1 above.

Figure 14: Section 4.3.1 of the SDCC Development Plan 2022-2028 (continued...).

Although the proposed development is within Urban Fringe/Periurban area of the County's Green Infrastructure (GI) network, green roof structures are proposed, for the bicycle parking area and bin store, which provide low maintenance, drought-tolerant planting that is nectar-rich for butterflies, bees, moths and other invertebrate wildlife. Due to structural constraints, it is not possible to include a green roof system on the roof of the existing building.

There are a combination of existing site constraints and proposed constraints which impact on the provision of nature based SuDS features, including but not limited to,

- underground services (Including Electrical and Fibre Optic Ducting, Drainage and other services),
- clear zones either side of security fencing,
- proposed equipment layouts.

As a result, no trees/tree pits are proposed within the main site compound. All additional planting, such as the bolstering of the existing tree line to the north of the site, will be located outside of the main site security fence in areas that do not facilitate tree pits as redirection of surface water drainage to these locations is not feasible to security requirements.

Section 12.11.1 of SDCC Development Plan 2022-2028:

12.11.1 Water Management

(I) Flood Risk Assessment

Flood risk management will be carried out in accordance with the *Flood Risk Management Guidelines for Planning Authorities*, DOECLG (2009) and Circular PL2 / 2014. The Dodder CFRAMS, Eastern CFRAMS (Catchment and Flood Risk Assessment and Management) and the *South Dublin Strategic Flood Risk Assessment* (2021) provide information in relation to known flood risk in South Dublin County (see Development Plan Map 14, Strategic Flood Risk). Development proposals will be subject to hydromorphical assessments where they are partially or wholly within the Riparian Corridors identified on Map 14 in accordance with Policy GI 3 and relevant objectives.

→ Development proposals on lands that may be at risk of flooding should be subject to a **flood risk assessment**, prepared by an appropriately qualified Chartered Engineer, in accordance with the Flood Risk Management Guidelines. Detailed flood risk assessments should be cognisant of possible pluvial flood risk and appropriate drainage proposals should be implemented to reduce the risk of pluvial flooding;

→ Proposals for minor development to existing buildings (for example, extensions or change of use) in areas of flood risk should include a **flood risk assessment** of appropriate detail.

(II) Surface Water

Development proposals should provide suitable drainage measures in compliance with the *South Dublin County Council's Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide*, 2022.

→ The maximum permitted surface water outflow from any new development should not exceed the existing situation, and on greenfield lands, that of a greenfield site before any development took place;

→ All new development must take account of the 'precautionary principle' in relation to climate change;

→ Development proposals should not give rise to the pollution of ground or surface waters either during construction phases or subsequent operation. This will be achieved through adherence to best practice in the design, installation and management of systems for the interception, collection and appropriate disposal or treatment of all surface water and effluents.

(iii) Sustainable Urban Drainage System (SuDS)
In general, all new developments will be required to incorporate Sustainable Urban Drainage Systems (SuDS).

- → Sustainable Drainage Systems include devices such as swales, permeable pavements, filter drains, storage ponds, constructed wetlands, soakways and green roofs;
- → In some exceptional cases and at the discretion of the Planning Authority, where it is demonstrated that SuDS devices are not feasible, approval may be given to install underground attenuation tanks or enlarged pipes in conjunction with other devices to achieve the required water quality. Such alternative measures will only be considered as a last resort;
- → Development should seek to maximise the use of permeable surfaces, as well as opportunities for stormwater attenuation and storage through SuDS and limit the use of underground attenuation and storage;
- → Watercourses should remain open in their natural valley and culverting should be confined to road crossings. In exceptional circumstances and at the discretion of the Planning Authority, approval may be given to install a culvert within a development where it is demonstrated that this is the most appropriate design response based on site specific constraints / circumstances.

(iv) Groundwater
The Planning Authority requires adequate and appropriate investigations to be carried out into the nature and extent of any soil and groundwater contamination and the risks associated with site development work at sensitive locations, in particular, where brownfield development is proposed.

(v) Rain Water Harvesting
Where a development proposal includes rain water harvesting, liaison should take place with the relevant stakeholders, to ensure the implementation of BS8515-2009 (Rain & Grey Water Harvesting), subject to class of use (SI 600 2001) and the economic viability for the end user.

Figure 15: Section 12.11.1 of the SDCC Development Plan 2022-2028.

In response to further information request to demonstrate compliance with Section 12.7.6 of SDCC Development Plan 2022-2028, please refer to the RPT-22_112-004 SuDS Management Plan and RPT-22_112-005 Proposed Surface Water Attenuation Overview.

Section 12.11.3 of SDCC Development Plan 2022-2028

(I) Bring Banks and Recycling Facilities

All large retail developments are required to provide public bring banks, unless there are existing facilities within a 1km radius. Bring bank facilities will generally be required at appropriate locations in the following development types:

- → In conjunction with significant new commercial developments, or extensions to same a minor offset in car parking requirements may be considered where public recycling bring facilities are provided;
- → In conjunction with new waste infrastructure facilities, proposals should include bring facilities for the acceptance of non-hazardous and hazardous wastes from members of the public and small businesses;
- → In conjunction with medium and large scale residential and mixed-use developments providing in excess of 10 residential units, proposals should provide recycling and bring bank facilities to serve residents and in some appropriate locations, the wider community;
- → In conjunction with all large retail developments provide space for reverse vending machines to promote the circular economy.

(II) Design and Siting of Refuse Storage, Recycling and Bring Facilities in Developments

The following criteria will be considered in the assessment of the design and siting of

Figure 16: Section 12.11.3 of the SDCC Development Plan 2022-2028

waste facilities and bring facilities:

- → The location and design of any refuse storage or recycling facility should ensure that it is easily accessible both for residents and / or the public and for bin collection, be insect and vermin proofed, will not present an odour problem, and will not significantly detract from the residential amenities of adjacent property or future occupants;
- → Provision for the storage and collection of waste materials shall be in accordance with the guidelines for waste storage facilities in the relevant Regional Waste Management Plan and the design considerations contained in Section 4.8 and 4.9 of the guidelines *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities*, DHLGH (2020). Refuse storage for houses should be externally located, concealed / covered and adequate to cater for the size and number of bins normally allocated to a household. For terraced houses, the most appropriate area for bins to be stored is to the front of the house, which should be located in well-designed enclosures that do not to detract from visual amenity;
- → Access to private waste storage in residential schemes should be restricted to residents only.

(iii) Waste Recovery and Waste Disposal Facilities

In assessing development proposals for, or including, waste recovery and waste disposal facilities, the Planning Authority will have regard to the policies, actions, targets and provisions of the Eastern-Midlands Region Waste Management Plan (2015-2021) or any superseding document, and to planning legislation, the Development Plan and other relevant planning documents. As indicated in Chapter 11, section 11.5 the objectives of the Waste Management Plan are deemed to be included in the Development Plan.

The provision of waste recovery facilities, pre-treatment infrastructure and development of indigenous secondary waste processing, including Material Recovery Facilities (MRF) and Waste Transfer Stations will be facilitated at appropriate locations within the County. In general, to prevent an excessive concentration, no new facilities will be permitted inside the M50. Facilities will only be permitted where they do not materially detract from the Land Use Zoning Objective and are at a scale appropriate to their surrounding environment and adjoining amenities.

With regard to large scale proposals for waste disposal installation, the Planning Authority will contribute to the Strategic Infrastructure Development (SID) process.

In the event of a conflict arising between an objective in the Regional Waste Plan and that of the County Development Plan, the Waste Plan objective takes precedence, and a planning decision may be made on that basis.

Development proposals for waste recovery and disposal facilities, should have regard to the following:

- → Avoid siting waste infrastructure or related infrastructure in Special Areas of

Figure 17: Section 12.11.1 of the SDCC Development Plan 2022-2028 (continued...).

Conservation (SACs), Special Protection Areas (SPAs) and proposed Natural Heritage Areas (pNHAs or NHAs) or areas protected for landscape amenity, visual amenity, geology, heritage or cultural value or areas of flood risk;
- → Undertake Appropriate Assessment Screening for all waste-related activities requiring development consent;
- → Ensure a Sustainable Drainage System (SuDS) is applied to any development and that site-specific solutions to surface water drainage systems are developed, which meet the requirements of the Water Framework Directive and associated River Basin Management Plans;
- → The impact from a transport perspective should be assessed including road access, network, safety and traffic patterns to and from the proposed facility in accordance with road design guidelines and / or relevant guidelines in relation to roads. Proposals will require a Traffic Impact Assessment (TIA);
- → Impact on residential and visual amenity of the area: - In general, no new waste disposal facility or Refuse Transfer Station shall be located within 200 metres of a residence.

(iv) Construction and Demolition Waste

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

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

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

Figure 18: Section 12.11.3 of the SDCC Development Plan 2022-2028 (continued...).

The Bin Store for the proposed development is externally located, concealed and covered. The provision of the Bin Store shall be in accordance with the relevant guidelines and the Regional Waste Management plan.

SDCC SUDS Design Guide 2022:

In response to further information request to demonstrate compliance with SDCC SUDS Design Guide 2022, please refer to the RPT-22_112-004 SuDS Management Plan.

(B) In response to further information request to demonstrate how surface water will be attenuated to Greenfields run off rates and what SuDS are proposed, please refer to RPT-22_112-005 Proposed Surface Water Attenuation Overview and applicable drawings in Appendices C, G and H, demonstrating how surface water shall be attenuated to greenfield run off rates.

(C) In response to further information request to demonstrate a comprehensive SUDS Management Plan, please refer to RPT-22_112-004 SuDS Management Plan and RPT-22_112-005 Proposed Surface Water

Attenuation Overview demonstrating how the proposed SUDS features have reduced runoff rates into the existing surface water drainage network to Greenfield runoff rates.

Please refer to Appendix E of RPT-22_112-004 SuDS Management Plan for the SuDS Operation and Maintenance Plan.

(D) With regard to the existing site context, much of the hardstanding areas of the site are contained in roofs, concrete yard slabs and asphalt parking areas which are impermeable. The proposed development involves the removal of large areas of this reinforced concrete slab for a more permeable alternative. As per drawing no. 22_112-CSE-00-XX-DR-C-2111 Proposed Permeable and Impermeable Areas, the car parking areas to the south/southeast of the main building, in addition to access laneways and other areas within the site, will be finished with permeable paving, allowing the rainwater to infiltrate through the soil and reduce the rainwater run off to surrounding drains. This will provide for a more sustainable site drainage solution than the existing scenario where hard-standing areas drain unattenuated to the external surface water drainage system. There are a combination of existing site constraints and proposed constraints which impact on the provision of nature based SuDS features, including but not limited to,

- underground services (Including Electrical and Fibre Optic Ducting, Drainage and other services),
- clear zones either side of security fencing,
- proposed equipment layouts.

As a result, no trees/tree pits are proposed within the main site compound. All additional planting, such as the bolstering of the existing tree line to the north of the site, will be located outside of the main site security fence in areas that do not facilitate tree pits as redirection of surface water drainage to these locations is not feasible to security requirements. Please refer to the RPT-22_112-004 SuDS Management Plan for further information on natural SuDS features incorporated into the proposed development's drainage network.

(E) In response to further information request to FI Request 3(E), please refer to the reports RPT- 22_112-004 SuDS Management Plan and RPT-22_112-005 Proposed Surface Water Attenuation Overview; and applicable drawings in Appendices C, G and H of RPT-22_112-005 Proposed Surface Water Attenuation Overview.

5.7 FI Request: Item 4.4 – Green Infrastructure and Green Space Factor (GSF)

The applicant is requested to provide additional information as follows and in accordance with the quoted policies and sections of the South Dublin County Development Plan 2022 - 2028: (a) To demonstrate how they intend to reduce fragmentation of existing green infrastructure. The applicant should provide a green infrastructure plan showing connections through the site and connections to wider GI network. (b) To demonstrate how the appropriate Greening Factor will be achieved for the relevant land use zoning objective. See link to the Green Space Factor Worksheet: Related Documents – SDCC.

5.8 Applicant's Reponse

Please refer to section 5.2.4 of this report.

6. ITEM 5

6.1 FI Request – Internal Road Layout and Emergency Vehicles

(i) The applicant shall submit a revised layout of not less than 1:200 scale, showing all pedestrian footpaths, walkways and crossings throughout the site with a minimum width of 2m. Dropped kerbs and tactile paving should also be clearly indicated on submitted drawings.

(ii) (ii)The applicant shall submit a revised layout of not less than 1:200 scale, showing a turning area for emergency vehicles on the access road to the north of the building

6.2 Applicant's Reponse

We address the points in the order they appear:

(i) The revised layout (drawing no. J2139-KTA-22-XX-DR-A-2003 proposed site plan) submitted now shows the width of all pedestrian footpaths, walkways and crossings throughout the site. Dropped kerbs and tactile paving is also indicated. Where new elements are proposed these have been shown as 2m wide. There are a number of existing footpaths where, within the constraints of the site, it is not possible to widen these further to achieve 2m.

(ii) Our fire consultant has calculated the required access for an emergency vehicle (pump appliance). Based on the building volume, 19,130 m^3 and the height of the top storey above ground being less than 10m, vehicle access for pump appliance is required to 15% of the perimeter of the building. This equates to approximately 31m and this is provided via the secondary site access where there is a hammerhead and via the main site access where there is a turning circle. Vehicle access is therefore not required to the north of the building. The site layout drawing has been amended to note this as access for maintenance only.

7. CONCLUSIONS

We believe the information presented in this Further Information response adequately addresses any outstanding queries. It should be read in conjunction with the documentation submitted in response to the various items of further information.

Appendix 1 – ESB Letter (FI Item 2)

[redacted]

IN WITNESS WHEREOF the hands of the duly authorised representatives of the Parties hereto on the date first above written.

ESB NETWORKS DAC

By:

Killian Morgan
Commercial Manager
ESB Networks DAC.

[redacted]

In the presence of:

Mary Power

MARY POWER

Date: 27.01.2022

AMAZON DATA SERVICES IRELAND L

By: JAMES MOLONEY

Block Capitals: JAMES MOLONEY

Position Held: Authorized Signatory

April 6, 2022

In the presence of: _____

Block Capitals: [redacted]

Date: _____

For wind based generation applicants only: This Agreement is for Physical Access to the Electricity Distribution System on a **Firm** Basis. Please indicate (tick the relevant box) if you wish to avail of Non-Firm Physical Access to the Electricity Transmission System (see clause 14.0 Quotation Letter)

FIRM Distribution and FIRM Transmission access: [ ]
FIRM Distribution and NON-FIRM Transmission access: [ ]

Signed: _____

[redacted]

[redacted]

SCHEDULE 1: SITE SPECIFIC DETAILS

1. Customer Details:

Customer Name: AMAZON DATA SERVICES IRELAND L
Site Address: OPPOSITE ROUNDABOUT
BALLYMOUNT ROAD UPPER
DUBLIN 12

Contact Name/Authorised Operator: [redacted]
Contact Phone No:

2. Connection Agreement Number:

3. Meter Point Details:

Meter Point Reference Number: [redacted]
Metering Configuration Code:
DUoS Group:

4. Connection Details:

Maximum Import Capacity(kVA): 1700
Maximum Export Capacity(kVA): 0

[redacted]

Characteristics of Connection:

Phase Rotation: [redacted]
No. of Phases:
Connection Voltage(V):
Frequency(Hz):
Minimum Equipment Short Circuit Rating(kA)*:
Normal Short Circuit Level(MVA)#:
(at Connection Point)

Special Requirements:
None

5. Protection Settings:
To be advised.

6. Terminal Sub-Station Interest Required: [redacted]

7. Charges Bond:

8. Capacity Bond:

*Refer to Conditions Governing Connection to the Distribution System - available on our website: www.esb.ie/esbnetworks
#This is the current Short Circuit Level calculated under normal feeding arrangements.

[redacted]

Appendix 2 - Landscape Design Rationale and Landscape Specification, Management and Maintenance Schedule

APPENDIX 2

LANDSCAPE DESIGN RATIONALE & LANDSCAPE SPECIFICATION, MANAGEMENT & MAINTENANCE SCHEDULE

LANDSCAPE DESIGN RATIONALE

The proposed development is wholly contained within an existing industrial/commercial land use located in the M50 Business Park to the south of Calmount road and to the northeast of Ballymount Road Upper. The existing landscape context of the surrounding landscape is that of a highly industrialised/commercial setting comprising numerous warehouse developments and major route infrastructure. The site itself comprises an existing warehouse development and is enclosed by mixed vegetation to the north, west, south and southeast, whilst a low hedgerow comprises the boundary with the neighbouring property to the northeast. The existing boundary treatment to the north and northwest boundary of the site with Calmount Road comprises a dense stacked mature tree line with understorey vegetation and is backed by an avenue of trees located outside of the site boundary along Calmount Road. Several small islands of trees also occur within the site to the south of this boundary within a grassed area. To the south, west and east, the boundary treatment comprises a steel fence backed by mixed partially manicured shrubs with some intervening tree planting, some of which is either dead or in decline, as noted in the Tree Survey Report for the proposed development.

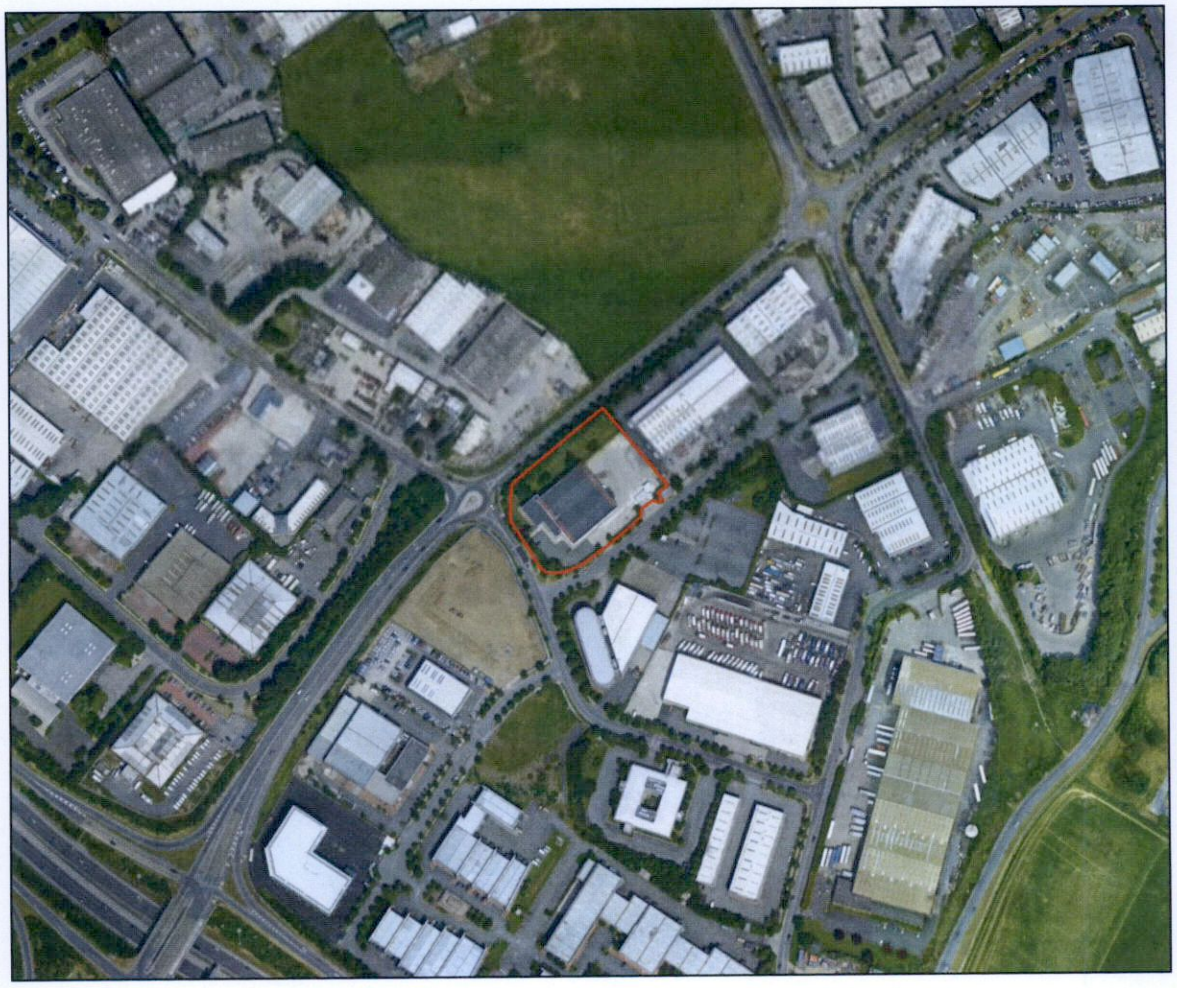

Figure 1: Existing site context

In terms of the local landscape pattern, the proposed development will result in the removal of some vegetation within the site to facilitate the full footprint of the development. Some trees along the boundary to the south, west and east will also be removed as they are dead or in decline, whilst several trees and tree groups along the northern and north-western boundary will be removed to facilitate the full footprint of the proposed development. Nonetheless, much of the existing landscape structure will be retained and enhanced as necessary. The existing woodland thicket along the north/northwest site boundary will be retained in so far as possible and reinforced with additional native trees and understorey planting as necessary. As per the current SDCC County Development Plan, it is proposed to use the 'Miyawaki Method' to generate quick dense woodland cover. Using the Miyawaki Method, trees can grow at a rate of around a meter per year. The main principles of the Miyawaki Method are to plant species of trees that would naturally occur in the area at a high density.

To the south, west and east, the existing shrub plantings will be retained and cut back/reshaped in some areas. It is also proposed to include areas of pollinator-friendly grass seeding, whilst existing areas of grassland will be retained and managed appropriately. All proposed plantings will be native and have been chosen to enhance the biodiversity of the site and the ecological networks that pass around the site and wider landscape. Planting has specifically been chosen in line with the All Ireland Pollinator Plan with the aim of restoring pollinator populations whilst also benefiting other flora and fauna.

In terms of screening, much of the existing boundary vegetation will be retained. In some areas, such as the northern boundary, this planting will be enhanced as necessary where gaps may occur, or space allows for additional plantings. Thus, the proposed development will remain heavily screened and softened from some of the nearest surrounding local receptors and is not considered to impose itself on the surrounding local landscape character, which is heavily influenced by similar development types.

In terms of the sites existing green infrastructure links, the proposed development is not considered not notably fragment any existing links within the local landscape. Indeed, the principal landscape structure that surrounds the site will be retained and enhanced (Figure 2) in some areas with additional native vegetation and will bolster the existing green corridors that pass along the site's perimeter and wider landscape context. It is also worth noting, whilst a slight increase in the intensity of development will occur within the site, over 43% of the site will still be utilised for green infrastructure measures ranging from retention and enhancement of existing vegetation, permeable paving, native grass seeding and grassland management, and green roof systems. With regard to the local biodiversity, several biodiversity enhancement measures will be include within the site and include bat boxes, insect hotels and birds nest boxes. The proposed green roof systems will include low maintenance, drought-tolerant planting that is nectar-rich for butterflies, bees, moths and other invertebrate wildlife (see figure 3 below).

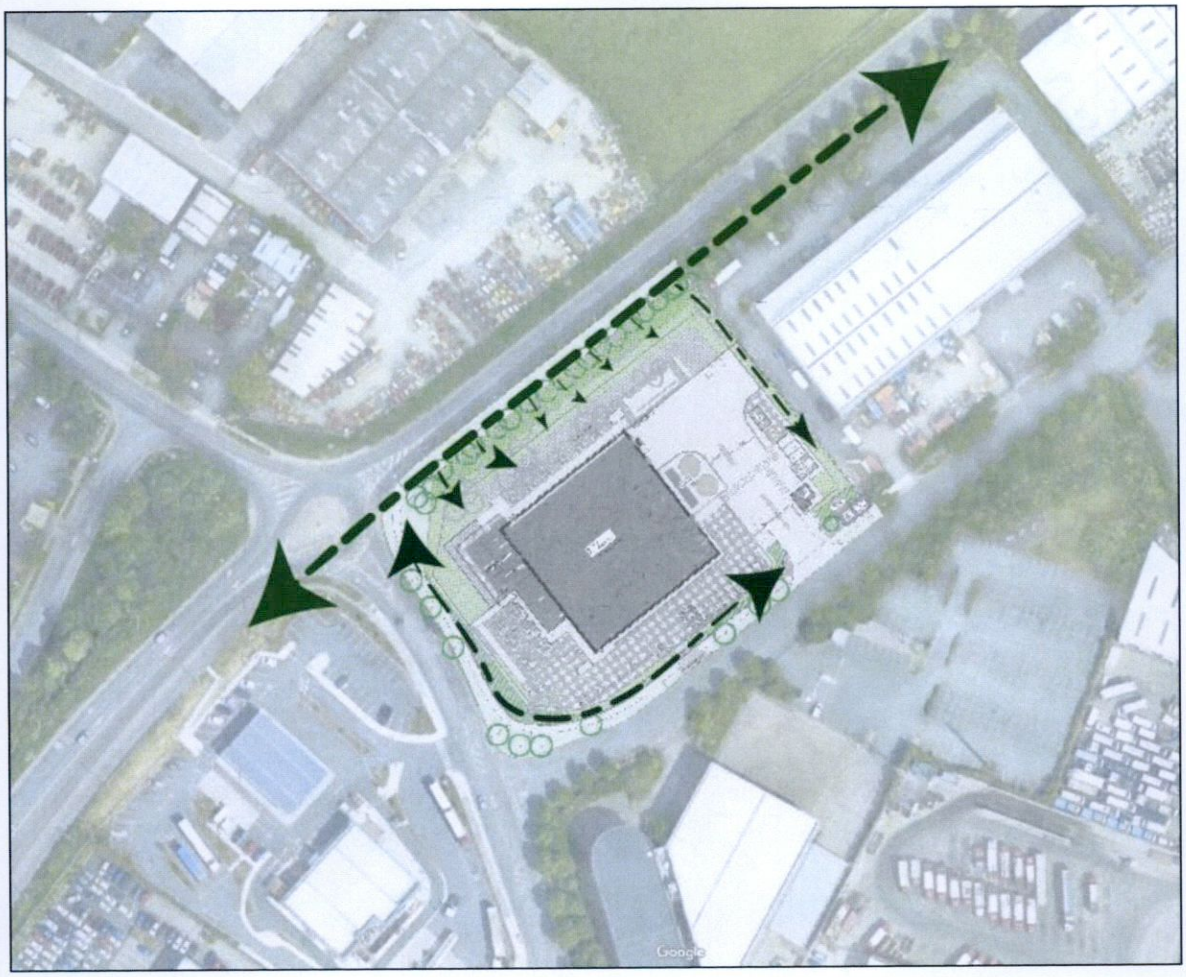

Figure 2: Retention and enhancement of green infrastructure links with and surrounding the site.

Figure 3: Examples of (left) green roof bin store systems and (right) green roof and integrated insect hotel bike stores

LANDSCAPE SPECIFICATION, MANAGEMENT & MAINTENANCE SCHEDULE

Introduction

This landscape specification, management and maintenance schedule has been prepared in respect of the proposed development at Unit 1, M50 Business Park, Ballymount, Dublin 12. This landscape report is to be read in conjunction with the landscape drawing – J2139-LD.UNIT1M50 and the tree survey report and associated drawings J2139_TCP01 and J2139_TPP01

1 SPECIFICATIONS FOR SUPPLY OF NURSERY STOCK & LANDSCAPE OPERATIONS

1.1 PLANT MATERIAL

All plant material shall be good quality nursery stock, free from fungal, bacterial or viral infection, aphids, red spider or other insect pests and any physical damage. Planting shall be in accordance with BS4428: 1989 Code of practice for general landscape operations (excluding hard surfaces).

All plants shall have been nursery grown in accordance with good practice and shall be supplied through the normal channels of the wholesale nursery trade. They shall have the habit of growth that is normal for the species. Country of origin must be shown in all cases for species grown from seed. All species will be from certified native stock and preferably from an approved supplier of the *Green, Low-Carbon, Agri Environment Scheme (GLAS).*

Unless otherwise state, the plant materials shall be supplied in accordance with the following codes:

- 1+0: 1 Year old seedling.
- 1+1: 1 Year old seedling lined out for 1 year.
- 1+2: 1 Year old seedling lined out for 2 years.
- 1+1+1: 1 Year old seedling lined out for 1 year, lifted and liner out for one further year
- 1u1: 1 Year old seedling undercut then 1 more year in seedbed.
- 1u2: 1 Year old seedling undercut then 2 more years in seedbed.
- 2X: Twice transplanted tree.
- 3X: Three times transplanted tree.
- 4X: Four times transplanted tree
- P9: Containerised plant in 9cm pot

1.2 PLANT SPECIES

It is imperative to use native Irish species in so far as possible as they are adapted to Irish conditions and therefore more likely to thrive compared to imported stock. Selected species should also represent woodland and hedgerows in the surrounding environs although non-native species are not to be used, unless otherwise agreed with the Planning Authority. All plants supplied shall be exactly true to name as shown in the plant schedules. Varieties with variegated and/or coloured leaves will not be accepted,

and any plant found to be of this type upon leafing-out shall be replaced by the contractor. Bundles of plants shall be marked in conformity with BS3936: Part 1: 1965 and BS3936: part 4: 1966. The nursery supplier shall replace any plants which, on leafing out, are found not to conform to the labels. Definitions of all terms used are in accordance with the following British Standards: -

BS3936: Part 1: 1965 entitled "Nursery Stock- Trees and Shrubs"
BS3936: Part 4: 1966 entitled "Nursery Stock- Forest Trees"
BS3936: 1967 entitled "Specification for Nursery Stock"

1.3 TRANSPLANTS 60-90CMS, 90-120CM, 120-150CM

Transplants shall be not less than one year old. Trees of species not listed in BS3936: Part 4: shall be sturdy, with a balanced root and shoot development. Size shall conform to the schedules. Trees shall be well furnished with lateral fibrous roots, and shall be lifted without severance of major roots. Roots shall be of the habit normal for the species, without deformation. Transplants shall be wrapped in polythene in bundles of 50 no. and clearly labelled from the time of lifting until planting to conserve moisture.

1.4 SHRUBS

(1) Containerised Shrubs shall be of the size specified in the schedules, with several stems originating from or near ground level and of reasonable bushiness, healthy, vigorous and with a sound root system. Pots or containers shall be appropriate to the size of shrub supplied and clearly labelled. Shrubs shall not be pot bound or with girdled or restricted roots.

(2) Bare Root Shrubs shall be of size specified in the schedules, with several stems originating from or near ground level, with reasonable bushiness, healthy, and vigorous. They shall be well furnished with fibrous roots and shall be lifted without severance of major roots. All bare root shrubs shall be wrapped in polythene in bundles of 50 no. and clearly labelled from the time of lifting until planting to conserve moisture.

1.5 PROPOSED PLANTING

1.5.1.1 Native Tree and Understory Planting (5875sqm):

It is proposed to bolster the existing woodland belt on the northern boundary of the site as necessary with native trees and understory species. All native species have be chosen in line with the All Ireland Pollinator Plan. These will be native species and will comprise the following:

- *Sorbus aucuparia*
- *Betula Pendula*
- *Prunus avium*
- *Corylus avellana*
- *Ilex aquifolium*
- *Crataegus monogyna*

1.6 PROTECTION

The interval between the lifting of stock at the heeling-in area and planting on site is to be kept to an absolute minimum. Plants shall be protected from drying out and from damage in transport. All stock awaiting planting on site shall be stored in a sheltered place protected from the wind and frost and from drying out. All tree protection measures to comply with the tree survey report and the tree constraints plan (J2139 TCP01) and tree protection plan (J2139 TPP01)

1.7 DAMAGE

On completion of planting any broken branches shall be pruned and any areas of damaged bark neatly pared back to sound tissue.

1.8 INSPECTIONS

The Landscape Architect will inspect the nursery stock on site before the execution of the works.

1.9 DELIVERY AND HEELING IN

All plants will be delivered on a phased basis as called up in advance in agreement with the Landscape Architect and the appointed Landscape Contractor. In the event of the Landscape Architect being dissatisfied with the care and attention given to the stocks, following heeling-in, they shall notify the Landscape Contractor who shall take steps to ensure careful heeling-in procedures.

The preparation of the heeling-in area and its subsequent maintenance is the sole responsibility of the Landscape Contractor.

2 SPECIFICATIONS FOR SITE OPERATIONS

2.1 SETTING OUT

Setting out shall be in accordance with the planting drawings. No planting shall take place until all tree planting pits (with ameliorants) have been inspected and approved by the Landscape Architect, or a person appointed by him as a representative, to ensure accordance with the specifications. No planting shall take place when ground conditions are frozen or waterlogged. All planting holes shall be opened and closed on the same day.

2.2 TOPSOIL

Topsoil conforming to BS 3882:2007 shall be used to backfill planting pits and trenches (as specified in Table 2.1 below) and otherwise spread to the following depths in general planting areas;

Table 2.1 Planting Depths

Planting Type	Minimum Depth (mm)	Notes
Tree/shrubs, landscape planting areas	300	-
Hedges and climbers	300	Existing
Grassed verges and general amenity areas	150	-

Wildgrass areas	50	-

2.3 FINISHED GRADING

All areas to be planted by the landscape contractor shall be left in an even state, with all soil clumps broken up and stones of greater than 75mm diameter shall be removed. Particular attention to finished grading and removal of stones will be required on the planting areas in the main interchanges.

3 SPECIFICATIONS FOR PLANTING AND PLANT MATRIALS

3.1 STAKING

Younger hedgerow plants should not require staking, however, in such cases where advanced nursery stock is needed, staking may be required.

3.1.1 Standard Trees

Round stakes shall be of peeled larch, pine or Douglas fir, preserved with a water-borne copper chrome arsenic composition in accordance with I.S. 131. Stakes shall be round, minimum 1.6m long, 75mm in diameter. Set stakes vertically in the pit, to the western side of the tree station, and drive before planting. Drive stake with a wooden maul or cast-iron headed drive. Sledgehammer should not be used. Set stakes vertically in the pit and drive before planting. Drive stake with a drive- all, wooden maul or cast-iron headed mell. Sledgehammer should not be used. Stakes shall be driven into the excavated planting put to a depth of:

800mm for Standards/Light Standards/Feathered Trees

3.1.2 Whips/Transplants 120cm ht. and higher

For all transplants exceeding 120cm height stakes shall be 1.2m long, 37mm x 37mm square softwood timber stakes or bamboo canes of minimum 20mm diameter. Stakes shall be pointed at the butt end. Set stakes vertically in the pit, to the western side of the tree station, and drive before planting. Drive stake with a wooden maul or by hand. Sledgehammer should not be used. Stakes shall be driven into the excavated planting pit to a depth of:

500mm for Whips/Transplants

3.1.3 Canes

Bamboo canes or similar approved shall be used to provide spot spraying location markers for small plants including Pinus species. The canes are not to be attached to plants.

3.1.4 Tree Ties

For standard trees, tree ties shall be of rubber, PVC or proprietary fabric laminate composition and shall be strong and durable enough to hold the tree securely in all weather conditions for a period of three years. They shall be flexible enough to allow proper tightening of the tie. Ties shall be min. 25mm wide for 120cm height trees and min. 38mm for larger sizes. They shall be fitted with a simple collar spacer

to prevent chafing. Two ties per tree shall be applied to standard trees. Ties shall be nailed to the stake with one galvanised nail.

3.2 PROTECTION

The interval between the lifting of stock at the heeling-in area and planting on site is to be kept to an absolute minimum. Plants shall be protected from drying out and from damage in transport. All stock awaiting planting on site shall be stored in a sheltered place protected from the wind and frost and from drying out.

All transplants shall be wrapped in polythene from the time of lifting to conserve moisture. Except when heeled-in, they shall be protected in polythene at all times until planted into their final position on site.

Rabbit-proof guards and/or rabbit proof fencing shall be provided to all tree species planted at100cm or taller and other plants as necessary.

3.3 DAMAGE

On completion of planting any broken branches shall be pruned, areas of damaged bark neatly pared back to sound tissue.

3.4 WATERING/FERTILISERS

All trees and shrubs shall be soaked in water for one hour prior to planting. Fertilisers shall conform to BS 5581: 1981. In the case of granular fertiliser being added to plantings, it must be mixed through and incorporated into the base of the planting hole and covered over in order to avoid roots of plants coming in direct contact. Approved slow release fertiliser granules are to be incorporated into backfill material at manufacturers specified rates. Fertilisers shall be supplied in sealed bags or containers bearing the manufacturers name, the net weight and analysis. Fertilisers shall be provided at the rates indicated in Table 3.1 below, or at manufacturers specified rates.

Table 3.1 Rates of Fertiliser Application

Planting Type	Minimum Depth (mm)
Semi-mature trees	300g/tree pit
Extra Heavy Standard (14-16cm girth)	200g/tree pit
Heavy Standard (12-14cm girth)	200g/tree pit
Standard Tree (8-10cm girth)	100g/tree pit
Light Standard (6-8cm girth)	60g/pit
Feathered tree (5cm girth)	50g/pit
Whip/transplants	20g/notch

3.5 TREE PLANTING

Trees shall be planted at the same depth as in the nursery, indicated by the soil mark on the stem of the tree. They shall be planted in the centre of the planting pit and planted upright. Stones or other rubbish over 75mm shall be removed. Supply and drive the stake 800mm into the ground for standard trees.

Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plant into position. Upon completion of planting, all pits hall be raked over lightly to leave an even surface and neat appearance. All stones greater than 25mm diameter to be removed. Provision should be made for the watering of root-balled trees in the first year following planting.

Table 3.2 Dimensions of Tree Pits

Planting Type	Size	Dimensions of Tree Pit
Semi-mature trees	Varies	300mm all round larger than rootball
Extra Heavy Standard	14-16cm girth	1.2 x 1.2 x 1m deep
Heavy Standard	12-14cm girth	900 x 900 x 750mm deep
Standard Tree	8-10cm girth	800 x 800 x 650mm deep
Light Standard	6-8cm girth	750 x 750 x 550mm deep
Feathered tree	5cm girth	600 x 600 x 500mm deep
Whip/transplants	Varies	Notch planted

Excavate tree pits to dimensions shown in Table 3.2 above. The base of the pit shall be broken up to a depth of 80mm and glazed sides roughened. Slow release fertiliser shall be applied to each tree pit prior to planting at rates specific in Table 3.1. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming planting into position.

Table 3.3 Propose native tree planting

	Plant Name	Height	Girth	Root	Density
	Trees				
	Sorbus aucuparia	3-4m	12-14cm	RB	1.5m centres
	Betula pendula	3-4m	12-14cm	RB	1.5m centres
	Prunus avium	2-3m	12-14cm	RB	1.5m centres

3.6 WHIP PLANTING 40-60CM, 60-90CM, 90-120CM

The base of the pit shall be broken up to depth of 50mm and glazed sides roughened. Trees shall be planted at the same depth as in the nursery and backfilled with compound fertiliser 0.10.20 at the rate of 20gm per whip. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plant into position.

3.7 TRANSPLANTS 30-40CM, 40-60CM, 60-90CM, 90-120CM

Remove vegetation. Create notch to depth as necessary to fully contain the length of the plant root system, using standard steel spade, place plant in notch, spreading roots to ensure the roots are not constricted in the planting notch. (Notch should be made at right angles to line of hedge). Using the ball of the foot, press the edges of the notch together taking care not to scrape the bark of the plant. Ensure that the root collar finishes level with the ground and that the plant finishes upright.

Planting should not take place during prolonged wet periods, periods of frost or periods of drought. The proposed woodland planting is detailed below.

Native tree and understory planting:

- Proposed planting to consist of heavy standard native trees and feathered whips (of various sizes) where gaps in the existing tree belt allow.
- Trees should be planted at varying distances between 1.5m x 1.5. Understory planting/Shrubs to be planted between 750-900mm.
- The location and density of tree planting to be determined by the landscape architect prior to the ordering of nursery stock.
- As per the current SDCC County Development Plan, it is proposed to use the 'Miyawaki Method' to generate quick dense woodland cover. Using the Miyawaki Method, trees can grow at a rate of around a meter per year. The main principles of the Miyawaki Method are to plant species of trees that would naturally occur in the area at a high density.

3.8 GRASSING

3.8.1 General

The contractor shall grade off all areas and compact, removing all stones greater than 75mm diameter and tip off site. All hollows to be filled in. Roll all areas with a roller as approved. Following the completion of final grading and raking, the area is to be left fallow for a period of 14 days.

Spray with 'Basta' or equal at recommended rates, and seed with specified grass seed mix at a nominal rate of 25g/Sq.m together with fertilizer 10:10:20 at a rate of 50g/Sq.m.

Any areas of poor seed germination as determined by the Landscape Architect shall be reseeded during the following sowing season.

3.8.2 Species Rich Meadow – Pollinator Friendly Wildflower Seeding.

Species rich meadow of local provenance to occupy residual space within the site. Seed mix as per the All-Ireland Pollinator Plan Wildflower Mixture:

> Birdsfoot Trefoil, Black Meddick, Cowslip, Devil's Bit Scabious, Meadow Buttercup, Field Scabious, Hemp Agrimony, Kidney Vetch, Lady's Bedstraw, Lady's Ann lace, Lesser Knapweed, Meadowsweet, Mullein, Ox-eye Daisy, Purple Loosestrife, Ragged Robin, Red Campion, Red Clover, Ribwort Plantain, Rough Hawksbit, Sorrel, St Johnswort, Wild Angelica, Wild Carrot, Yarrow. Yellow Agrimony, Yellow Rattle, Teasel and more. Also includes 35% annuals: Corn Marigold, Corn Poppy, Corncockle, Cornflower, Scented Mayweed,

3.9 GROUND PREPARATION TO PLANTING AREAS

Prior to planting, topsoil shall be cultivated where required to a depth of 200mm where soil is undisturbed or 75mm where topsoil has been placed. When the topsoil is reasonably dry and workable

grade to smooth flowing contours, with falls for adequate drainage, removing all minor ridges and hollows. Unless otherwise stated, finished levels of topsoil, after settlement, to be:

1. 30mm above adjoining pavements and kerbs.
2. 30mm higher for shrubs than for adjoining grass areas
3. Married in with adjoining soil areas
4. All stones above 75mm diameter to be removed off site by the landscape contractor.

4 MANAGEMENT AND MAINTENANCE

4.1 GENERAL PLANTING AFTERCARE

Planting shall be tended for 60 months from the dates of completion of all Works.

4.1.1 Woodland Planting

- The principal maintenance requirement for the establishment of woodland areas is to prevent the development of competing vegetation at the base of the proposed planting stock. This ensures better and quicker establishment of the proposed woodland planting.

- The application of a deep layer of back mulch (minimum 50mm deep layer) to a 400mm radius around the proposed planting will reduce the potential for weed growth and can be used as an alternative to applying herbicides.

- Some fencing may be required to protect plants from browsing by rabbits or hares. It may be useful to include a rabbit proof fence around the entire proposed planting area, or alternatively, guards may be used on individual plants. However, it is recommended that where guards are used, stakes should be provided for plant support if the measure is to prove effective.

- Plants should be allowed to grow naturally, with maintenance confined to essential practices such as replacing larger areas of failed plants and the control of invasive species.

- Replacement of failed plants should be undertaken at the earliest opportunity so as to maintain the integrity of the proposed woodland. Larger areas of woodland planting, with low failure rates, may not require replacement planting as occasional losses will provide for some random windows in the canopy and a more natural appearance to the woodland.

- Leaving cuttings from tree and shrub thinning's at the site will promote nutrient cycling and restore nutrients to the soil.

4.1.2 Weeding

- Throughout the aftercare period keep all shrub planting areas weed free. For tree planting keep an area of 1 m. in diameter around each planting station in a weed free condition. This may be achieved by the use of an approved herbicide or by regular cultivation. A minimum of 3 visits for

weed control will be required during the growing season. All injurious weeds, will be removed from the remainder of each transplant tree or shrub plot. The growth of herbaceous material between the weed free planting stations should be controlled by strimming twice per year.

- Selective spot spraying will be carried out to all grassed areas, whether planted or unplanted through the application of an approved herbicide to control broad-leaved annual and perennial weeds, including thistle, dock and ragwort. Herbicide to be approved by the landscape architect prior to application. Herbicide to be applied using controlled drop applicator containing a dye to indicate areas sprayed.

- Spraying of weed / grass growth shall be carried out to drainage channels, French drains and slit drains 3 times per year.

- Spraying to all hard landscape areas including footpath edges, paving and beneath bridge abutments 3 times per year.

4.1.3 Stakes, Trees, Shrubs and Ties

All stakes, trees and shrubs shall be maintained in firm positions within the ground and with all ties securely fixed and adjusted to allow for the increase in stem girth.

4.1.4 Replacements

Plants that fail to thrive, are removed, uprooted or destroyed or die during the aftercare period will be replaced with equivalent plants as soon as possible during the following planting season. Replacements shall be of the same size and species as that originally specified unless otherwise agreed with the Planning Authority. Defects shall be made good by the end of the planting season of the year in which the defect is identified.

- Shrub areas – all dead stock shall be replaced at the end of each growing season to obtain 100% stocking
- Cell grown/root trainers and transplant planting – throughout the aftercare period, all dead stock shall be replaced at the end of each growing season to obtain 90% stock providing that failures are evenly distributed throughout both planting areas and species
- Standard trees – throughout the aftercare period all dead and diseased stock shall be replaced at the end of each growing season.

4.2 WILDFLOWER SEEDING

4.2.1 First Year

In the first year it is important to keep the area cut short. This is firstly to keep "weeds" down but also to provide light to seedlings to help them grow. Cut the sward to a height of 75 mm whenever the vegetation reaches 150mm, and remove the cut vegetation if possible. Over the first season perennial weeds should be treated (removed by mechanical means or by careful spot spraying) after cutting. Cut the meadow no later than mid-November to a height of 30 mm and remove all vegetation.

4.2.2 Second Year

After year one, the meadow is cut just once annually. The goal in years 2 and 3 is to encourage germination the following year. Cut the sward just once, after the seed has set (or no later than mid-November), to a height of 30 mm. Leave the cut vegetation for 3 days then remove. After cutting, perennial weeds should continue to be treated through mechanical removal or careful spot spraying.

- There is no specific time for annual cutting as it can depend on weather and other unpredictable factors. Seeds should be allowed to ripen and fall from the seed heads before cutting.
- After cutting in Year 2 and 3, Yellow Rattle can be over-sown. Yellow rattle is a semi-parasite that reduces grass dominance.
- If more diversity is required, that wildflower meadow can be enhanced with plug plants of other wildflowers

4.3 MAINENANCE SCHEDULE

Tasks	*WINTER*	*SPRING*	*SUMMER*	*AUTUMN*
General Tasks;				
Landscape Architect inspection			■	
Replacing failed plants	■			■
Refirming	■	■	■	■
Pest and disease control	■	■	■	■
Check Plant supports	■	■	■	■
General pruning		■		
Tasks for Whips/Transplants;				
Weed control		■	■	■
Slow release fertiliser	■			
Tasks for Trees;				
Weed control		■	■	■
Slow release fertiliser	■			
Tasks for wildgrass/wildflower seeding areas;				
Mowing			■	
Weed control		■	■	■

4.4 MONITORING

A qualified Landscape Architect should monitor the site on an annual basis for the duration of the 3 yr Maintenance and Management Schedule and make adjustments to the Management and Maintenance Strategy where required.

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